**STUDY OF TEMPORAL VARIATION OF RADON CONCENTRATION IN
PUBLIC DRINKING WATER SUPPLIES**

by

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ABSTRACT

Emma L. York. Study of Temporal Variation of Radon Concentration in Public Drinking Water Supplies.

(Under the direction of Dr. James E. Watson, Jr.)

The Environmental Protection Agency (EPA) has proposed a Maximum Contaminant Level (MCL) for radon-222 in public drinking water supplies of 300 pCi/L. Proposed monitoring requirements include collecting quarterly grab samples for the first year, then annual samples for the remainder of the compliance cycle provided first year quarterly samples average below the MCL. The focus of this research was to study the temporal variation of groundwater radon concentrations to investigate how reliably one can predict an annual average radon concentration based on the results of grab samples. Using a "slow-flow" collection method and liquid scintillation analysis, biweekly water samples were taken from ten public water supply wells in North Carolina (6 month - 11 month sampling periods).

Based on study results, temporal variations exist in groundwater radon concentrations. Statistical analysis performed on the data indicates that grab samples taken from each of the ten wells during the study period would exhibit groundwater radon concentrations within 30% of their average radon concentration.

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INTRODUCTION

Water piped to consumers by public water systems is regulated by the Environmental Protection Agency (EPA) under the safe drinking water act (SDWA). Under the 1986 amendments to the SDWA, the EPA has proposed a National Primary Drinking Water Regulation (NPDWR) for radon-222 (^{222}Rn). The NPDWR proposes a Maximum Contaminant Level (MCL), monitoring, and reporting requirements for ^{222}Rn in public drinking water supplies. Although EPA published a proposal for radon in water in 1991, regulations are yet to be finalized.

The proposed MCL for radon in water is 300 pCi/L, and it applies to all community and non-transient, non-community public water systems relying wholly or in part on groundwater supplies. Such systems would be required to obtain and analyze samples of finished water at each well or entry point to the distribution system. The proposed initial monitoring requirements include collecting four consecutive quarterly grab samples for the first year, then annual samples for the remainder of the first 3-year compliance period provided first year quarterly samples average below the MCL. Systems with averages exceeding 300 pCi/L at any well or entry point would be out of compliance and would be required to monitor quarterly until the average of four consecutive samples is less than the MCL, at which time monitoring could then be reduced to an annual basis. Primacy states would be allowed to reduce monitoring requirements to one sample per 3-year compliance period if the state judges the system to be reliably and consistently below the MCL (Federal Register 1991).

However, radon is a volatile inert gas whose concentrations in groundwater are reportedly controlled by and related to a number of factors including temperature,

pressure, rainfall, emission of radon from surrounding rocks, and earthquake activity (Hess et al. 1985; Loomis et al. 1988; Danali-Cotsaki and Margomenou-Leonidopoulou 1993). Due to such physical variables and the dynamic nature of the environment, various investigators have reported conflicting findings on the temporal stability of groundwater radon concentrations. EPA reports that radon levels in groundwater can vary on a diurnal or longer term basis, with a variability of 100% or more (Federal Register 1991). Data on radon variability developed by Kinner (1990) reported up to two fold variations in radon concentrations at various wells over periods of one year or less (Federal Register 1991).

The focus of this research was to study the temporal variation of radon concentrations in public drinking water supplies, with the objective being to investigate how reliably one can predict an annual average radon concentration based on the results of grab samples. In characterizing the temporal trend of radon in groundwater, we will determine if EPA's proposed monitoring schedule is satisfactory in determining compliance with the proposed MCL.

To study the temporal variation of radon concentrations in groundwater, water samples were taken on a biweekly basis from ten public water supply wells located in various counties of North Carolina. Four of the ten wells were sampled from May 1994 through March 1995 (June and July excluded). These same four wells were also monitored for seven months, October 1993 through April 1994, in Hightower's (1994) study; therefore, data for these wells will be reported for a combined 1½ year sampling period. The six remaining wells, newly identified for this study, were monitored for six months, October 1994 through March 1995.

LITERATURE REVIEW

Radon and the EPA

Radon is an invisible, radioactive gas ubiquitous in our environment that results from the decay of naturally occurring uranium-238 (^{238}U) in rock, soil, and water. As a noble gas, radon is chemically inert and poses little risk to human health when inhaled. However, as radon decays, its radioactive decay progeny are of particulate form. It is these particulate decay products of radon, primarily alpha particles emitted by polonium-218 (^{218}Po) and polonium-214 (^{214}Po), that will deposit in the lung upon inhalation to present a radiological health hazard. Direct ingestion of radon-laden water is also thought to cause adverse health effects to the stomach and other internal organs (U.S. EPA 1991a; Federal Register 1991).

When examining radon in water, one must consider the underlying geology of an area to obtain a full picture of its presence and exposure potential. In a study conducted by Simones et al. (1988), the underlying geology of an area was found to be the primary determinant of groundwater radon concentrations. Radium-226 (^{226}Ra), a decay product of ^{238}U and radon's immediate precursor, is present in geological strata with a high uranium content. Granites are known to possess such a uranium rich geology, and in a nationwide survey Hess (1985) has found that groundwater sources possessing the highest radon concentrations are those in granite areas.

Groundwater entrained in granitic formations and in contact with rocks containing elevated levels of radium can become enriched with radon, experience transport through an aquifer, and eventually find its way into drinking water supply wells. Because radon is a volatile drinking water contaminant, as water enriched with radon is pumped into the home it can expose consumers via two routes- inhalation and ingestion. When this water is used for domestic purposes such as dishwashing,

clotheswashing, cooking, etc., the heat and turbulence of the action drive the dissolved but highly mobile radon out of solution to present an inhalation hazard in addition to the ingestion hazard from direct consumption of the water.

In some parts of the United States, radon in water may be a significant source of indoor air radon concentrations found in homes (Lawrence et al. 1992), but generally it is thought to account for less than 5% of the total indoor air concentration (for those homes with groundwater supply wells) (Federal Register 1991). The main contributor to indoor air radon is usually from soil gas radon entering the home through cracks in foundations or around service piping. A smaller fraction of the radon released into a home can arise from fuel gas, construction materials, and the outside air (Hess 1985).

Risk Estimates

Indoor air radon may result in 8,000 - 40,000 lung cancer deaths annually, of which 75 - 400 may be attributable to radon emanating from the water supply (U.S. EPA 1989). EPA estimates that every 10,000 pCi/L radon in water results in 1 pCi/L radon in air (U.S. EPA 1991b; Federal Register 1991). EPA proposes to set the MCL for radon in water at 300 pCi/L to protect against the risk of lung cancer. With an MCL set at 300 pCi/L, an estimated 80 cancer cases per year will be avoided upon promulgation of the standard (Federal Register 1991).

Radon in water poses some cancer risk to the stomach and other internal organs upon ingestion (U.S. EPA 1991a; Federal Register 1991), in addition to the lung cancer risk arising from the inhaled volatilized fraction. Therefore, EPA's risk assessment of radon in water evaluates both the inhalation exposure and risk and the ingestion exposure and risk. Exposure to a water supply containing ^{222}Rn at 300 pCi/L results in a total estimated lifetime cancer risk, from both inhalation and ingestion combined, of approximately 2×10^{-4} , i.e. 2 cancer fatalities per 10,000 individuals exposed to radon-laden water at the proposed MCL (Federal Register 1991). This risk,

2×10^{-4} , is slightly higher than the lifetime individual risk range of 10^{-4} to 10^{-6} the EPA has historically set and deemed acceptable for drinking water contaminants (Federal Register 1991).

It must be noted, however, that ingestion risk estimates are less certain than inhalation risk estimates (Federal Register 1991). In estimating the risk from ingested radon, EPA used data and organ doses developed by Crawford-Brown (1990). Later work published by Crawford-Brown (1991) has shown that inhalation and ingestion may lead to roughly equal risks, yet EPA's calculated ingestion risk is just 20% of the risk estimated from inhalation (U.S. EPA 1990; 1991a; Federal Register 1991). Several sources of uncertainty may exist in the radon risk estimates (U.S. EPA 1991a; Federal Register 1991), but generally the risk from ingestion is thought to be small when compared to that from inhalation (Federal Register 1991).

Sampling Schedule

EPA's proposed monitoring scheme divides the nine year compliance cycle following promulgation of the standard into three, 3-year compliance periods (Federal Register 1991). Proposed monitoring requirements for the first year of the initial 3-year compliance period require collecting four consecutive quarterly grab samples of finished water at each well or entry point to the distribution system. System compliance is established if the average of all four of the first year quarterly samples is below the MCL, at which time monitoring could be reduced to an annual sample at each well or entry point for the remainder of the compliance cycle. Should an annual sample exceed the MCL, monitoring would revert back to quarterly sampling until the average of four consecutive samples is below the MCL. In addition to monitoring requirements proposed by EPA, primacy states would have the option of reducing sampling frequency to one sample per 3-year compliance period should the state judge the system to be reliably and consistently below the MCL (Federal Register 1991). In

the proposed regulation, EPA also makes reference to the possibility of requiring only one sample per compliance cycle, or every 9 years, for some systems. The feasibility and/or status of this requirement is unclear at this time.

Significance to Consumers

There are approximately 68,000 community and non-community, non-transient public water systems served by groundwater sources that will be regulated under the proposed radon standard. At 300 pCi/L, it is estimated that 26,000 systems would be required to take action to meet the MCL, at an estimated annual nationwide cost of \$180 million. EPA estimates the cost to small systems serving 25-100 persons at \$170 per household per year (Federal Register 1991).

North Carolina, New Jersey, and states in the New England and Western Mountain regions known to exhibit elevated groundwater radon concentrations will undoubtedly feel the impact of an MCL set at 300 pCi/L. A study conducted by Watson et al. (1993) characterizing radon concentrations in North Carolina private groundwater supplies found the statewide mean level to be 1,800 pCi/L, with 67% of the 400 wells sampled exceeding the proposed MCL. From results assembled in another study examining North Carolina groundwater supplies (Dusenbury 1992), more than 50% of the sites sampled, 293 out of 468 public and private wells, had groundwater radon concentrations exceeding 300 pCi/L.

In proposing their sampling schedule and monitoring requirements, EPA's goal was "to insure compliance with the MCL while efficiently utilizing state and utility resources" (Federal Register 1991). With the radon in water standard on the horizon, the number of people affected and the costs involved for noncompliance, this report is timely and beneficial in evaluating the suitability of EPA's proposed sampling schedule in determining compliance with the MCL.

Sampling Methods & Analyses

In EPA's radon in water sampling program, a "funnel-syringe" method of sample collection is recommended for radon in water analysis (U.S. EPA 1978). In the funnel-syringe method, an inverted funnel is attached by way of flexible tubing to the spigot at which the sample is to be withdrawn. As water is allowed to flow over one side of the funnel, a large hypodermic needle is submersed under the pool of water and a 10-15 mL water sample is withdrawn. Approximately 10 mL of the water sample is then injected into a 20 mL glass vial under 10 mL of scintillation cocktail already present in the vial.

Although EPA recommends the funnel-syringe sample collection method outlined above for radon in water analysis, a much easier and recently proven method of sample collection exists (Hightower 1994). An alternative to the funnel-syringe method is appropriately termed a "slow-flow" technique of sample collection. Water flow from the spigot is reduced to a very slow and steady non-aerated stream. A 20 mL vial is placed in the stream and as the water travels along the inside wall of the vial, it deposits under 10 mL of scintillation cocktail already present in the vial. After obtaining approximately 10 mL of water, the vial is tightly capped and ready to transport for analysis. This slow-flow method of sample collection is much less involved and easier to perform than the funnel-syringe method. Because the slow-flow method involves no assembly setup or the use of hypodermic needles, it is a viable alternative for sample collection in a state-wide radon in water sampling program.

Both Dusenbury and Hightower have investigated using the slow-flow technique as an alternative method for radon sample collection (Dusenbury 1992; Hightower 1994). In Hightower's (1994) field study the slow-flow collection method performed well and produced results as good as or better than the funnel-syringe assembly. Upon completion of his field and laboratory tests, Dusenbury (1992) also found the slow-flow

collection method to be basically equivalent to the funnel-syringe method in the results produced.

As part of the radon standard, EPA also recommends analytical techniques to determine the concentration of radon in a sample (Federal Register 1991). EPA recommends two very different methods for analyzing radon in water; direct low volume liquid scintillation counting and radon de-emanation into a Lucas Cell for counting (U.S. EPA 1987; 1991c; Federal Register 1991). A method utilizing liquid scintillation counting (LSC) was developed by Prichard and Gesell (1977) that achieved a detection limit for radon as low as 10 pCi/L for a 10 mL sample and a 40 minute count time. In the LSC technique, the water sample is contained in a vial with scintillation cocktail composed of a solvent and a fluor. Ionizing particles released from the water sample dissipate their energy by colliding with the cocktail. As the cocktail absorbs energy, solvent molecules become excited. Excited solvent molecules then transfer their energy to the fluor solute, causing orbital electron clouds of the fluor to reach an excited state. As these excited orbital electrons return to their ground state, photons of light are emitted. If these flashes of light are detected by two photomultiplier tubes in coincidence, the output pulse is amplified, sorted by size, and counted¹.

The Lucas Cell method is a more complicated analysis to perform than liquid scintillation counting. In this technique, radon is de-emanated from solution and injected into a zinc-sulfide coated alpha scintillation cell, or Lucas Cell. As alpha particles interact with the zinc-sulfide coating, light flashes are produced and detected by an attached photomultiplier tube system. This procedure reportedly has good specificity, but Lucas Cell preparation and counting is much more time consuming and labor intensive than liquid scintillation counting (Kinner et al. 1991).

¹Packard Operation Manual, Tri-Carb Liquid Scintillation Analyzers, Model 1900TR

A collaborative study involving eighteen laboratories was conducted by Whittaker et al. (1989) to compare LSC and Lucas Cell methods. Based upon their research, the authors recommend the LSC method be considered equivalent to the Lucas Cell method. The authors further conclude that the LSC method is slightly more precise and accurate than the Lucas Cell method. Additional advantages of liquid scintillation counting include short sample preparation time, small sample size, automatic sample changing, and a good detection limit (Prichard and Gesell 1977).

Temporal Variation

Not many studies exist in the published literature that have examined the temporal variation of groundwater radon concentrations. Of the few studies available for review, the results differ on the temporal stability of groundwater radon concentrations. One of the most recent studies examining radon in water was conducted by Hightower (1994) at the University of North Carolina at Chapel Hill (UNC-CH). In his study, samples from four public water supply wells taken monthly from September 1993 through March 1994 did indeed exhibit variations in their groundwater radon concentrations. The well experiencing the greatest fluctuation in water radon levels, Eastern Site C, had an average radon concentration during the study period of 22,158 pCi/L with a standard deviation of 4,827 pCi/L, and a maximum difference from the mean during the sample period of 8,942 pCi/L (1.85σ). It should be noted, however, that inadequate purging may be a contributing factor in the variation of measured radon concentrations at Eastern Site C.

Two additional studies that have reported small temporal variations in groundwater radon concentrations were conducted by Farai and Sanni (1992), and Watson and Mitsch (1987). In Farai and Sanni's study (1992), samples were obtained from one well, three times a week, from November 1987 to October 1988. At the

completion of sampling for this well, the annual average radon concentration was reported to be 400 pCi/L with a standard deviation of 38 pCi/L and a maximum difference from the average during the year of 57 pCi/L (2.1σ). The authors characterized the radon fluctuations as "small" and attributable to rainfall activity. In Watson and Mitsch's (1987) study, groundwater samples were collected from four research wells on a quarterly basis for nine months. Though the authors found no major changes in radium or radon concentrations during the nine months, they did recommend continued sampling over a longer period of time to better characterize any long-term variations that may occur.

A study examining short-term time variations in groundwater radon concentrations was conducted by Simones et al. (1988). Twenty wells located in the Georgia Piedmont were examined monthly from December 1987 to February 1988. Data obtained from the short, three month sampling period did not reveal any pattern of variation in radon concentrations and the authors tentatively conclude "there may not be any short-term time variation in radon activities in groundwaters." However, as the authors realize, data over a much longer time interval are needed to confirm their claim.

Two further studies were found in the literature that, although their stated objective was not to study the temporal trend in groundwater radon concentrations, did monitor a number of wells repetitively over time. Unfortunately, neither study provided a conclusion about the stability of radon in the groundwater supplies sampled. In Davis & Watson's (1990) study, groundwater samples were collected from six different wells drilled in the same granite pluton to investigate the variation in their radon content. Groundwater samples were collected from the wells over a period of six months, March through August 1988. The authors found that over the six month sampling period, ^{222}Rn concentrations in three of the six wells were fairly constant, with the remaining three wells exhibiting more variation. However, the authors could

not find a consistent pattern of variation in the radon concentrations for these three wells.

Another study, again not focusing on the temporal trend of radon in groundwater specifically but reporting related data, was conducted by Dillon et al. (1991). Radon concentrations were measured in 283 wells located in the Georgia Piedmont. In 278 of the 283 wells, one grab sample was taken sometime between October 1987 and September 1988. In the remaining five wells, however, two samples were obtained, with an elapsed time between sample collection from three to thirteen months. While two of the five wells exhibited identical concentrations between sample collections, the remaining three wells had concentrations that differed by as much as a factor of two from their initial measured radon levels.

As one can gather from the short synopsis previously given, investigators have reported conflicting findings on the stability of groundwater radon concentrations. In light of the published studies, EPA has taken the stance that groundwater radon concentrations will fluctuate. In fact, EPA reports that radon levels in groundwater can vary on a diurnal or longer term basis, with a variability of 100% or more (Federal Register 1991). Because of this variability, EPA has proposed a monitoring schedule for radon in water, as detailed in the "sampling schedule" section of this report, that is more frequent than for other water-borne radionuclides.

MATERIALS AND METHODOLOGY

A total of ten wells were examined in this study. Four of the ten wells sampled (site identifications 1 - 4) were part of a continuing study from Hightower (1994). The remaining six wells (site identifications 5 - 10) were newly identified for this study based on records from the North Carolina Department of Environment, Health, and Natural Resources (DEHNR). Upon obtaining a printout from DEHNR of all public water supplies in Orange, Durham, and Chatham counties, sites were selected based on their proximity to Chapel Hill and included for study only after consent was given from the owner or operator to allow biweekly sampling. Additional requirements for each site were that a representative ground water sample be obtainable, i.e. the pump could be manually tripped to get a fresh water sample, and that the well be part of a public water supply.

All ten sites were located in the Piedmont region of North Carolina (See Fig. 1). The four wells continued from Hightower's (1994) study, sites 1 - 4, are all located within a twenty mile radius east of Raleigh. For this study, these four wells were sampled over an eleven month period, May 1994 through March 1995 (June and July excluded). Because Hightower sampled these same four wells from October 1993 through April 1994, results will be reported for the combined eighteen month sampling period. The remaining six wells, sites 5 - 10, were all within a ten mile radius of Chapel Hill, with two in Orange county and four in Chatham county. Sampling for these six sites began in October 1994 and continued through March 1995, for a total sampling period of six months. Refer to Table 1 for a brief summary of site characteristics.

Figure 1: North Carolina Counties and Physiographic Provinces

(Source: U.S. Geological Survey 1989)

Table 1: Site Characteristics

Well #	County	Population Served	Underlying Geology
1	Franklin	Small town	Town underlain by light-gray, coarse to medium-grained biotite granite. ^a
2	Franklin	Small town	"
3	Wake	Trailer park	Region underlain predominantly by light gray coarse to medium-grained biotite granite. ^b
4	Wake	Trailer park	Principal rock unit is granite. ^b
5	Orange	Retreat camp	Metamorphosed volcanic rocks. Granite and gabbro exposed in all parts of the county. ^b
6	Orange	Trailer park	"
7	Chatham	Subdivision	Large body of granite underlies the region. ^b
8	Chatham	Subdivision	"
9	Chatham	Subdivision	"
10	Chatham	Subdivision	"

^a U.S. Geological Survey 1968

^b U.S. Geological Survey 1972

Experimental Design

The focus of this research was to examine how groundwater radon concentrations varied over time. In order to examine both short and long-term time variations, the study was designed to sample all ten sites on a biweekly basis over a period of several months. During each sampling run, five sequential samples were collected from the well head after purging the well (adequate purge times addressed in a latter portion of this report). Sampling began in May 1994 and continued through March 1995 for sites 1 - 4, resulting in a total of fourteen sampling runs spread over an eleven month sampling period. Sampling for sites 5 - 10 began in October 1994 and continued through March 1995, for a total of eleven sampling runs over a six month sampling period.

Sample Run Preparation

Prior to each sampling run, time was spent in the laboratory preparing vials for upcoming sample collection. Supplies utilized during lab preparatory work and subsequent sample collection were 20 mL borosilicate glass vials, cone-shaped inner lined caps, and E.I. duPont New England Nuclear High Efficiency Mineral Oil Scintillator. Necessary equipment used during sample collection was a thermometer to record water temperatures and a watch to record the time each sample was taken.

In preparing vials for an upcoming sampling run, the first step was to micropipet 10 mL of scintillation fluid into each vial. Vial caps were then tightened on by hand and a vial identifier was put on each cap to detail both the site and sample number (site 1 - 10, vial #1 - 5). Finally, each vial's preweight was determined and recorded to the nearest hundredth of a gram.

Sample Collection

Each well was sheltered in its own pump house near the population supplied. Upon entering the pump house, the appropriate vials were arranged near the well head and readied for sample collection. In those cases where the pump was not already running just prior to sample collection, water was allowed to "blow-off", or drain, from the holding tank until pressure levels were low enough to cause the pump to automatically engage. For those sites with a rather large holding tank, a combination of draining the tank and/or tripping the electrical circuit was employed to cause the pump to engage. Prior to beginning sample collection at each site, five minutes was allowed to elapse after the pump had engaged before the first sample was taken to allow for sufficient purging of the well.

Slow Flow Technique

All ten wells had a spigot at the well head, so samples could be withdrawn via the slow flow technique directly at the well before the water entered the holding tank or distribution system. After purging the well for at least five minutes, water flow from the well head spigot was reduced to a very slow and steady nonaerated stream. Vial #1 was uncapped and placed along the edge of the spigot, allowing the stream of water to flow along the inside of the vial and deposit under the scintillation cocktail already present in the vial. Upon filling the vial just to its neck, corresponding to a water sample of approximately 10 mL, the vial was removed from the water stream and quickly recapped. The time was then recorded to the nearest second, the cap rechecked for a tight fit, and the vial set aside. This same procedure was then repeated for the remaining four vials at each site, ending with vial #5.

Purge Times

In order to obtain a representative ground water sample, any standing water already in the well prior to engaging the pump must be removed, or purged. Purging is necessary because radon in the standing water has undergone radioactive decay over an unknown period of time while in the well; thus one can not accurately decay correct to determine the actual amount of radon activity present in the underlying water source. (Nonuniformity of radon activity in standing water was investigated by Hightower and discussed in Appendix E of his 1994 masters thesis.) To ensure sufficient purge times for all ten sites sampled, the total volume of water in each well was calculated using well depth and diameter information from well test records and driller's logs on file at DEHNR. (Figure 2 is an elementary sketch of a groundwater well that details terminology used in referring to well components.) Specifically, information on well yield, casing depth and diameter, and drop pipe depth and diameter is necessary to calculate an adequate purge time.

Reported in Table 2 are the well dimensions at each site and their corresponding calculated purge times. Note, however, that while most of the well log records on file at DEHNR specified the overall depth of the well, casing depths were not specifically reported. State regulators recommend a minimum casing depth of 50 feet, with 100 feet usually being a maximum casing depth at the localities sampled in this study². Therefore, two different purge times were calculated and listed for each of the ten sites in Table 2 - purge times based on a minimum casing depth of 50 feet and on a maximum casing depth of 100 feet.

Because for some wells, necessary information on well dimensions was not available from state records, and approximations had to be used in calculating well volumes, additional measures were taken to insure that a well was adequately purged

²Personal communication with Mr. Bill Barlow, N.C. DEHNR

Figure 2: Elementary Sketch of a Groundwater Well

Table 2: Well Dimensions and Calculated Purge Times

Well #	Drop Pipe Diameter (in)	Casing Diameter (in)	Well Depth (ft)	Well Yield (gpm)^a	Well Volume (ft³)^b	Purge Time (min)^b	Well Volume (ft³)^c	Purge Time (min)^c
1	2	6.25	400	70	27.84	2.98	18.28	1.95
2	2	6.25	320	40	26.10	4.88	16.53	3.09
3	2	6.25	255	12	24.68	15.39	15.12	9.42
4	2	6.25	110	29	21.52	5.55	11.96	3.08
5	2	6.25	d	d	-	-	-	-
6	2	6.25	180	d	23.05	-	13.48	-
7	2	6.25	200	37	23.48	4.75	13.92	2.81
8	2	6.25	550	35	31.11	6.65	21.55	4.61
9	2	6.25	d	26	-	-	-	-
10	2	6.25	525	18	30.57	12.70	21.00	8.73

Information obtained from DEHNR inspection records and driller's logs.

^a gpm = gallons per minute

^b maximum casing depth of 100 ft.

^c minimum casing depth of 50 ft.

^d information unavailable

prior to sample collection. During each sampling run, five water samples were taken and their corresponding radon concentrations were measured. Measured concentrations were consistently determined after each run and results from vial #1 through vial #5 were compared to insure no trends existed in the data, i.e. if sample one continually had the lowest radon concentration while sample five had the highest, inadequate purging would be suspected.

Lastly, to assure all wells were sufficiently purged prior to sample collection, water temperatures were monitored during each sampling run. Investigating changes in water temperature helps to determine if the water sample came directly from the underlying water source without residence time in the well³. The temperature of groundwater from deeper sources, sources greater than 50 feet deep, remains fairly constant throughout the year. Beyond a depth of about 100 feet, groundwater temperature increases approximately 1° F for each additional 75 - 150 feet of depth (U.S. EPA 1982). Thus, when monitoring the temperature of groundwater purged from a well, one would expect to see an increase in temperature as more water is pumped from the well. When the water being purged reaches a fairly constant temperature, one could assume the water was now coming directly from the underlying water source.

Because the wells in this study ranged in depth from 110 to 550 feet, one might expect the water temperature to vary 4 - 5° F from the surface to the underlying water source. Table 3 reports the actual temperature changes found during each sampling run. As can be seen from Table 3, temperature changes averaged 1 - 2° F. In most instances, little to no temperature change was seen from initially engaging the pump to the conclusion of sample collection approximately seven to eight minutes later. Little to no temperature change indicates that the wells cycle on quite frequently; hence,

³Personal communication with Dr. C. T. Hess, University of Maine

Table 3: Groundwater Temperatures

(Note: Data reported as "initial temp. - final temp." in °F)

Well #	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1				64-64	63-64 63-64	63-64 60-63	63-64	
2				64-64	65-65 64-65	64-64 62-63		
3				62-62			63-63	
4				63-63	63-63		62-62 63-63	
5					56-58	59-57 59-59	57-59	
6					60-60	59-60 60-60	60-60 61-61	
7					61-61	61-61 61-61	61-61	
8					61-62 61-61	60-60 61-62	62-62 61-60	
9						61-60	61-61	
10					60-61 61-61	53-60 60-61	60-61 60-61	

water is not allowed to stand in the well for any appreciable amount of time. Thus, after a minimum purge time of five minutes, it was believed that a fresh water sample was being drawn directly from the underlying water source.

Because water temperature data was not collected during the first few months of sample collection, the data set reported in Table 3 is somewhat incomplete. However, based on all three pieces of information: the calculation of total volume of standing water in each well, the fact that only slight changes in radon concentrations occurred with time as samples were being drawn, and the absence of any significant changes in groundwater temperatures as each pump was engaged, it was believed that a fresh sample could be drawn from all ten wells after a minimum purge time of five minutes.

Sample Analysis

Upon completion of each sampling run, vials were transported to the radiological hygiene laboratory at UNC-CH for radon analysis. First, the outsides of all vials were wiped clean to remove any dirt or residue that may have been present. Then, each vial was vigorously shaken for 15 seconds to assist the radon gas in coming out of the aqueous phase and into the scintillation phase. After shaking all vials, they were again weighed and their postweights recorded to the nearest hundredths of a gram. After cleaning, shaking, and post-weighing each vial, all were counted together in a Packard Tri-Carb 1900TR Liquid Scintillation Analyzer.

Four blanks and two standard solutions were also counted with each set of samples put into the LSC. Each blank, containing 10 mL scintillation cocktail and 10 mL distilled water, was counted for 50 minutes. The total elapsed time in counting the four blanks, 200 minutes, not only supplied a measure of the LSC's background, but it also allowed the radon progeny in the standards and samples sufficient time to come into secular equilibrium with the radon gas. Two radon standards, 714 pCi and 952

pCi, also accompanied each set of samples to serve as calibration sources, allowing conversion from the LSC's reported counts/min into an activity in pCi.

Each sample cassette used in conjunction with the LSC could hold twelve vials. The four blank, or background vials always occupied positions 1 - 4 in the first cassette, with positions 5 and 6 reserved for the 714 pCi and 952 pCi radon standards, respectively. The water samples were then arranged, beginning with position 7, to count in the order in which they were collected.

After loading blanks, standards, and all samples from a run into sample cassettes, the cassettes were placed into the LSC and program #1 was initiated. Program #1 contained preset parameters, as detailed in Figure 3, that were utilized to analyze water samples for their radon content. (Note: A complete description of liquid scintillation counting can be found in Packard's Operation Manual for the Tri-Carb Analyzer Model 1900TR.)

Program #1 was set-up to count all vials for a maximum of 50 minutes or until the 2σ terminator was reached in region B, whichever occurred first. Only those counts registering in region B were used in calculating radon activities. Counts falling outside region B were considered noise.

The LSC's printed results in counts/min are not indicative of the radon concentration at the time samples were taken. Because radon decays with a half life of 3.82 days, knowing the elapsed time between sample collection and analysis is essential in order to correct for that activity that has decayed during transport and while awaiting analysis. To convert the measured counts/min into a decay-corrected activity in pCi/L, the following equation was used:

$$C \text{ (pCi/L)} = \frac{(\text{NCR}) \text{ cpm} \times (1000) \text{ mL/L}}{(\text{Volume}) \text{ mL} \times (\text{CF}) \text{ cpm/pCi}} \times \exp [T \times (0.693/3.82 \text{ days})],$$

Figure 3: LSC's Preset Parameters for Program #1

Protocol # =	1	Copy Protocol #?	no
Protocol Name?	Radon		
Cycles?	1		
Count Time?	50.00		
2 Sigma Coincidence?	yes		
# Counts/Vial?	1		
# Vials/Standard?	1	# Vials/Sample?	1
1st Vial Background?	no		
Radionuclide?	manual		

	LL	UL	Bkg	2Sigma%	LCR
Region A:	0.0	2000	0.00	20.0	0
Region B:	5.0	1850	0.00	2.0	0
Region C:	0.0	5.0	0.00	20.0	0

Qip?	SIS
% of Reference?	no
Data Mode?	cpm

Protocol # =	1	Protocol Name =	Radon
Half Life?	A: 0.00	B: 0.00	
Ref Date?	A: 1 / 1 / 93	B: 1 / 1 / 93	
Ref Time?	A: 0:0	B: 0:0	
Single Photon Count?	no		
Colored Samples?	no		
RS232 Computer Output?	no		
Luminescence Correction?	no		
High Sensitivity Count Mode?	no		
Data/Application Drive & Path?			
Save Data?			
Save Spectrum?	no		
Run User Application?	no		
File Name?			
Command String?			
Static Controller?	on		

(Note: Above figure is extensive in that it details all of the available settings on the LSC. Key items are discussed in the previous section. For a further explanation of all the fields outlined above, one should refer to Packard's Operation Manual for the Tri-Carb Analyzer Model 1900 TR.)

where:

C signifies the radon concentration in the water sample at the time the sample was taken. The water radon concentration is reported in picocuries of activity per liter of water (pCi/L).

NCR denotes the net count rate, in counts per minute (cpm), of each sample. The NCR for each sample is calculated by subtracting the background count rate, the average of the registered counts in Region B for the four blanks, from the gross count rate reported in Region B for each sample.

Volume denotes the volume of water taken during sample collection. Volume, in mL's, is calculated by subtracting a sample's preweight from its postweight, and then dividing by the density of water (1 g/mL).

CF is the calibration factor utilized in converting the LSC's reported counts/min to an activity. The calibration factor is calculated by dividing the counts/min in Region B measured for each standard by the standard's known activity (714 pCi and 952 pCi). The CF's calculated for the two standards were averaged and this average calibration factor was used in determining cpm/pCi for each run. The average calibration factor throughout the duration of this study was around 10 cpm/pCi.

T is a measure of the elapsed time from capping the vial immediately after sample collection to the midpoint of LSC counting.

RESULTS

Sample collection for sites 1 - 4 ran from May 1994 through March 1995, resulting in a total sampling period of eleven months (June and July excluded). Sample collection for sites 5 - 10 ran from October 1994 through March 1995, resulting in a total sampling period of six months. Samples were collected on a biweekly basis during the study period.

Well results are displayed graphically in Figures 4 - 14, one figure per well. Each figure displays the collection month along the horizontal axis, and the measured groundwater radon concentrations, reported in pCi/L, on the vertical axis for that month. Plotted on each figure are sample means, which are the averages of the five samples taken during a run, and associated error bars of 2 standard deviations. After all sampling runs were completed and data collection had ended, an overall mean (reported as grand) and overall error of 2 standard deviations (2σ) were calculated and included on each figure. For wells 1 - 4, Hightower's (1994) data are also plotted. (Note: Hightower's data collected and analyzed using same techniques and standards.) Hightower's (1994) data were also included in calculating the grand mean and grand standard deviation for wells 1 - 4.

Following each well's graphed results is a data summary table (Tables 4 - 14). The data summary table gives the exact date of a sample run, the number of samples taken during that run, and the calculated average radon concentration and standard deviation for the run. Reported at the bottom of each table is the overall number of samples collected for that well, the overall (grand) mean, and the overall standard deviation. In addition to the summary tables given in this section, the Appendix contains raw data for each sampling run grouped by well number.

Figure 4: Well 1 Results

Table 4: Well 1 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
May 19, 1994	5	35,946	670
Sept. 15, 1994	5	39,298	148
Sept. 29, 1994	5	32,871	669
Oct. 13, 1994	5	34,932	639
Oct. 27, 1994	5	32,925	994
Nov. 10, 1994	5	29,838	1,141
Nov. 22, 1994	5	33,640	999
Dec. 8, 1994	5	33,849	1,012
Dec. 29, 1994	5	33,256	354
Jan. 12, 1995	5	35,801	665
Jan. 26, 1995	5	34,645	1,789
Feb. 9, 1995	5	34,651	1,067
Feb. 23, 1995	5	44,892	1,261
Mar. 9, 1995	5	28,828	560

York Data Only	Hightower & York Data Combined
Total Number of Samples: 70	Total Number of Samples: 115
Grand Mean: 34,670 pCi/L	Grand Mean: 36,781 pCi/L
Grand Deviation: 3,867 pCi/L	Grand Deviation: 5,088 pCi/L

Figure 5: Well 2 Results

Table 5: Well 2 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
May 19, 1994	5	23,034	795
Sept. 15, 1994	5	23,237	235
Sept. 29, 1994	5	20,011	885
Oct. 13, 1994	5	20,939	1,825
Oct. 27, 1994	5	23,307	2,767
Nov. 10, 1994	5	26,358	2,630
Nov. 22, 1994	5	27,918	2,722
Dec. 8, 1994	5	31,525	2,286
Dec. 29, 1994	5	30,246	1,147
Jan. 12, 1995	5	29,998	2,349
Jan. 26, 1995	5	36,705	1,072
Feb. 9, 1995	5	35,924	980
Mar. 9, 1995	5	21,597	238

York Data Only	Hightower & York Data Combined
Total Number of Samples: 65	Total Number of Samples: 110
Grand Mean: 26,984 pCi/L	Grand Mean: 25,010 pCi/L
Grand Deviation: 5,633 pCi/L	Grand Deviation: 5,807 pCi/L

Figure 6: Well 3 Results

Table 6: Well 3 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
May 19, 1994	5	12,142	436
Sept. 15, 1994	5	12,737	350
Sept. 29, 1994	5	13,373	235
Oct. 13, 1994	5	13,012	270
Oct. 27, 1994	5	13,892	413
Nov. 10, 1994	5	14,381	281
Nov. 22, 1994	5	15,124	429
Dec. 8, 1994	5	17,787	512
Dec. 29, 1994	5	14,680	184
Jan. 12, 1995	5	15,871	218
Jan. 26, 1995	5	16,144	242
Feb. 9, 1995	5	16,174	109
Feb. 23, 1995	5	14,095	239
Mar. 9, 1995	5	13,756	111

York Data Only	Hightower & York Data Combined
Total Number of Samples: 70	Total Number of Samples: 120
Grand Mean: 14,512 pCi/L	Grand Mean: 13,382 pCi/L
Grand Deviation: 1,545 pCi/L	Grand Deviation: 1,854 pCi/L

Figure 7: Well 4 Results

Table 7: Well 4 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
May 19, 1994	5	12,383	650
Sept. 15, 1994	5	11,358	206
Sept. 29, 1994	5	11,553	147
Oct. 13, 1994	5	10,978	805
Oct. 27, 1994	5	11,475	368
Nov. 10, 1994	5	11,965	92
Nov. 22, 1994	5	11,752	90
Dec. 8, 1994	5	11,969	295
Dec. 29, 1994	5	11,539	365
Jan. 19, 1995*	5	8,693	285
Jan. 26, 1995*	5	6,982	181
Feb. 9, 1995*	5	6,067	64
Feb. 23, 1995*	5	6,201	114
Mar. 9, 1995*	5	5,951	87

York Data Only	Hightower & York Data Combined
Total Number of Samples: 45*	Total Number of Samples: 95*
Grand Mean: 11,664 pCi/L	Grand Mean: 11,538 pCi/L
Grand Deviation: 537 pCi/L	Grand Deviation: 733 pCi/L

* 1995 data not included in analysis

Figure 8: Well 5a Results

Table 8: Well 5a Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Oct. 6, 1994	5	2,387	42
Oct. 20, 1994	5	1,875	46
Nov. 3, 1994	5	1,482	42
Nov. 17, 1994	5	1,931	29
Dec. 1, 1994	5	1,905	26
Dec. 15, 1994	5	2,031	75
Jan. 5, 1995	5	1,912	71
Jan. 19, 1995	5	1,774	45
Feb. 2, 1995	5	2,003	84
Mar. 9, 1995	5	1,980	85
<p>Total Number of Samples: 50 Grand Mean: 1,928 pCi/L Grand Deviation: 222 pCi/L</p>			

Figure 9: Well 5b Results

Table 9: Well 5b Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Nov. 3, 1994	3	2,159	60
Nov. 17, 1994	5	1,840	40
Dec. 1, 1994	5	1,900	237
Dec. 15, 1994	5	1,837	106
Jan. 5, 1995	5	1,813	420
Jan. 19, 1995	5	1,414	383
Feb. 2, 1995	5	1,859	238
Mar. 9, 1995	5	2,028	99
<p>Total Number of Samples: 38 Grand Mean: 1,840 pCi/L Grand Deviation: 297 pCi/L</p>			

Figure 10: Well 6 Results

Table 10: Well 6 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Oct. 6, 1994	5	184	12
Oct. 20, 1994	5	171	15
Nov. 3, 1994	5	178	16
Nov. 17, 1994	4	180	15
Dec. 1, 1994	5	145	10
Dec. 15, 1994	5	180	13
Jan. 5, 1995	5	185	14
Jan. 19, 1995	5	196	20
Feb. 2, 1995	5	190	18
Feb. 16, 1995	5	178	10
Mar. 9, 1995	4	188	11
<p>Total Number of Samples: 53 Grand Mean: 179 pCi/L Grand Deviation: 18 pCi/L</p>			

Figure 11: Well 7 Results

Table 11: Well 7 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Oct. 31, 1994	5	492	30
Nov. 14, 1994	5	502	28
Dec. 1, 1994	5	497	18
Dec. 15, 1994	5	534	18
Jan. 5, 1995	5	500	39
Jan. 19, 1995	5	509	33
Feb. 2, 1995	5	500	11
Feb. 16, 1995	5	470	23
Mar. 9, 1995	5	533	24
Total Number of Samples: 45 Grand Mean: 504 pCi/L Grand Deviation: 30 pCi/L			

Figure 12: Well 8 Results

Table 12: Well 8 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Oct. 31, 1994	5	3,389	160
Nov. 14, 1994	5	2,938	72
Dec. 1, 1994	5	2,714	128
Dec. 15, 1994	5	2,954	86
Jan. 5, 1995	5	2,970	47
Jan. 19, 1995	5	2,793	49
Feb. 2, 1995	5	3,678	55
Feb. 16, 1995	5	3,052	85
Mar. 9, 1995	5	2,628	64
Total Number of Samples: 45 Grand Mean: 3,013 pCi/L Grand Deviation: 327 pCi/L			

Figure 13: Well 9 Results

Table 13: Well 9 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Oct. 31, 1994	5	2,171	55
Nov. 14, 1994	5	2,252	135
Jan. 5, 1995	5	2,403	47
Jan. 19, 1995	5	2,023	92
Feb. 2, 1995	5	2,229	58
Feb. 16, 1995	5	1,919	14
Mar. 9, 1995	5	1,883	55
Total Number of Samples: 35 Grand Mean: 2,126 pCi/L Grand Deviation: 191 pCi/L			

Figure 14: Well 10 Results

Table 14: Well 10 Data Summary

Collection Date	Number of Samples	Average Rn Conc. (pCi/L)	Standard Deviation (pCi/L)
Oct. 31, 1994	5	2,724	70
Nov. 14, 1994	5	2,355	72
Dec. 1, 1994	5	2,699	90
Dec. 15, 1994	5	2,526	95
Jan. 5, 1995	5	2,459	118
Jan. 19, 1995	5	2,472	75
Feb. 2, 1995	5	2,716	40
Feb. 16, 1995	5	2,576	45
Mar. 9, 1995	5	2,646	98
Total Number of Samples: 45 Grand Mean: 2,575 pCi/L Grand Deviation: 145 pCi/L			

Qualitative Discussion of Results

Because Hightower's data are included with the data collected during this study, groundwater radon concentrations for a 1 ½ year sampling period are reported for sites 1 - 4. Trends in the data are more easily interpreted for these four sites, as compared to any apparent trends for sites 5 - 10 (6 month sampling period), simply due to the longer period of sample collection for sites 1 - 4.

Wells 1 & 2

It is obvious in looking at Figures 4 and 5 that measured groundwater radon concentrations for wells 1 and 2 are well above the proposed 300 pCi/L standard. Wells 1 and 2 are located approximately ¼ mile apart and both serve the same small municipality. Some variation is seen in the average radon concentrations plotted for well 1 in Figure 4. In comparing Hightower data points with the data plotted from the results of this study, more variation is seen in the average radon concentrations measured between sample collections during Hightower's study period. The larger variation seen in Hightower's data might be attributed to the fact that Hightower drew water samples directly from the distribution line without actually engaging the pump. Thus, because the well was not purged prior to sample collection, water samples were not always being drawn directly from the underlying water source. Though some variation exists in the radon concentrations graphed for well 1, no seasonal variations or other apparent trends occur in the data over the eighteen month sampling period.

Well 2 is an interesting well to study (Fig. 5). Beginning in October of 1994 and continuing through February of 1995, the average radon concentration steadily increases between sample collection runs. In examining the results for the five individual samples collected during each of these runs, a trend is apparent when comparing the measured radon concentrations of vial one through vial five. During

each sample collection for this well, the first vial taken from the well consistently had the highest measured radon concentration while the last vial taken consistently had the lowest concentration of all vials taken during the collection (opposite of what might be expected if inadequate purging were suspected). This observation, a noticeable trend in measured concentrations within the five vials, coupled with the large error bars around the sampling means, leads this author to hypothesize that, as the well is purged and remains pumping, the water is actually travelling into the pumping zone from the surrounding geology some distance away- with this surrounding geology contributing less radon activity to the water supply (thus lower radon concentrations measured in water samples) than the geology in the immediate vicinity of the well head. Further, the last sample mean plotted on the graph corresponds to samples taken in March 1995. This data point is noticeable in scanning the graph because it represents an average radon concentration much lower than had been measured in the previous months. It is interesting to note that this March sample collection was the only collection run in which the well was pumping due to residential demand rather than being manually tripped. Thus, the well had been on for some time longer than the average five minute purge time. Because the measured concentration was quite low compared to previous months, this observation would tend to support the hypothesis that water travels from some distance away. The water is travelling from a source having different geology than that of the immediate vicinity of the well. Although a conclusion can not be drawn from one data point, further study of this well would be warranted to investigate the hypothesis.

Well 3

Well 3 results are graphed in Figure 6. Figure 6 shows a steady increase in groundwater radon concentrations from October through December 1994, with a "leveling-off" in January and February 1995. The holding tank for well 3 is fairly

small and supplies a small trailer park; therefore, it turns over quite frequently. Within each sampling run little variation occurs in the five measured radon concentrations, as is evident by the small error bars around the plotted sample means of Figure 6.

Because little variation is seen within each run, and because the well was used on a very consistent basis, it is believed that the fluctuations seen in the measured groundwater radon concentrations at the different sampling times are actual temporal variations in the radon activity of the underlying water source.

Well 4

Figure 7 is a graph of well 4 results. This graph requires some explanation. In viewing the graph one can see that during most sampling runs the variability between samples is fairly small, with the exception of a few data points. This well is one of two wells that supplies a small trailer park. The well's usage was quite constant and relatively steady groundwater radon concentrations were measured up until December 1994. In December the well underwent some work and, as a result, was taken off-line and not used by the trailer park. The well remained off-line (with the exception of collecting samples for this study) through January, February, and March of 1995. Groundwater radon concentrations measured during previous collection months (prior to January 1995 when the well was taken off-line) were fairly consistent- around 12,000 pCi/L. However, as a result of the well being taken off-line in January, measured concentrations of all 1995 samples were much lower- around 6,000 pCi/L, in comparison to 1993 and 1994 data. Thus, due to the well's inactivity in 1995, the 1995 data are plotted on the graph but not included in the overall analysis, i.e. not included in calculating the grand mean or overall standard deviation.

Well 5

Two sets of samples were collected from well 5 during each sampling run. Samples denoted as 5a were drawn from a spigot downline of the well head after the water had passed through a pressure vessel; whereas, 5b samples were taken directly at the well head. Both sets of samples were collected in hopes of determining what changes, if any, would occur in the water radon concentrations after passing through the pressure vessel. In reviewing Figure 9, a graph of measured radon concentrations of samples taken directly at the well head, one notices the wide error bars associated with the sample means. In reviewing the raw data, it is believed a longer purge time (greater than 5 minutes) is necessary for this well. Inadequate purging is suspected because, for most sample collections at this well, the first vial taken consistently had the lowest measured radon concentration while the last vial taken consistently had the highest measured radon concentration. Since the well was not adequately purged prior to sample collection, it is difficult to reach any conclusions on the temporal stability of water radon concentrations of well 5. It is interesting to note, however, the apparent effect the pressure vessel had on the radon concentrations of 5a samples (Fig. 8). The sample means were not greatly effected, nor was the overall mean, but the pressure vessel seemed to have a "moderating" effect on each sample's measured radon concentration. In those samples taken after the pressure vessel, much less variability is seen within the five samples collected during each run (smaller error bars) as compared with those samples taken directly at the well head.

Well 6

Well 6 is the only well in this study having groundwater radon concentrations below 300 pCi/L. The holding tank for this well is quite small and supplies a trailer park. Because the holding tank is small, the well cycles on frequently and the water

usage is very consistent. Samples collected from well 6 indicate a relatively constant groundwater radon concentration throughout the six month study period.

Wells 7 - 10

Wells 7 - 10 all have large holding tanks and supply subdivisions. Good, representative sample collection is illustrated by the close fit of the data around the sample means (Figures 11 - 14). While the sample means appear to vary little throughout the study period, again it is difficult to reach any conclusions on the temporal stability of groundwater radon concentrations for wells 7 - 10 because the wells were sampled for only a six month period. Because data for only one-half year exist for these wells, further study is warranted to reach conclusions on the long-term temporal stability of groundwater radon concentrations in wells 7 - 10.

Quantitative Discussion of Results

To quantitatively study the data, the result for each vial taken during a sample run is treated as an independent observation or sample (versus analyzing the sample means of five vials). The difference between a sample's measured radon concentration and the overall mean radon concentration for a well was calculated. This difference, for all samples obtained from each well, is reported as a percent difference from the overall mean and is given in Table 15. Percent differences are grouped into <50%, <40%, <30%, <20%, and <10% categories. For example, in looking at Table 15, only 54% (or 62 samples) of the 115 samples taken from well 1 were within 10% of the grand mean for well 1.

In studying Table 15, it is evident that all samples, with the exception of samples taken from well 2, were within 40% of their grand mean. (Possible reasons for the variability seen in measured radon concentrations from well 2 were discussed in

Table 15: Percentage Sample Difference from the Mean

Well #	Total Number of Samples	Percent (and number) of samples within x% of the grand mean					Maximum Difference
		50%	40%	30%	20%	10%	
1	115	100% (115)	100% (115)	97% (112)	83% (96)	54% (62)	35%
2	110	97% (107)	85% (94)	80% (88)	66% (73)	38% (42)	52%
3	120	100% (120)	100% (120)	97% (116)	85% (102)	48% (58)	36%
4	95	100% (95)	100% (95)	100% (95)	99% (94)	89% (85)	20%
5a	50	100% (50)	100% (50)	100% (50)	80% (40)	78% (39)	27%
5b	38	100% (38)	100% (38)	89% (34)	87% (33)	47% (18)	37%
6	53	100% (53)	100% (53)	100% (53)	91% (48)	74% (39)	26%
7	45	100% (45)	100% (45)	100% (45)	100% (45)	89% (40)	12%
8	45	100% (45)	100% (45)	100% (45)	89% (40)	67% (30)	25%
9	35	100% (35)	100% (35)	100% (35)	100% (35)	66% (23)	15%
10	45	100% (45)	100% (45)	100% (45)	100% (45)	96% (43)	13%

the previous section.) The maximum difference between any one sample and its grand mean was 52%, again for well 2. Further, only 38% (42) of the 110 samples taken from well 2 were within 10% of the grand mean. Thus, from the results presented in Table 15, well 2 groundwater radon concentrations exhibit the most variation of all ten wells studied. In contrast, results given in the table for wells 4 and 10 tend to imply they have the most stable groundwater radon concentrations of any of the wells studied. Results from well 4 indicate that 89% (85) of the 120 samples taken were within 10% of the grand mean, as were 96% (43) of the 45 samples taken from well 10.

In reviewing the percent differences calculated for well 5, again a "moderating" effect is observed due to the presence of the pressure vessel in the distribution line. Only 47% (18) of the 38 samples taken directly at the well head were within 10% of the grand mean, while 78% (39) of the 50 samples taken after the pressure tank were within 10% of the grand mean.

Results of samples taken from wells 7 - 10 indicate that most were within 20% of their overall mean. Though most samples were within 20%, note that fewer samples were collected for these four wells in comparison to wells 1 - 4 continued from Hightower's (1994) study.

Table 15 presents the primary sample collection data. Table 16 is given on the following page to further evaluate the sampling data based on applied statistical methods. Based on the results obtained from this study, Table 16 reports probability densities for each of the ten wells. Probability densities were calculated to answer the question, "If just one sample had been taken during the entire study period, what is the probability that that sample would have been within x% (50%, 40%, 30%, 20%, and 10%) of the grand mean?" In order to generate Table 16, a normal distribution or normal density must be assumed for the sample data. A 'z' statistic was then calculated for each group (50%, 40%, 30%, 20%, and 10%) for each well (See Fig. 15 for an example). In consulting a standard normal distribution table for a particular 'z' value,

Table 16: Probability Densities

Well #	Total Number of Samples	Grand Mean (pCi/L)	Grand Stnd. Dev. (pCi/L)	Probability 1 sample is within x% of the grand mean				
				50%	40%	30%	20%	10%
1	115	36,781	5,088	99.97%	99.62%	97.00%	85.29%	52.85%
2	110	25,010	5,807	96.84%	91.46%	80.29%	61.02%	33.28%
3	120	13,382	1,854	99.97%	99.62%	97.00%	85.01%	52.85%
4	95	11,538	733	99.99%	99.99%	99.99%	99.84%	88.36%
5a	50	1,928	222	99.99%	99.94%	99.07%	91.81%	61.57%
5b	38	1,840	297	99.81%	98.69%	93.71%	78.50%	46.47%
6	53	179	18	99.99%	99.99%	99.66%	94.88%	67.29%
7	45	504	30	99.99%	99.99%	99.99%	99.91%	90.51%
8	45	3,013	327	99.99%	99.98%	99.42%	93.42%	64.24%
9	35	2,126	191	99.99%	99.99%	99.91%	97.36%	73.30%
10	45	2,575	145	99.99%	99.99%	99.99%	99.96%	92.49%

Figure 15: Example Calculation of 'z' Statistic

Well 1: Grand mean (μ) = 36,781 pCi/L
 Grand deviation (σ) = 5,088 pCi/L

To calculate the probability a sample concentration will be within 10% of the grand mean:

$$z = (x - \mu) / \sigma$$

where :

$x = \pm 10\%$ from the grand mean, which is calculated to be 40,459 pCi/L and 33,103 pCi/L

μ = grand mean, previously calculated to be 36,781 pCi/L

σ = grand deviation, previously calculated to be 5,088 pCi/L

$$z = (40,459 \text{ pCi/L} - 36,781 \text{ pCi/L}) / 5,088 \text{ pCi/L}$$
$$z = +0.72$$

$$z = (33,103 \text{ pCi/L} - 36,781 \text{ pCi/L}) / 5,088 \text{ pCi/L}$$
$$z = -0.72$$

Consulting a Normal Distribution table for z values of ± 0.72 yields a probability of 0.5285, i.e. if only one sample was taken during the study period, the probability that sample's measured radon concentration would lie within 10% of the grand mean is 52.85%.

the corresponding probability density at any value x can be determined. This probability density indicates, for a given x value (i.e. 10% of the mean, 20% of the mean, etc.), how frequently values within the immediate vicinity of x occur (Remington and Schork 1985). Table 16 reports the total number of samples, the grand mean, and the grand standard deviation for each well, along with the probability data.

The two wells this section will focus on in looking at Table 16 are wells 6 and 7 because both exhibit groundwater radon concentrations close to the proposed 300 pCi/L standard. The grand mean for well 6 is 179 pCi/L. In looking at the table for well 6, the probability that a sample taken during the study period would have a measured radon concentration within 50% of the grand mean, which would correspond to radon concentrations of 90 pCi/L to 269 pCi/L, is 99.99%. Thus, the likelihood that a sample's measured radon concentration would exceed 300 pCi/L is quite small. The grand mean for well 7 is 504 pCi/L, again close to the proposed 300 pCi/L standard. The probability that a sample taken from well 7 during the study period would have a measured radon concentration within 30% of the grand mean, corresponding to radon concentrations of 353 pCi/L to 655 pCi/L, is 99.99%. Therefore, it is unlikely (probability less than 0.01%) that well 7 would exhibit groundwater radon concentrations during the study period below 300 pCi/L.

CONCLUSIONS AND RECOMMENDATIONS

Based on sampling results obtained from this study, analyzed in conjunction with data from Hightower's (1994) study, temporal variations exist in groundwater radon concentrations. Data compiled during this study provide insight into the magnitude of variation exhibited in measured water radon concentrations. Statistical analysis was performed on the data to determine how representative a grab sample would be of the annual average groundwater radon concentration for each well. Results indicate that, for each of the ten wells, the probability ranged from 80.29% to 99.99% that a grab sample taken during the study period would be within 30% of the annual average radon concentration for each well (80.29% - 99.99% for wells 1 - 4; 93.71% - 99.99% for wells 5 - 10). With the exception of wells 2 and 5 (inadequate purging suspected), the results further imply that the remaining eight wells would exhibit groundwater radon concentrations during the study period within 20% of their annual average radon concentration. The probability that, had just one sample been taken during the study period, the measured water radon concentration would have been within 20% of the grand average ranged from 85.01% - 99.96% (85.01% - 99.84% for wells 1 - 4, excluding well 2; 93.42% - 99.96% for wells 6 - 10). However, based on sampling results and statistical analysis, this author would not expect just one grab sample taken during the entire study period to be within 10% of the actual annual average for most of the ten wells studied (majority of the probabilities ranged from 40% - 70%). The possible exception might be for wells 7 and 10. Wells 7 and 10 exhibited fairly constant water radon levels (probability a grab sample would lie within 10% of the grand average was 90.51% for well 7 and 92.49% for well 10), but the sampling period was only six months in duration.

Limitations of this study are addressed so that recommendations can be made for future studies. Limitations of this study include the small number of wells sampled,

the short sampling period for wells 5 - 10, and the lack of wells included for study exhibiting water radon concentrations near the proposed 300 pCi/L standard.

Wells in this study did experience temporal fluctuations in their groundwater radon concentrations. However, because most wells had radon levels well above the proposed standard, the magnitude of variation in their measured radon concentrations could not be studied in relation to the proposed standard. To investigate the impact temporal variations would have in determining compliance, more wells need to be included for study that exhibit groundwater radon concentrations near the proposed 300 pCi/L standard (100 - 600 pCi/L).

A further recommendation would be to continue sampling the ten wells of this study. Although wells 5 - 10 exhibited fairly steady water radon levels, they were sampled for only a six month period. Additional study is warranted for these six wells to determine if any long-term time variations exist in their groundwater radon concentrations. Also, wells 1 - 4 should continue to be studied with emphasis placed on collecting data during the summer months. Demand on the underlying water source is potentially greater in the summer; therefore, seasonal data should be collected to determine if seasonal fluctuations in groundwater radon concentrations occur.

Aside from the limitations addressed above, the sampling data obtained throughout the study period is valid and essential in beginning to characterize each of the water supplies studied. Additional sampling of these wells would serve to more fully characterize each well and determine any longer term variations in their groundwater radon concentrations.

REFERENCES

- Blanchard, R. L.; Hahne, R. M. A.; Kahn, B.; McCurdy, D.; Mellor, R. A.; Moore, W. S.; Sedlet, J.; Whittaker, E. Radiological sampling and analytical methods for national primary drinking water regulations. *Health Phys.* 48:587-600; 1985.
- Crawford-Brown, D. J. A calculation of organ burdens, doses and health risks from Rn-222 ingested in water (Draft); 1990.
- Crawford-Brown, D. J. Cancer fatalities from waterborne radon (^{222}Rn). *Risk Analysis* 11:135-143; 1991.
- Danali-Cotsaki, S.; Margomenou-Leonidopoulou, G. ^{222}Rn in greek spa waters: Correlation with rainfall and seismic activities. *Health Phys.* 64:605-612; 1993.
- Davis, R. M.; Watson, J. E., Jr. Influence of ^{226}Ra concentration in surrounding rock on ^{222}Rn concentration in ground water. *Health Phys.* 58:369-371; 1990.
- Dillon, M. E.; Carter, G. L.; Arora, R.; Kahn, B. Radon concentrations in ground water of the Georgia piedmont. *Health Phys.* 60:229-236; 1991.
- Dusenbury, B. D., Jr. A compilation of measurements of radon in North Carolina groundwater and a study of sample collection methods. University of North Carolina at Chapel Hill Master's Report. 1992.
- Farai, I. P.; Sanni, A. O. ^{222}Rn in groundwater in Nigeria: A survey. *Health Phys.* 62:96-98; 1992.
- Federal Register. National Primary Drinking Water Regulations; Radionuclides. Vol. 56, No. 138: 33050-33114. July 18, 1991.
- Hess, C. T.; Michel, J.; Horton, T. R.; Prichard, H. M.; Coniglio, W. A. The occurrence of radioactivity in public water supplies in the United States. *Health Phys.* 48:553-586; 1985.
- Hightower, J. H., III. ^{222}Rn in water: A comparison of two sample collection methods and two sample transport methods, and the determination of temporal variation in North Carolina ground water. University of North Carolina at Chapel Hill Master's Report. 1994.

- Kinner, N.E. Memorandum to Greg Helms, ODW from Nancy Kinner. Variability in Radon Occurrence Data; July 3, 1990.
- Kinner, N. E.; Malley, J. P., Jr.; Clement, J. A.; Quern, P. A.; Schell, G. S.; Lessard, C. E. Effects of sampling technique, storage, cocktails, sources of variation and extraction on liquid scintillation technique for radon in water. Environ. Sci. Technol. 25:1165-1171; 1991.
- Lawrence, E. P.; Wanty, R. B.; Nyberg, P. Contribution of ^{222}Rn in domestic water supplies to ^{222}Rn in indoor air in Colorado homes. Health Phys. 62:171-177; 1992.
- Loomis, D. P.; Watson, J. E., Jr.; Crawford-Brown, D. J. Predicting the occurrence of radon-222 in groundwater supplies. Environ. Geochem. Health 10:41-50; 1988.
- Lowry, J. D. Measuring low radon levels in drinking water supplies. Journal AWWA 83:149-153; 1991.
- Olguin, M. T.; Segovia, N.; Tamez, E.; Alcantara, M.; Bulbulian, S. Radon concentration levels in ground water from Toluca, Mexico. Sci. of Tot. Environ. 130/131:43-50; 1993.
- Parsa, B.; Horton, T. Radon-222 in drinking water: An NJDEP-EERF collaborative study. Health Phys. 58:209-212; 1990.
- Prichard, H. M.; Gesell, T. F. Rapid measurements of ^{222}Rn concentrations in water with a commercial liquid scintillation counter. Health Phys. 33:577-581; 1977.
- Remington, R. D.; Schork, M. A. Statistics with Applications to the Biological and Health Sciences. Second edition. Prentice-Hall, Inc., New Jersey. 1985.
- Simones, G. C.; Spaulding, J. D.; Wenner, D. B.; Noakes, J. E. Northeast Georgia temporal and spatial variations in the radon content of ground water. Atlanta, GA: Georgia Institute of Technology; Environmental Resources Center report ERC 03-88; 1988.
- Remington, R.D.; Schork, M.A. Statistics with Applications to the Biological and Health Sciences. 2nd ed. New Jersey: Prentice-Hall, Inc., 1985.
- U.S. Environmental Protection Agency. Radon in water sampling program. Montgomery, AL: Eastern Environmental Radiation Facility; Report EPA/EERF Manual 78-1; 1978.

- U.S. Environmental Protection Agency. Manual of Individual Water Supply Systems. Washington, DC: Office of Drinking Water; EPA-570/9-82-004; 1982.
- U.S. Environmental Protection Agency. Two Test Procedures for Radon in Drinking Water, Interlaboratory Collaborative Study. EPA/600/2-87/082; 1987.
- U.S. Environmental Protection Agency. Memorandum to Arthur Perler, STB from Jon Longtin, WSTB regarding Distribution Tables for NIRS Results; February 23, 1988.
- U.S. Environmental Protection Agency. Memorandum from Margo Oge, Director, Radiation Division. "Current ORP Estimate of Annual Radon-Induced Lung Cancer Deaths in the General Population"; August 17, 1989.
- U.S. Environmental Protection Agency. Memorandum to Joseph Cotruvo, ODW from Jerome Puskin, ORP regarding Human Radon-222 Lifetime Risk Estimates from Ingestion; March 28, 1990.
- U.S. Environmental Protection Agency. Drinking Water Criteria Document for Radon in Drinking Water (Draft). Prepared by Life Systems, Inc.; 1991a.
- U.S. Environmental Protection Agency. Radon in Drinking Water; Assessment of Exposure Pathways. Prepared by Life Systems, Inc.; 1991b.
- U.S. Environmental Protection Agency. Method 913 - Radon in Drinking Water by Liquid Scintillation. EMSL/LV; 1991c.
- U.S. Environmental Protection Agency. Regulatory Impact Analysis of Proposed NPDWR for Radionuclides (Draft). Prepared by Wade Miller Associates; 1991d.
- U.S. Geological Survey, Department of the Interior. Geology and ground-water resources in the Raleigh area North Carolina. Ground Water Bulletin No. 15; 1968.
- U.S. Geological Survey, Department of the Interior. Public water supplies of North Carolina, Part 1: Northern Piedmont; 1972.
- U.S. Geological Survey, Department of the Interior. Statistical analysis relating well yield to construction practices and siting of wells in the Piedmont and Blue Ridge Provinces of North Carolina. Water-Supply Paper 2341-A; 1989.
- Vitz, E. Toward a standard method for determining waterborne radon. Health Phys. 60:817-829; 1991.

Watson, J. E., Jr.; Evans, J. P.; Mabry, A. M. Analysis of ^{222}Rn concentration in North Carolina household water supplies derived from private wells. Health Phys. 65:156-160; 1993.

Watson, J. E., Jr.; Mitsch, B. F. Ground-water concentrations of ^{226}Ra and ^{222}Rn in North Carolina phosphate lands. Health Phys. 52:361-365; 1987.

Whittaker, E. L.; Akridge, J. D.; Giovino, J. Two test procedures for radon in drinking water. Interlaboratory collaborative study. Las Vegas, NV: U.S. EPA Environmental Monitoring Systems Laboratory, Office of Research and Development; EPA 600/2-87/082; 1989.

APPENDIX

SAMPLE COLLECTION RAW DATA

The following tables report all raw data for each sample collection run, grouped by well number. "Count Time" refers to the amount of time the LSC counted the vial, "LSC Time" is the cumulative elapsed time that the LSC had been counting (a "running" total LSC use time), and "Elapsed Time" is the total elapsed time between sample collection at the well and the midpoint of LSC counting.

Table A-1-1: Well 1 - Raw Data, Sample Run #1 (5/19/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.02	35.68	11:29:26 AM	4.04	214.00	2,481.68	9.66	1772	2,447.73	35,235.16
2	26.06	35.52	11:30:10 AM	4.07	219.00	2,459.95	9.46	1776	2,426.00	35,678.64
3	26.03	35.04	11:30:38 AM	4.16	224.00	2,404.33	9.01	1781	2,370.38	36,624.81
4	25.94	35.48	11:31:14 AM	4.07	229.00	2,465.36	9.54	1785	2,431.41	35,498.57
5	26.01	35.70	11:31:41 AM	3.87	234.00	2,585.01	9.69	1790	2,551.06	36,692.02
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	56.00	36.94				
Blank 2	26.03	36.07	N/A	50.00	107.00	33.10				
Blank 3	26.05	36.59	N/A	50.00	158.00	32.70				
Blank 4	26.03	36.15	N/A	50.00	209.00	33.08				
714 pCi STD	N/A	N/A	N/A	1.55	3.00	6,462.58				
952 pCi STD	N/A	N/A	N/A	1.18	5.00	8,502.54				

Table A-1-2: Well 1 - Raw Data, Sample Run #2 (9/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	36.87	11:05:05 AM	8.90	223.00	3,550.70	10.86	1589	3,519.25	39,429.80
2	26.00	37.48	11:05:20 AM	8.41	232.00	3,719.30	11.48	1598	3,687.85	39,131.64
3	25.98	36.50	11:05:42 AM	8.84	241.00	3,421.40	10.52	1607	3,389.95	39,297.66
4	25.83	37.04	11:06:03 AM	8.64	250.00	3,655.10	11.21	1615	3,623.65	39,460.94
5	25.87	36.14	11:06:22 AM	9.25	260.00	3,323.20	10.27	1624	3,291.75	39,171.99
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	57.00	30.70				
Blank 2	26.03	36.07	N/A	50.00	108.00	30.70				
Blank 3	26.05	36.59	N/A	50.00	159.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	210.00	32.40				
714 pCi STD	N/A	N/A	N/A	1.39	211.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	2.01	214.00	9,512.90				

Table A-1-3: Well 1 - Raw Data, Sample Run #3 (9/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.94	36.72	10:23:02 AM	10.78	217.00	2,388.60	10.78	3159	2,356.70	32,482.87
2	25.84	35.52	10:25:02 AM	11.12	229.00	2,109.50	9.68	3169	2,077.60	31,930.26
3	25.87	35.61	10:25:32 AM	11.84	241.00	2,193.00	9.74	3180	2,161.10	33,054.73
4	25.88	35.32	10:26:07 AM	11.90	254.00	2,159.40	9.44	3192	2,127.50	33,625.74
5	25.88	35.28	10:26:35 AM	11.71	266.00	2,124.30	9.40	3204	2,092.40	33,261.95
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.40				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.00				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,230.90				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,439.60				

Table A-1-4: Well 1 - Raw Data, Sample Run #4 (10/13/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.96	35.52	10:24:20 AM	3.98	211.00	2,516.80	9.56	2168	2,485.03	34,467.97
2	25.83	35.40	10:25:05 AM	4.02	215.00	2,491.30	9.57	2172	2,459.53	34,095.81
3	25.97	35.82	10:25:37 AM	3.80	219.00	2,632.90	9.85	2175	2,601.13	35,047.00
4	25.96	35.77	10:26:05 AM	3.78	223.00	2,652.40	9.81	2179	2,620.63	35,471.58
5	25.83	35.62	10:26:33 AM	3.77	228.00	2,653.80	9.79	2182	2,622.03	35,576.48
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.50				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.20				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,233.10				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,228.40				

Table A-1-5: Well 1 - Raw Data, Sample Run #5 (10/27/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.84	35.70	10:45:49 AM	3.69	211.00	2,714.63	9.86	1473	2,683.13	33,361.37
2	25.98	35.84	10:46:19 AM	3.66	215.00	2,737.16	9.86	1477	2,705.66	33,658.46
3	25.84	35.80	10:46:52 AM	3.62	219.00	2,764.64	9.96	1480	2,733.14	33,671.67
4	25.90	35.60	10:47:28 AM	3.84	223.00	2,608.59	9.70	1483	2,577.09	32,612.50
5	25.80	35.68	10:47:58 AM	3.92	228.00	2,551.28	9.88	1487	2,519.78	31,322.09
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.70				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.82				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.00				
Blank 4	26.03	36.15	N/A	50.00	204.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.42	206.00	7,071.83				
952 pCi STD	N/A	N/A	N/A	1.08	207.00	9,276.85				

Table A-1-6: Well 1 - Raw Data, Sample Run #6 (11/10/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.00	35.64	10:37:06 AM	4.29	211.00	2,335.90	9.64	1495	2,304.62	28,603.90
2	26.06	35.07	10:37:30 AM	4.39	220.00	2,283.60	9.01	1500	2,252.32	29,928.28
3	25.89	35.35	10:37:55 AM	4.03	224.00	2,484.86	9.46	1508	2,453.58	31,083.03
4	26.08	36.03	10:38:18 AM	3.87	229.00	2,588.63	9.95	1512	2,557.35	30,817.70
5	25.98	35.74	10:39:55 AM	4.22	233.00	2,371.09	9.76	1515	2,339.81	28,755.97
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.36				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.94				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.84				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.00				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,299.27				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,483.02				

Table A-1-7: Well 1 - Raw Data, Sample Run #7 (11/22/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.92	35.75	10:57:11 AM	3.76	263.00	2,660.11	9.83	1242	2,628.94	32,108.51
2	25.96	35.67	10:57:36 AM	3.65	268.00	2,746.30	9.71	1245	2,715.13	33,583.70
3	25.97	35.09	10:57:52 AM	3.86	272.00	2,666.84	9.12	1250	2,635.67	34,731.77
4	25.92	35.71	10:58:12 AM	3.63	276.00	2,757.30	9.79	1254	2,726.13	33,482.16
5	25.86	35.67	10:58:39 AM	3.54	280.00	2,827.97	9.81	1257	2,796.80	34,293.06
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.16				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.60				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.43	205.00	7,006.29				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,198.17				

Table A-1-8: Well 1 - Raw Data, Sample Run #8 (12/8/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.04	36.24	10:31:23 AM	3.29	210.00	3,049.24	10.20	1128	3,018.59	34,667.66
2	26.02	35.55	10:31:41 AM	3.79	214.00	2,641.69	9.53	1132	2,611.04	32,111.45
3	25.80	36.18	10:31:54 AM	3.31	217.00	3,030.51	10.38	1136	2,999.86	33,889.24
4	26.01	37.05	10:32:18 AM	3.06	221.00	3,267.97	11.04	1138	3,237.32	34,394.12
5	25.95	36.60	10:32:37 AM	3.20	225.00	3,132.81	10.65	1142	3,102.16	34,182.28
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.40				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.88				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	29.46				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,182.86				
952 pCi STD	N/A	N/A	N/A	1.10	206.00	9,149.09				

Table A-1-9: Well 1 - Raw Data, Sample Run #9 (12/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.90	35.85	10:26:32 AM	3.24	210.00	3,091.67	9.95	593	3,060.30	32,781.91
2	26.05	35.36	10:26:46 AM	3.43	214.00	2,917.49	9.31	597	2,886.12	33,058.02
3	26.06	35.62	10:27:08 AM	3.29	217.00	3,039.51	9.56	601	3,008.14	33,571.53
4	25.92	35.26	10:27:26 AM	3.41	221.00	2,940.76	9.34	603	2,909.39	33,242.64
5	26.04	35.26	10:27:40 AM	3.41	225.00	2,935.19	9.22	607	2,903.82	33,627.77
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.34				
Blank 2	26.03	36.07	N/A	50.00	101.00	29.86				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.80				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.48				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,327.74				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,481.13				

Table A-1-10: Well 1 - Raw Data, Sample Run #10 (1/12/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.03	35.87	10:29:06 AM	3.04	210.00	3,290.13	9.84	877	3,258.35	36,688.02
2	25.83	35.65	10:29:18 AM	3.17	213.00	3,162.78	9.82	881	3,131.00	35,343.70
3	25.94	35.67	10:29:31 AM	3.15	217.00	3,175.24	9.73	884	3,143.46	35,826.11
4	25.98	35.63	10:29:46 AM	3.15	220.00	3,176.19	9.65	888	3,144.41	36,152.24
5	26.08	36.02	10:30:05 AM	3.16	224.00	3,165.82	9.94	891	3,134.04	34,994.98
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.68				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.80				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.34				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,337.96				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,416.82				

Table A-1-11: Well 1 - Raw Data, Sample Run #11 (1/26/95)

Sample #	Pre-Weight (g)	Post Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.05	35.92	9:43:19 AM	3.19	210.00	3,136.36	9.87	557	3,104.81	33,212.30
2	25.92	35.42	9:43:30 AM	3.38	213.00	2,959.17	9.50	561	2,927.62	32,553.00
3	26.02	34.82	9:43:40 AM	3.22	217.00	3,115.53	8.80	564	3,083.98	37,033.35
4	25.96	34.48	9:43:50 AM	3.48	221.00	2,876.72	8.52	568	2,845.17	35,306.25
5	26.09	35.41	9:44:03 AM	3.21	224.00	3,125.86	9.32	572	3,094.31	35,119.61
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.66				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.34				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.88				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.35	205.00	7,449.63				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,420.56				

Table A-1-12: Well 1 - Raw Data, Sample Run #12 (2/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.00	38.00	10:07:12 AM	2.61	243.00	3,845.98	12.00	532	3,814.12	33,885.91
2	26.07	35.08	10:07:24 AM	3.23	247.00	3,101.55	9.01	535	3,069.69	36,336.24
3	25.97	36.43	10:07:41 AM	2.89	250.00	3,468.51	10.46	539	3,436.65	35,058.45
4	25.91	36.06	10:08:01 AM	3.05	254.00	3,282.95	10.15	542	3,251.09	34,191.34
5	26.02	36.56	10:08:24 AM	3.07	257.00	3,366.45	10.54	545	3,334.59	33,784.63
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.94				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.70				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.26				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,254.35				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,424.30				

Table A-1-13: Well 1 - Raw Data, Sample Run #13 (2/23/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.56	36.95	9:40:06 AM	2.49	209.00	4,531.33	11.39	931	4,499.04	43,715.88
2	25.66	35.67	9:40:16 AM	2.50	212.00	4,017.60	10.01	934	3,985.31	44,079.35
3	25.52	36.28	9:40:27 AM	2.18	214.00	4,591.74	10.76	937	4,559.45	46,932.27
4	25.60	36.67	9:40:41 AM	2.23	217.00	4,488.79	11.07	938	4,456.50	44,593.58
5	25.71	36.89	9:40:56 AM	2.52	220.00	4,586.51	11.18	941	4,554.22	45,140.09
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.24				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.76				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.50				
714 pCi STD	N/A	N/A	N/A	1.34	205.00	7,467.16				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,383.18				

Table A-1-14: Well 1 - Raw Data, Sample Run #14 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.66	35.96	1:45:38 PM	4.65	1793.00	2,152.04	10.30	2592	2,120.51	29,031.15
2	25.63	36.10	1:45:49 PM	4.57	1798.00	2,190.81	10.47	2596	2,159.28	29,096.60
3	25.62	36.00	1:46:00 PM	4.59	1803.00	2,180.83	10.38	2601	2,149.30	29,231.64
4	25.82	36.21	1:46:14 PM	4.81	1808.00	2,079.63	10.39	2606	2,048.10	27,845.99
5	25.64	36.16	1:46:28 PM	4.58	1813.00	2,185.15	10.52	2611	2,153.62	28,937.03
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-2-1: Well 2 - Raw Data, Sample Run #1 (5/19/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.11	36.27	11:39:04 AM	6.17	241.00	1,621.07	10.16	1788	1,587.12	21,766.11
2	26.06	35.98	11:39:52 AM	5.87	248.00	1,703.92	9.92	1794	1,669.97	23,474.16
3	26.02	36.55	11:40:14 AM	5.57	254.00	1,796.05	10.53	1801	1,762.10	23,354.92
4	25.99	36.46	11:40:31 AM	5.75	261.00	1,742.43	10.47	1807	1,708.48	22,791.22
5	26.10	35.29	11:41:34 AM	6.26	268.00	1,597.76	9.19	1813	1,563.81	23,784.88
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	56.00	36.94				
Blank 2	26.03	36.07	N/A	50.00	107.00	33.10				
Blank 3	26.05	36.59	N/A	50.00	158.00	32.70				
Blank 4	26.03	36.15	N/A	50.00	209.00	33.08				
714 pCi STD	N/A	N/A	N/A	1.55	3.00	6,462.58				
952 pCi STD	N/A	N/A	N/A	1.18	5.00	8,502.54				

Table A-2-2: Well 2 - Raw Data, Sample Run #2 (9/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.94	36.91	11:15:10 AM	13.18	273.00	2,121.70	10.97	1627	2,090.25	23,295.66
2	25.95	36.95	11:15:42 AM	12.79	287.00	2,144.80	11.00	1640	2,113.35	23,527.37
3	25.95	36.67	11:16:04 AM	14.20	301.00	2,031.40	10.72	1654	1,999.95	22,886.80
4	25.95	36.88	11:16:28 AM	12.53	314.00	2,104.50	10.93	1667	2,073.05	23,305.67
5	26.09	36.97	11:16:48 AM	12.69	328.00	2,079.40	10.88	1680	2,047.95	23,167.20
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	57.00	30.70				
Blank 2	26.03	36.07	N/A	50.00	108.00	30.70				
Blank 3	26.05	36.59	N/A	50.00	159.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	210.00	32.40				
714 pCi STD	N/A	N/A	N/A	1.39	211.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	2.01	214.00	9,512.90				

Table A-2-3: Well 2 - Raw Data, Sample Run #3 (9/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.86	35.43	10:39:15 AM	15.47	282.00	1,267.70	9.57	3205	1,235.80	19,298.42
2	25.93	34.92	10:39:41 AM	15.86	298.00	1,264.10	8.99	3221	1,232.20	20,524.97
3	26.06	35.21	10:40:03 AM	16.29	315.00	1,273.40	9.15	3237	1,241.50	20,359.26
4	25.98	33.56	10:40:31 AM	17.10	333.00	1,090.00	7.58	3254	1,058.10	20,990.56
5	25.96	36.18	10:40:54 AM	15.62	349.00	1,312.40	10.22	3271	1,280.50	18,881.01
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.40				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.00				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,230.90				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,439.60				

Table A-2-4: Well 2 - Raw Data, Sample Run #4 (10/13/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.97	35.40	10:39:34 AM	5.81	234.00	1,722.50	9.43	2175	1,690.73	23,795.08
2	25.94	35.58	10:40:00 AM	6.26	241.00	1,597.60	9.64	2181	1,565.83	21,573.49
3	25.81	35.11	10:40:27 AM	6.86	248.00	1,459.00	9.30	2188	1,427.23	20,400.77
4	26.02	35.78	10:40:48 AM	6.94	255.00	1,442.10	9.76	2195	1,410.33	19,226.02
5	26.04	36.54	10:41:14 AM	6.31	262.00	1,585.10	10.50	2201	1,553.33	19,697.97
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.50				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.20				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,233.10				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,228.40				

Table A-2-5: Well 2 - Raw Data, Sample Run #5 (10/27/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.85	35.85	10:59:40 AM	4.46	232.00	2,246.19	10.00	1481	2,214.69	27,178.76
2	25.91	35.98	11:00:15 AM	4.80	238.00	2,084.58	10.07	1484	2,053.08	25,029.78
3	25.65	35.45	11:00:55 AM	5.44	244.00	1,838.60	9.80	1490	1,807.10	22,655.04
4	26.07	36.06	11:01:15 AM	5.77	250.00	1,733.62	9.99	1496	1,702.12	20,948.92
5	25.74	35.23	11:01:45 AM	6.14	256.00	1,629.80	9.49	1501	1,598.30	20,720.61
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.70				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.82				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.00				
Blank 4	26.03	36.15	N/A	50.00	204.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.42	206.00	7,071.83				
952 pCi STD	N/A	N/A	N/A	1.08	207.00	9,276.85				

Table A-2-6: Well 2 - Raw Data, Sample Run #6 (11/10/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	34.38	10:50:56 AM	5.07	239.00	1,974.16	8.37	1509	1,942.88	27,822.06
2	26.15	35.00	10:51:18 AM	4.57	244.00	2,188.40	8.85	1514	2,157.12	29,233.01
3	26.05	35.22	10:51:39 AM	4.77	249.00	2,099.58	9.17	1519	2,068.30	27,068.25
4	26.02	35.68	10:51:58 AM	4.86	254.00	2,062.35	9.66	1523	2,031.07	25,245.42
5	25.07	35.29	10:52:20 AM	5.16	260.00	1,938.37	10.22	1528	1,907.09	22,419.64
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.36				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.94				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.84				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.00				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,299.27				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,483.02				

Table A-2-7: Well 2 - Raw Data, Sample Run #7 (11/22/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.94	35.21	11:09:51 AM	4.15	284.00	2,409.88	9.27	1250	2,378.71	30,838.44
2	26.05	35.69	11:10:12 AM	4.15	289.00	2,411.08	9.64	1254	2,379.91	29,684.72
3	25.85	35.67	11:10:30 AM	4.23	294.00	2,366.43	9.82	1259	2,335.26	28,611.91
4	25.76	35.97	11:10:47 AM	4.40	298.00	2,275.68	10.21	1263	2,244.51	26,462.91
5	25.92	36.09	11:11:02 AM	4.87	304.00	2,057.29	10.17	1267	2,026.12	23,994.12
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.16				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.60				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.43	205.00	7,006.29				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,198.17				

Table A-2-8: Well 2 - Raw Data, Sample Run #8 (12/8/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.98	36.03	10:43:32 AM	3.53	228.00	2,938.53	10.05	1135	2,907.88	33,924.54
2	26.04	35.57	10:43:50 AM	3.64	233.00	2,747.53	9.53	1138	2,716.88	33,438.38
3	26.07	36.29	10:44:08 AM	3.60	237.00	2,778.33	10.22	1143	2,747.68	31,554.15
4	25.97	35.76	10:44:25 AM	3.91	241.00	2,562.66	9.79	1147	2,532.01	30,369.86
5	25.99	36.16	10:44:40 AM	4.03	245.00	2,484.12	10.17	1150	2,453.47	28,338.96
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.40				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.88				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	29.46				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,182.86				
952 pCi STD	N/A	N/A	N/A	1.10	206.00	9,149.09				

Table A-2-9: Well 2 - Raw Data, Sample Run #9 (12/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.02	35.30	10:37:30 AM	3.55	229.00	2,818.87	9.28	601	2,787.50	32,047.78
2	26.04	34.14	10:37:49 AM	4.27	234.00	2,342.15	8.10	605	2,310.78	30,452.53
3	25.89	34.67	10:38:10 AM	3.98	238.00	2,514.57	8.78	610	2,483.20	30,209.30
4	25.96	35.42	10:38:25 AM	3.84	242.00	2,611.72	9.46	614	2,580.35	29,149.41
5	26.02	33.73	10:38:40 AM	4.66	247.00	2,149.14	7.71	618	2,117.77	29,368.75
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.34				
Blank 2	26.03	36.07	N/A	50.00	101.00	29.86				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.80				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.48				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,327.74				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,481.13				

Table A-2-10: Well 2 - Raw Data, Sample Run #10 (1/12/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.88	37.38	10:41:11 AM	3.00	227.00	3,338.33	11.50	883	3,306.55	31,880.65
2	26.04	34.75	10:41:26 AM	3.95	232.00	2,537.47	8.71	887	2,505.69	31,913.74
3	26.01	34.34	10:41:42 AM	4.24	236.00	2,361.32	8.33	891	2,329.54	31,039.34
4	26.06	35.26	10:41:56 AM	4.17	241.00	2,400.24	9.20	895	2,368.46	28,588.04
5	25.92	35.69	10:42:15 AM	4.23	246.00	2,367.61	9.77	900	2,335.83	26,566.01
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.68				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.80				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.34				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,337.96				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,416.82				

Table A-2-11: Well 2 - Raw Data, Sample Run #11 (1/26/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.99	36.60	9:55:06 AM	2.81	228.00	3,565.84	10.61	563	3,534.29	35,196.23
2	25.96	36.97	9:55:24 AM	2.61	231.00	3,976.25	11.01	567	3,944.70	37,875.20
3	25.95	36.66	9:55:36 AM	2.89	234.00	3,771.63	10.71	570	3,740.08	36,930.38
4	25.95	36.45	9:55:48 AM	2.77	237.00	3,613.72	10.50	573	3,582.17	36,092.20
5	25.95	36.08	9:56:05 AM	2.77	240.00	3,614.80	10.13	575	3,583.25	37,431.19
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.66				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.34				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.88				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.35	205.00	7,449.63				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,420.56				

Table A-2-12: Well 2 - Raw Data, Sample Run #12 (2/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.33	36.18	10:19:16 AM	2.81	260.00	3,570.46	10.85	537	3,538.60	34,792.16
2	25.94	36.57	10:19:30 AM	2.81	264.00	3,562.99	10.63	540	3,531.13	35,450.65
3	25.91	34.69	10:19:46 AM	3.24	267.00	3,098.46	8.78	544	3,066.60	37,292.82
4	26.02	35.45	10:19:58 AM	3.08	271.00	3,254.87	9.43	547	3,223.01	36,507.05
5	25.88	36.22	10:20:13 AM	3.03	274.00	3,474.59	10.34	550	3,442.73	35,577.33
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.94				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.70				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.26				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,254.35				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,424.30				

Table A-2-13: Well 2 - Raw Data, Sample Run #13 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.76	36.86	1:53:30 PM	5.74	1,819.00	1,742.86	11.10	2609	1,711.33	21,787.23
2	25.64	35.69	1:53:41 PM	6.35	1,826.00	1,575.28	10.05	2616	1,543.75	21,726.27
3	25.64	35.51	1:53:52 PM	6.51	1,833.00	1,536.56	9.87	2622	1,505.03	21,583.93
4	25.64	35.58	1:54:06 PM	6.59	1,840.00	1,518.36	9.94	2629	1,486.83	21,191.43
5	25.77	35.94	1:54:20 PM	6.30	1,846.00	1,587.46	10.17	2636	1,555.93	21,693.89
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-3-1: Well 3 - Raw Data, Sample Run #1 (5/19/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.91	35.98	1:04:22 PM	10.93	280.00	915.37	10.07	1739	881.42	12,120.94
2	25.89	36.40	1:04:40 PM	11.11	292.00	900.36	10.51	1751	866.41	11,432.99
3	25.90	36.23	1:05:05 PM	10.42	303.00	961.04	10.33	1762	927.09	12,464.15
4	26.02	36.16	1:05:24 PM	10.56	315.00	947.82	10.14	1773	913.87	12,533.99
5	25.95	35.27	1:05:47 PM	11.81	327.00	847.33	9.32	1785	813.38	12,155.61
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	56.00	36.94				
Blank 2	26.03	36.07	N/A	50.00	107.00	33.10				
Blank 3	26.05	36.59	N/A	50.00	158.00	32.70				
Blank 4	26.03	36.15	N/A	50.00	209.00	33.08				
714 pCi STD	N/A	N/A	N/A	1.55	3.00	6,462.58				
952 pCi STD	N/A	N/A	N/A	1.18	5.00	8,502.54				

Table A-3-2: Well 3 - Raw Data, Sample Run #2 (9/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.91	36.36	11:46:43 AM	16.64	345.00	1,143.40	10.45	1666	1,111.95	13,073.33
2	25.81	36.17	11:50:21 AM	16.90	362.00	1,120.80	10.36	1679	1,089.35	12,940.05
3	26.07	36.44	11:50:40 AM	17.01	380.00	1,117.80	10.37	1696	1,086.35	12,919.61
4	26.09	36.47	11:51:07 AM	18.10	398.00	1,082.90	10.38	1714	1,051.45	12,520.87
5	25.92	35.93	11:51:34 AM	18.38	417.00	1,019.80	10.01	1732	988.35	12,232.21
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	57.00	30.70				
Blank 2	26.03	36.07	N/A	50.00	108.00	30.70				
Blank 3	26.05	36.59	N/A	50.00	159.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	210.00	32.40				
714 pCi STD	N/A	N/A	N/A	1.39	211.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	2.01	214.00	9,512.90				

Table A-3-3: Well 3 - Raw Data, Sample Run #3 (9/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.95	36.08	11:14:28 AM	19.61	369.00	907.10	10.13	3255	875.20	12,993.29
2	26.01	36.59	11:14:56 AM	19.59	389.00	971.50	10.58	3275	939.60	13,389.76
3	25.82	35.18	11:15:26 AM	20.53	410.00	863.30	9.36	3295	831.40	13,425.91
4	25.97	36.07	11:15:55 AM	19.40	430.00	941.20	10.10	3315	909.30	13,642.37
5	26.02	36.34	11:16:24 AM	20.63	451.00	943.10	10.32	3335	911.20	13,413.19
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.40				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.00				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,230.90				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,439.60				

Table A-3-4: Well 3 - Raw Data, Sample Run #4 (10/13/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.91	35.79	11:14:24 AM	10.13	273.00	987.50	9.88	2177	955.73	12,841.37
2	25.98	35.56	11:14:47 AM	10.53	284.00	950.60	9.58	2187	918.83	12,748.22
3	26.01	36.51	11:15:07 AM	9.40	293.00	1,064.70	10.50	2198	1,032.93	13,093.74
4	26.00	36.73	11:15:31 AM	9.32	303.00	1,073.80	10.73	2206	1,042.03	12,938.99
5	25.88	35.70	11:15:51 AM	9.80	313.00	1,020.90	9.82	2216	989.13	13,437.20
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.50				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.20				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,233.10				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,228.40				

Table A-3-5: Well 3 - Raw Data, Sample Run #5 (10/27/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.85	35.71	11:37:47 AM	8.76	266.00	1,142.12	9.86	1473	1,110.62	13,809.14
2	25.99	36.61	11:38:10 AM	8.15	274.00	1,228.22	10.62	1482	1,196.72	13,830.52
3	25.64	35.93	11:38:30 AM	8.36	283.00	1,196.65	10.29	1490	1,165.15	13,911.52
4	25.88	35.61	11:38:54 AM	9.18	293.00	1,089.87	9.73	1499	1,058.37	13,379.04
5	25.95	36.45	11:39:15 AM	7.87	301.00	1,270.65	10.50	1508	1,239.15	14,532.08
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.70				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.82				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.00				
Blank 4	26.03	36.15	N/A	50.00	204.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.42	206.00	7,071.83				
952 pCi STD	N/A	N/A	N/A	1.08	207.00	9,276.85				

Table A-3-6: Well 3 - Raw Data, Sample Run #6 (11/10/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.89	35.86	11:24:06 AM	8.22	268.00	1,217.03	9.97	1504	1,185.75	14,245.98
2	25.95	35.35	11:24:22 AM	8.74	277.00	1,144.97	9.40	1512	1,113.69	14,205.89
3	25.91	35.02	11:24:39 AM	9.06	287.00	1,104.41	9.11	1521	1,073.13	14,140.29
4	25.98	35.62	11:24:56 AM	8.20	296.00	1,220.49	9.64	1530	1,189.21	14,825.13
5	26.20	35.69	11:25:15 AM	8.52	305.00	1,173.94	9.49	1539	1,142.66	14,486.39
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.36				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.94				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.84				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.00				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,299.27				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,483.02				

Table A-3-7: Well 3 - Raw Data, Sample Run #7 (11/22/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.97	35.77	11:42:14 AM	8.20	312.00	1,220.61	9.80	1244	1,189.19	14,572.25
2	26.02	35.77	11:42:28 AM	7.77	320.00	1,287.64	9.75	1251	1,256.22	15,486.23
3	25.97	35.97	11:42:40 AM	7.52	328.00	1,329.92	10.00	1259	1,298.50	15,622.99
4	25.90	33.98	11:42:59 AM	9.69	339.00	1,032.20	8.08	1268	1,000.78	14,919.06
5	25.83	35.74	11:46:19 AM	7.90	347.00	1,265.95	9.91	1275	1,234.53	15,018.47
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.16				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.60				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.43	205.00	7,006.29				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,198.17				

Table A-3-8: Well 3 - Raw Data, Sample Run #8 (12/8/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.97	35.34	11:12:06 AM	7.23	253.00	1,384.65	9.37	1129	1,354.00	16,929.90
2	25.97	36.16	11:12:25 AM	6.34	260.00	1,577.44	10.19	1136	1,546.79	17,799.81
3	25.95	35.40	11:12:38 AM	6.79	267.00	1,472.90	9.45	1143	1,442.25	17,912.24
4	25.77	35.63	11:12:52 AM	6.39	274.00	1,565.73	9.86	1149	1,535.08	18,286.20
5	25.93	36.23	11:13:15 AM	6.22	280.00	1,608.20	10.30	1156	1,577.55	18,005.22
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.40				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.88				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	29.46				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,182.86				
952 pCi STD	N/A	N/A	N/A	1.10	206.00	9,149.09				

Table A-3-9: Well 3 - Raw Data, Sample Run #9 (12/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.96	36.07	11:10:07 AM	7.01	255.00	1,427.67	10.11	592	1,396.30	14,718.59
2	26.06	35.68	11:10:22 AM	7.47	263.00	1,339.76	9.62	600	1,308.39	14,509.03
3	25.86	35.73	11:10:39 AM	7.18	270.00	1,394.29	9.87	608	1,362.92	14,745.76
4	26.09	35.77	11:10:59 AM	7.23	278.00	1,384.09	9.68	615	1,352.72	14,935.84
5	26.16	36.27	11:11:18 AM	7.14	285.00	1,400.98	10.11	622	1,369.61	14,491.91
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.34				
Blank 2	26.03	36.07	N/A	50.00	101.00	29.86				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.80				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.48				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,327.74				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,481.13				

Table A-3-10: Well 3 - Raw Data, Sample Run #10 (1/12/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.92	36.09	11:13:01 AM	6.61	253.00	1,513.77	10.17	875	1,481.99	16,141.20
2	26.08	35.92	11:13:13 AM	7.05	260.00	1,419.57	9.84	882	1,387.79	15,635.90
3	25.85	35.57	11:13:27 AM	6.99	267.00	1,432.05	9.72	889	1,400.27	15,985.37
4	25.96	35.89	11:13:40 AM	6.99	275.00	1,431.76	9.93	896	1,399.98	15,657.88
5	26.07	36.19	11:13:54 AM	6.75	282.00	1,482.37	10.12	903	1,450.59	15,933.36
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.68				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.80				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.34				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,337.96				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,416.82				

Table A-3-11: Well 3 - Raw Data, Sample Run #11 (1/26/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.07	36.29	10:25:08 AM	6.24	247.00	1,603.53	10.22	551	1,571.98	16,227.40
2	25.96	36.12	10:25:19 AM	6.28	254.00	1,593.15	10.16	558	1,561.60	16,229.75
3	25.93	36.04	10:25:35 AM	6.49	260.00	1,540.99	10.11	565	1,509.44	15,779.15
4	25.93	35.93	10:25:49 AM	6.46	267.00	1,550.15	10.00	570	1,518.60	16,059.64
5	25.97	36.33	10:26:03 AM	6.10	274.00	1,639.34	10.36	577	1,607.79	16,426.50
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.66				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.34				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.88				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.35	205.00	7,449.63				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,420.56				

Table A-3-12: Well 3 - Raw Data, Sample Run #12 (2/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.86	36.16	9:35:09 AM	6.27	213.00	1,595.22	10.30	532	1,563.36	16,181.84
2	26.06	36.19	9:35:24 AM	6.32	220.00	1,584.02	10.13	539	1,552.16	16,349.94
3	25.94	36.00	9:35:40 AM	6.46	227.00	1,551.08	10.06	546	1,519.22	16,128.53
4	25.92	35.70	9:35:57 AM	6.63	234.00	1,510.11	9.78	552	1,478.25	16,155.09
5	25.88	36.51	9:36:15 AM	6.15	240.00	1,627.15	10.63	559	1,595.29	16,054.24
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.94				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.70				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.26				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,254.35				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,424.30				

Table A-3-13: Well 3 - Raw Data, Sample Run #13 (2/23/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.72	36.23	10:25:06 AM	7.20	227.00	1,389.44	10.51	903	1,357.15	14,240.82
2	25.70	36.94	10:25:20 AM	6.70	235.00	1,493.73	11.24	909	1,461.44	14,350.04
3	25.51	36.04	10:25:36 AM	7.38	242.00	1,356.10	10.53	917	1,323.81	13,889.07
4	25.63	35.92	10:25:49 AM	7.60	250.00	1,316.18	10.29	924	1,283.89	13,796.58
5	25.67	37.08	10:26:03 AM	6.69	257.00	1,496.26	11.41	931	1,463.97	14,200.01
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.24				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.76				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.50				
714 pCi STD	N/A	N/A	N/A	1.34	205.00	7,467.16				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,383.18				

Table A-3-14: Well 3 - Raw Data, Sample Run #14 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.61	36.32	2:29:05 PM	9.38	1,856.00	1,067.38	10.71	2609	1,035.85	13,667.80
2	25.58	35.46	2:29:19 PM	10.19	1,867.00	981.65	9.88	2619	950.12	13,606.92
3	25.54	36.49	2:29:30 PM	9.10	1,876.00	1,099.01	10.95	2629	1,067.48	13,811.19
4	25.47	36.34	2:29:41 PM	9.15	1,886.00	1,093.33	10.87	2638	1,061.80	13,854.51
5	25.68	36.21	2:29:54 PM	9.46	1,896.00	1,057.61	10.53	2648	1,026.08	13,838.14
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-4-1: Well 4 - Raw Data, Sample Run #1 (5/19/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.12	36.91	2:39:50 PM	9.21	338.00	1,085.88	10.79	1702	1,051.93	13,437.68
2	26.06	36.91	2:41:20 PM	10.06	349.00	994.53	10.85	1712	960.58	12,218.26
3	25.86	37.20	2:41:39 PM	9.66	359.00	1,035.82	11.34	1722	1,001.87	12,208.19
4	26.00	36.16	2:41:58 PM	10.60	371.00	943.58	10.16	1733	909.63	12,388.70
5	25.97	36.27	2:43:12 PM	11.10	383.00	900.90	10.30	1744	866.95	11,663.08
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	56.00	36.94				
Blank 2	26.03	36.07	N/A	50.00	107.00	33.10				
Blank 3	26.05	36.59	N/A	50.00	158.00	32.70				
Blank 4	26.03	36.15	N/A	50.00	209.00	33.08				
714 pCi STD	N/A	N/A	N/A	1.55	3.00	6,462.58				
952 pCi STD	N/A	N/A	N/A	1.18	5.00	8,502.54				

Table A-4-2: Well 4 - Raw Data, Sample Run #2 (9/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.93	36.58	2:16:06 PM	17.80	435.00	1,044.30	10.65	1606	1,012.85	11,596.58
2	25.96	36.51	2:16:29 PM	20.27	456.00	1,028.00	10.55	1625	996.55	11,545.71
3	26.02	36.42	2:16:53 PM	19.35	476.00	974.40	10.40	1645	942.95	11,110.24
4	25.99	36.73	2:17:17 PM	18.01	495.00	1,014.70	10.74	1664	983.25	11,245.21
5	25.90	36.99	2:17:36 PM	18.55	514.00	1,048.70	11.09	1683	1,017.25	11,293.89
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	57.00	30.70				
Blank 2	26.03	36.07	N/A	50.00	108.00	30.70				
Blank 3	26.05	36.59	N/A	50.00	159.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	210.00	32.40				
714 pCi STD	N/A	N/A	N/A	1.39	211.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	2.01	214.00	9,512.90				

Table A-4-3: Well 4 - Raw Data, Sample Run #3 (9/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.99	35.99	12:23:55 PM	20.53	472.00	807.90	10.00	3288	776.00	11,718.94
2	25.99	36.88	12:24:12 PM	20.42	493.00	859.80	10.89	3309	827.90	11,511.33
3	25.99	36.68	12:24:35 PM	19.17	513.00	834.60	10.69	3329	802.70	11,398.44
4	26.06	36.09	12:24:50 PM	19.17	532.00	802.80	10.03	3349	770.90	11,696.64
5	25.97	36.43	12:25:12 PM	22.97	556.00	816.20	10.46	3369	784.30	11,439.55
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.40				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.00				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.00				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,230.90				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,439.60				

Table A-4-4: Well 4 - Raw Data, Sample Run #4 (10/13/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.97	37.00	12:07:58 PM	10.11	324.00	990.20	11.03	2174	958.43	11,530.65
2	25.82	36.05	12:08:25 PM	11.90	336.00	840.50	10.23	2186	808.73	10,506.38
3	25.92	36.85	12:08:48 PM	11.55	348.00	865.90	10.93	2197	834.13	10,156.42
4	26.01	35.25	12:10:00 PM	13.05	362.00	766.80	9.24	2209	735.03	10,602.69
5	25.93	35.83	12:10:19 PM	10.77	373.00	928.80	9.90	2221	897.03	12,095.17
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.50				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.20				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,233.10				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,228.40				

Table A-4-5: Well 4 - Raw Data, Sample Run #5 (10/27/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.90	36.65	12:35:41 PM	9.50	311.00	1,052.95	10.75	1460	1,021.45	11,629.88
2	25.90	36.98	12:36:07 PM	9.75	321.00	1,025.74	11.08	1470	994.24	10,996.77
3	25.67	36.12	12:36:31 PM	10.16	332.00	984.55	10.45	1480	953.05	11,190.77
4	25.87	36.08	12:36:50 PM	9.98	342.00	1,002.00	10.21	1490	970.50	11,678.24
5	25.81	36.21	12:37:11 PM	9.66	352.00	1,036.02	10.40	1500	1,004.52	11,881.74
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.70				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.82				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.00				
Blank 4	26.03	36.15	N/A	50.00	204.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.42	206.00	7,071.83				
952 pCi STD	N/A	N/A	N/A	1.08	207.00	9,276.85				

Table A-4-6: Well 4 - Raw Data, Sample Run #6 (11/10/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.06	36.09	12:13:37 PM	9.57	315.00	1,044.93	10.03	1500	1,013.65	12,099.36
2	26.04	36.02	12:13:54 PM	9.83	325.00	1,017.29	9.98	1510	986.01	11,843.31
3	25.97	36.22	12:14:10 PM	9.49	335.00	1,053.95	10.25	1520	1,022.67	11,975.16
4	25.81	35.34	12:14:25 PM	10.20	346.00	980.59	9.53	1530	949.31	11,971.04
5	26.13	36.42	12:14:43 PM	9.51	355.00	1,051.84	10.29	1540	1,020.56	11,934.03
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.36				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.94				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.84				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.00				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,299.27				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,483.02				

Table A-4-7: Well 4 - Raw Data, Sample Run #7 (11/22/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.91	35.14	10:00:22 AM	10.62	217.00	941.71	9.23	1249	910.54	11,854.19
2	25.91	35.62	10:00:41 AM	10.24	228.00	977.34	9.71	1259	946.17	11,723.89
3	25.91	36.06	10:00:55 AM	9.81	238.00	1,019.78	10.15	1270	988.61	11,734.99
4	26.09	36.34	10:01:14 AM	9.82	248.00	1,018.84	10.25	1280	987.67	11,624.08
5	25.88	35.34	10:01:35 AM	10.45	259.00	957.03	9.46	1290	925.86	11,821.48
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.16				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.60				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.80				
714 pCi STD	N/A	N/A	N/A	1.43	205.00	7,006.29				
952 pCi STD	N/A	N/A	N/A	1.09	206.00	9,198.17				

Table A-4-8: Well 4 - Raw Data, Sample Run #8 (12/8/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.03	36.85	2:21:14 PM	8.41	310.00	1,189.06	10.82	996	1,158.41	12,334.84
2	26.02	35.62	2:21:35 PM	9.91	320.00	1,009.69	9.60	1005	979.04	11,763.05
3	25.92	36.12	2:21:46 PM	9.02	330.00	1,109.53	10.20	1015	1,078.88	12,215.49
4	26.02	36.17	2:22:02 PM	9.50	340.00	1,053.05	10.15	1025	1,022.40	11,647.69
5	25.98	36.06	2:22:20 PM	9.39	350.00	1,065.28	10.08	1034	1,034.63	11,882.34
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.40				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.88				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	29.46				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,182.86				
952 pCi STD	N/A	N/A	N/A	1.10	206.00	9,149.09				

Table A-4-9: Well 4 - Raw Data, Sample Run #9 (12/29/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.13	36.91	1:50:33 PM	8.30	294.00	1,205.30	10.78	471	1,173.93	11,429.88
2	25.87	35.58	1:50:51 PM	9.39	304.00	1,065.50	9.71	480	1,034.13	11,190.94
3	25.95	35.92	1:51:00 PM	8.70	313.00	1,149.89	9.97	489	1,118.52	11,801.90
4	25.98	35.53	1:51:10 PM	8.92	323.00	1,122.31	9.55	498	1,090.94	12,030.76
5	26.04	36.55	1:51:25 PM	8.69	332.00	1,151.55	10.51	508	1,120.18	11,239.00
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.34				
Blank 2	26.03	36.07	N/A	50.00	101.00	29.86				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.80				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.48				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,327.74				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,481.13				

Table A-4-10: Well 4 - Raw Data, Sample Run #10 (1/12/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.99	36.87	11:46:05 AM	12.78	1,863.00	782.47	10.88	1925	750.89	8,564.43
2	26.07	36.68	11:46:17 AM	13.08	1,876.00	764.98	10.61	1939	733.40	8,592.95
3	25.98	36.27	11:46:29 AM	13.86	1,890.00	721.57	10.29	1952	689.99	8,349.41
4	26.15	36.82	11:46:45 AM	12.39	1,903.00	807.34	10.67	1965	775.76	9,067.81
5	25.92	35.58	11:47:00 AM	13.91	1,918.00	719.05	9.66	1979	687.47	8,891.64
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-4-11: Well 4 - Raw Data, Sample Run #11 (1/26/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.87	36.68	12:49:06 PM	12.89	287.00	776.26	10.81	444	744.71	7,170.68
2	25.97	36.19	12:49:17 PM	14.41	302.00	694.31	10.22	458	662.76	6,761.92
3	25.92	36.17	12:49:26 PM	14.04	317.00	712.96	10.25	473	681.41	6,944.96
4	26.02	35.92	12:49:37 PM	14.68	332.00	681.34	9.90	488	649.79	6,869.80
5	25.92	36.82	12:49:49 PM	12.88	345.00	776.40	10.90	502	744.85	7,164.97
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.66				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.34				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.88				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.32				
714 pCi STD	N/A	N/A	N/A	1.35	205.00	7,449.63				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,420.56				

Table A-4-12: Well 4 - Raw Data, Sample Run #12 (2/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.96	36.53	1:17:07 PM	15.71	290.00	636.73	10.57	383	604.87	5,987.44
2	25.97	37.06	1:17:19 PM	14.93	306.00	669.93	11.09	398	638.07	6,031.31
3	25.93	36.12	1:17:29 PM	16.16	322.00	619.37	10.19	415	587.51	6,056.84
4	25.94	36.03	1:17:43 PM	16.20	339.00	617.59	10.09	430	585.73	6,109.87
5	25.95	35.97	1:18:17 PM	16.24	356.00	616.19	10.02	447	584.33	6,151.00
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.94				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.70				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.26				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,254.35				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,424.30				

Table A-4-13: Well 4 - Raw Data, Sample Run #13 (2/23/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.67	36.18	1:02:19 PM	15.98	274.00	626.16	10.51	787	593.87	6,141.15
2	25.56	35.58	1:02:35 PM	16.75	291.00	597.43	10.02	804	565.14	6,142.99
3	25.68	36.41	1:02:51 PM	15.69	307.00	637.35	10.73	820	605.06	6,154.12
4	25.65	36.18	1:03:09 PM	15.99	324.00	625.58	10.53	836	593.29	6,161.42
5	25.25	35.78	1:03:23 PM	15.44	340.00	647.80	10.53	852	615.51	6,405.08
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.24				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.76				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.50				
714 pCi STD	N/A	N/A	N/A	1.34	205.00	7,467.16				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,383.18				

Table A-4-14: Well 4 - Raw Data, Sample Run #14 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.88	36.88	3:16:05 PM	20.37	1,917.00	490.92	11.00	2617	459.39	5,907.69
2	25.54	36.73	3:16:19 PM	19.81	1,937.00	504.95	11.19	2638	473.42	6,000.60
3	25.55	36.18	3:16:29 PM	20.59	1,958.00	485.67	10.63	2658	454.14	6,074.75
4	25.64	36.47	3:16:39 PM	20.79	1,980.00	481.24	10.83	2679	449.71	5,920.05
5	25.65	36.45	3:16:51 PM	21.13	2,001.00	473.59	10.80	2701	442.06	5,851.70
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-5a-1: Well 5a - Raw Data, Sample Run #1 (10/6/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.83	35.15	9:24:13 AM	41.80	206.00	239.30	9.32	634	208.30	2,399.22
2	25.86	36.10	9:24:38 AM	39.32	249.00	254.40	10.24	676	223.40	2,354.39
3	25.96	35.39	9:25:02 AM	40.90	289.00	244.50	9.43	716	213.50	2,455.66
4	25.96	34.78	9:25:25 AM	45.03	330.00	222.10	8.82	759	191.10	2,362.80
5	25.78	35.31	9:25:53 AM	42.33	376.00	236.40	9.53	802	205.40	2,363.17
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.50				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.00				
Blank 3	26.05	36.59	N/A	50.00	152.00	29.80				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.70				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,315.30				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,455.70				

Table A-5a-2: Well 5a - Raw Data, Sample Run #2 (10/20/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.88	35.60	9:52:42 AM	50.00	257.00	174.66	9.72	1708	142.51	1,801.93
2	25.81	36.48	9:53:11 AM	50.00	308.00	197.88	10.67	1759	165.73	1,921.25
3	25.83	35.04	9:53:32 AM	50.00	359.00	172.54	9.21	1809	140.39	1,897.41
4	26.11	35.46	9:54:04 AM	50.00	409.00	171.22	9.35	1860	139.07	1,863.36
5	25.80	35.28	9:54:34 AM	50.00	460.00	174.24	9.48	1909	142.09	1,889.34
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.94				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.36				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.06				
Blank 4	26.03	36.15	N/A	50.00	203.00	33.24				
714 pCi STD	N/A	N/A	N/A	1.50	205.00	7,311.33				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,466.04				

Table A-5a-3: Well 5a - Raw Data, Sample Run #3 (11/3/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.89	34.79	9:27:31 AM	50.00	257.00	140.60	8.90	1152	109.30	1,432.80
2	25.85	35.31	9:28:01 AM	50.00	308.00	153.02	9.46	1203	121.72	1,510.83
3	25.85	35.27	9:28:42 AM	50.00	358.00	150.30	9.42	1253	119.00	1,492.72
4	25.93	36.33	9:29:18 AM	50.00	409.00	157.48	10.40	1303	126.18	1,442.69
5	25.87	35.88	9:30:05 AM	50.00	460.00	159.16	10.01	1353	127.86	1,528.46
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.06				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.30				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.64				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.20				
714 pCi STD	N/A	N/A	N/A	1.40	205.00	7,179.29				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,287.04				

Table A-5a-4: Well 5a - Raw Data, Sample Run #4 (11/17/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.96	35.32	9:31:17 AM	50.00	511.00	166.52	9.36	2390	134.95	1,958.11
2	25.78	36.85	9:31:38 AM	50.00	562.00	189.42	11.07	2439	157.85	1,948.58
3	26.07	35.77	9:31:54 AM	50.00	613.00	165.64	9.70	2490	134.07	1,900.95
4	25.97	36.28	9:32:10 AM	50.00	664.00	176.86	10.31	2541	145.29	1,950.64
5	25.88	35.85	9:32:28 AM	50.00	715.00	167.44	9.97	2592	135.87	1,898.54
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.42				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.98				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.50				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,346.73				

Table A-5a-5: Well 5a - Raw Data, Sample Run #5 (12/1/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.89	36.81	9:28:58 AM	45.34	497.00	220.58	10.92	765	188.22	1,869.91
2	25.92	36.34	9:29:44 AM	46.38	544.00	215.61	10.42	810	183.25	1,918.74
3	26.14	37.18	9:30:24 AM	44.71	590.00	223.66	11.04	856	191.30	1,901.53
4	26.02	36.94	9:31:08 AM	45.50	636.00	219.78	10.92	902	187.42	1,894.38
5	26.12	36.32	9:31:46 AM	47.49	684.00	210.63	10.20	948	178.27	1,940.29
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	33.16				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.06				
Blank 3	26.05	36.59	N/A	50.00	153.00	32.74				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.36	205.00	7,380.88				
952 pCi STD	N/A	N/A	N/A	1.06	207.00	9,477.36				

Table A-5a-6: Well 5a - Raw Data, Sample Run #6 (12/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.09	35.39	9:24:30 AM	50.00	508.00	176.58	9.30	1640	145.50	1,929.29
2	26.03	34.65	9:25:15 AM	50.00	559.00	168.40	8.62	1690	137.32	1,976.88
3	26.15	36.95	9:25:53 AM	46.97	606.00	212.90	10.80	1739	181.82	2,102.11
4	25.95	36.88	9:26:35 AM	47.70	655.00	209.64	10.93	1785	178.56	2,051.72
5	26.12	35.97	9:27:14 AM	50.00	706.00	194.28	9.85	1835	163.20	2,093.98
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.00				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.32				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.64				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,330.66				
952 pCi STD	N/A	N/A	N/A	1.09	207.00	9,214.68				

Table A-5a-7: Well 5a - Raw Data, Sample Run #7 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.04	35.73	9:20:38 AM	50.00	512.00	162.90	9.69	2434	130.74	1,851.84
2	25.94	36.23	9:21:29 AM	50.00	562.00	171.00	10.29	2485	138.84	1,863.84
3	26.02	36.68	9:22:30 AM	50.00	613.00	180.84	10.66	2534	148.68	1,938.59
4	25.93	35.30	9:23:35 AM	50.00	664.00	158.14	9.37	2583	125.98	1,880.32
5	26.14	38.20	9:24:19 AM	48.66	713.00	205.51	12.06	2633	173.35	2,022.96
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-5a-8: Well 5a - Raw Data, Sample Run #8 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.86	36.53	8:29:24 AM	48.01	496.00	208.29	10.67	739	176.71	1,769.94
2	26.05	36.07	8:30:15 AM	49.53	547.00	201.90	10.02	787	170.32	1,827.62
3	25.99	37.31	8:30:56 AM	45.34	593.00	220.56	11.32	835	188.98	1,805.86
4	26.02	36.44	8:31:42 AM	50.00	644.00	195.68	10.42	882	164.10	1,713.67
5	26.06	35.99	8:32:33 AM	50.00	695.00	190.50	9.93	932	158.92	1,752.47
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-5a-9: Well 5a - Raw Data, Sample Run #9 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.63	37.16	8:35:18 AM	46.87	495.00	213.46	11.53	1487	181.75	1,920.24
2	25.66	36.76	8:35:45 AM	47.71	544.00	209.68	11.10	1535	177.97	1,964.99
3	25.75	37.46	8:37:00 AM	46.25	591.00	216.26	11.71	1582	184.55	1,942.97
4	25.71	36.97	8:37:45 AM	45.16	637.00	221.50	11.26	1628	189.79	2,090.07
5	25.64	36.18	8:38:18 AM	47.86	685.00	208.94	10.54	1675	177.23	2,097.45
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-5a-10: Well 5a - Raw Data, Sample Run #10 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.77	37.41	8:28:21 AM	47.53	487.00	210.44	11.64	1581	178.91	1,908.22
2	25.94	37.87	8:29:04 AM	45.99	534.00	217.44	11.93	1628	185.91	1,946.17
3	25.84	37.66	8:29:43 AM	47.13	582.00	212.26	11.82	1675	180.73	1,920.89
4	25.96	38.64	8:30:32 AM	41.03	624.00	243.75	12.68	1719	212.22	2,114.29
5	26.01	37.71	8:30:59 AM	46.15	671.00	216.68	11.70	1763	185.15	2,010.21
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-5b-1: Well 5b - Raw Data, Sample Run #1 (11/3/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.06	35.75	9:31:00 AM	48.39	509.00	206.65	9.69	1402	175.35	2,178.79
2	25.86	35.51	9:31:21 AM	48.29	559.00	207.10	9.65	1451	175.80	2,207.02
3	25.82	35.84	9:31:41 AM	49.19	609.00	203.29	10.02	1501	171.99	2,092.59
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.06				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.30				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.64				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.20				
714 pCi STD	N/A	N/A	N/A	1.40	205.00	7,179.29				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,287.04				

Table A-5b-2: Well 5b - Raw Data, Sample Run #2 (11/17/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.93	35.25	9:29:01 AM	50.00	257.00	161.02	9.32	2137	129.45	1,827.19
2	26.03	36.12	9:29:18 AM	50.00	308.00	173.82	10.09	2188	142.25	1,866.59
3	26.00	34.67	9:29:37 AM	50.00	359.00	150.36	8.67	2238	118.79	1,825.51
4	25.98	36.45	9:29:51 AM	50.00	410.00	171.26	10.47	2289	139.69	1,789.09
5	25.86	34.65	9:30:05 AM	50.00	461.00	154.74	8.79	2340	123.17	1,891.12
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.42				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.98				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.50				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,346.73				

Table A-5b-3: Well 5b - Raw Data, Sample Run #3 (12/1/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.03	36.50	9:28:38 AM	50.00	257.00	199.86	10.47	523	167.50	1,683.46
2	25.87	35.09	9:29:25 AM	50.00	308.00	173.06	9.22	573	140.70	1,615.96
3	26.07	35.70	9:30:11 AM	47.55	357.00	210.30	9.63	622	177.94	1,968.79
4	26.02	35.06	9:30:49 AM	47.69	405.00	209.75	9.04	670	177.39	2,103.49
5	25.96	35.73	9:31:29 AM	44.41	451.00	225.17	9.77	716	192.81	2,127.80
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	33.16				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.06				
Blank 3	26.05	36.59	N/A	50.00	153.00	32.74				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.36	205.00	7,380.88				
952 pCi STD	N/A	N/A	N/A	1.06	207.00	9,477.36				

Table A-5b-4: Well 5b - Raw Data, Sample Run #4 (12/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.07	37.34	9:24:09 AM	46.10	254.00	216.94	11.27	1388	185.86	1,970.14
2	26.10	36.39	9:24:49 AM	50.00	304.00	195.88	10.29	1436	164.80	1,924.87
3	26.10	36.96	9:25:35 AM	50.00	355.00	193.24	10.86	1485	162.16	1,805.73
4	25.80	35.53	9:26:13 AM	50.00	406.00	171.62	9.73	1536	140.54	1,757.98
5	26.09	36.56	9:27:00 AM	50.00	457.00	178.80	10.47	1586	147.72	1,728.05
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.00				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.32				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.64				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,330.66				
952 pCi STD	N/A	N/A	N/A	1.09	207.00	9,214.68				

Table A-5b-5: Well 5b - Raw Data, Sample Run #5 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	35.41	9:20:19 AM	50.00	257.00	139.34	9.40	2180	107.18	1,515.67
2	25.87	35.28	9:21:11 AM	50.00	308.00	118.66	9.41	2230	86.50	1,229.63
3	25.95	32.48	9:22:10 AM	50.00	359.00	129.06	6.53	2280	96.90	1,997.55
4	25.93	36.11	9:22:55 AM	50.00	410.00	195.32	10.18	2330	163.16	2,171.19
5	25.98	36.27	9:23:58 AM	50.00	461.00	194.52	10.29	2380	162.36	2,150.95
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-5b-6: Well 5b - Raw Data, Sample Run #6 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.87	36.25	8:29:08 AM	50.00	257.00	148.18	10.38	498	116.60	1,164.60
2	26.11	36.29	8:29:59 AM	50.00	307.00	147.66	10.18	548	116.08	1,189.66
3	26.04	36.25	8:30:40 AM	50.00	358.00	173.04	10.21	597	141.46	1,454.46
4	26.06	37.33	8:31:24 AM	50.00	409.00	159.18	11.27	648	127.60	1,196.22
5	25.96	37.93	8:32:12 AM	37.85	448.00	264.23	11.97	692	232.65	2,064.90
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-5b-7: Well 5b - Raw Data, Sample Run #7 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.73	36.71	8:35:05 AM	42.94	250.00	232.91	10.98	1244	201.20	2,164.92
2	24.87	36.18	8:35:33 AM	44.67	296.00	223.93	11.31	1289	192.22	2,019.36
3	25.83	37.02	8:36:41 AM	48.82	346.00	204.83	11.19	1336	173.12	1,849.12
4	25.75	37.17	8:37:29 AM	50.00	396.00	190.60	11.42	1386	158.89	1,673.45
5	25.61	36.20	8:38:05 AM	50.00	447.00	170.70	10.59	1435	138.99	1,588.36
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-5b-8: Well 5b - Raw Data, Sample Run #8 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	37.50	8:28:06 AM	43.75	251.00	228.57	11.49	1348	197.04	2,067.44
2	25.87	36.11	8:28:50 AM	50.00	302.00	196.92	10.24	1394	165.39	1,958.51
3	25.88	37.32	8:29:25 AM	42.73	346.00	234.05	11.44	1441	202.52	2,159.38
4	25.89	37.37	8:30:10 AM	44.78	391.00	223.31	11.48	1485	191.78	2,049.07
5	25.85	37.67	8:30:47 AM	46.72	439.00	214.06	11.82	1531	182.53	1,905.14
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-6-1: Well 6 - Raw Data, Sample Run #1 (10/6/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.06	35.25	11:43:45 AM	50.00	419.00	46.80	9.19	711	15.80	186.36
2	26.03	36.30	11:44:13 AM	50.00	470.00	49.10	10.27	762	18.10	192.27
3	26.00	35.99	11:44:34 AM	50.00	521.00	48.50	9.99	813	17.50	192.34
4	25.77	34.98	11:44:47 AM	50.00	572.00	46.40	9.21	863	15.40	184.75
5	26.05	35.57	11:45:02 AM	50.00	623.00	45.00	9.52	914	14.00	163.53
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.50				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.00				
Blank 3	26.05	36.59	N/A	50.00	152.00	29.80				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.70				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,315.30				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,455.70				

Table A-6-2: Well 6 - Raw Data, Sample Run #2 (10/20/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.88	35.48	10:29:23 AM	50.00	511.00	44.30	9.60	1926	12.15	159.88
2	25.57	35.23	10:30:00 AM	50.00	562.00	44.72	9.66	1976	12.57	165.42
3	25.85	35.58	10:30:21 AM	50.00	613.00	44.96	9.73	2027	12.81	168.44
4	26.00	35.40	10:30:47 AM	50.00	663.00	44.30	9.40	2077	12.15	166.42
5	25.97	35.10	10:31:10 AM	50.00	714.00	46.04	9.13	2127	13.89	197.11
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.94				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.36				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.06				
Blank 4	26.03	36.15	N/A	50.00	203.00	33.24				
714 pCi STD	N/A	N/A	N/A	1.50	205.00	7,311.33				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,466.04				

Table A-6-3: Well 6 - Raw Data, Sample Run #3 (11/3/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.88	34.02	10:03:18 AM	50.00	660.00	41.96	8.14	1520	10.66	160.04
2	25.85	34.76	10:03:40 AM	50.00	710.00	44.98	8.91	1570	13.68	188.81
3	25.80	34.16	10:04:04 AM	50.00	761.00	44.60	8.36	1620	13.30	196.88
4	25.82	34.75	10:04:30 AM	50.00	812.00	43.14	8.93	1671	11.84	165.14
5	25.84	35.01	10:04:51 AM	50.00	863.00	44.26	9.17	1721	12.96	177.14
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.06				
Blank 2	26.03	36.07	N/A	50.00	101.00	30.30				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.64				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.20				
714 pCi STD	N/A	N/A	N/A	1.40	205.00	7,179.29				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,287.04				

Table A-6-4: Well 6 - Raw Data, Sample Run #4 (11/17/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.84	34.49	10:10:54 AM	50.00	765.00	41.64	8.65	2604	10.07	162.43
2	26.10	36.12	10:11:14 AM	50.00	816.00	44.86	10.02	2654	13.29	186.23
3	25.97	35.17	10:11:31 AM	50.00	867.00	43.00	9.20	2704	11.43	175.54
4	25.90	34.85	10:11:45 AM	50.00	918.00	43.92	8.95	2755	12.35	196.22
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.42				
Blank 3	26.05	36.59	N/A	50.00	152.00	30.98				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.50				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,203.60				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,346.73				

Table A-6-5: Well 6 - Raw Data, Sample Run #5 (12/1/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.06	34.05	10:22:00 AM	50.00	735.00	43.60	7.99	947	11.24	156.09
2	26.06	34.81	10:22:22 AM	50.00	786.00	43.12	8.75	998	10.76	137.32
3	26.13	35.56	10:22:32 AM	50.00	837.00	45.26	9.43	1048	12.90	153.74
4	25.98	35.59	10:22:44 AM	50.00	887.00	44.46	9.61	1099	12.10	142.41
5	25.93	35.27	10:23:01 AM	50.00	938.00	43.32	9.34	1149	10.96	133.56
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	33.16				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.06				
Blank 3	26.05	36.59	N/A	50.00	153.00	32.74				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.36	205.00	7,380.88				
952 pCi STD	N/A	N/A	N/A	1.06	207.00	9,477.36				

Table A-6-6: Well 6 - Raw Data, Sample Run #6 (12/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.02	35.21	10:01:10 AM	50.00	756.00	45.68	9.19	1852	14.60	201.15
2	25.87	34.86	10:01:32 AM	50.00	807.00	43.46	8.99	1901	12.38	175.43
3	25.97	35.26	10:01:50 AM	50.00	858.00	43.36	9.29	1952	12.28	169.48
4	25.93	35.16	10:11:01 AM	50.00	909.00	43.20	9.23	1994	12.12	169.25
5	26.02	35.18	10:11:39 AM	50.00	959.00	44.02	9.16	2044	12.94	183.23
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.00				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.32				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.64				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,330.66				
952 pCi STD	N/A	N/A	N/A	1.09	207.00	9,214.68				

Table A-6-7: Well 6 - Raw Data, Sample Run #7 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.94	35.73	10:02:08 AM	50.00	764.00	44.50	9.79	2645	12.34	177.60
2	25.80	35.31	10:02:24 AM	50.00	815.00	45.26	9.51	2696	13.10	195.34
3	25.95	35.33	10:02:37 AM	50.00	866.00	44.66	9.38	2746	12.50	190.17
4	25.95	34.98	10:02:58 AM	50.00	916.00	44.68	9.03	2797	12.52	199.13
5	25.99	35.79	10:03:10 AM	50.00	967.00	43.30	9.80	2847	11.14	164.28
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-6-8: Well 6 - Raw Data, Sample Run #8 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.06	36.02	9:07:06 AM	50.00	745.00	47.50	9.96	949	15.92	175.40
2	26.06	36.09	9:07:16 AM	50.00	796.00	48.46	10.03	999	16.88	185.85
3	26.03	35.07	9:07:29 AM	50.00	847.00	46.60	9.04	1050	15.02	184.66
4	25.97	35.37	9:07:41 AM	50.00	898.00	49.86	9.40	1100	18.28	217.50
5	25.97	35.48	9:07:52 AM	50.00	948.00	50.04	9.51	1151	18.46	218.50
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-6-9: Well 6 - Raw Data, Sample Run #9 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.67	36.97	9:15:10 AM	50.00	736.00	50.82	11.30	1687	19.11	211.22
2	25.74	36.37	9:15:20 AM	50.00	787.00	47.34	10.63	1738	15.63	184.82
3	25.58	36.43	9:15:30 AM	50.00	838.00	47.68	10.85	1789	15.97	186.20
4	25.63	35.43	9:15:41 AM	50.00	888.00	44.46	9.80	1839	12.75	165.61
5	25.61	36.05	9:15:55 AM	50.00	939.00	48.20	10.44	1889	16.49	202.35
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-6-10: Well 6 - Raw Data, Sample Run #10 (2/16/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.72	35.67	9:02:07 AM	50.00	257.00	48.96	9.95	364	17.29	180.25
2	25.76	35.99	9:02:17 AM	50.00	307.00	50.42	10.23	415	18.75	191.35
3	25.62	36.40	9:02:27 AM	50.00	358.00	50.40	10.78	465	18.73	182.54
4	25.63	36.73	9:02:38 AM	50.00	409.00	49.64	11.10	515	17.97	171.16
5	25.82	35.11	9:02:49 AM	50.00	460.00	46.12	9.29	566	14.45	165.49
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.84				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.52				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.74				
714 pCi STD	N/A	N/A	N/A	1.37	204.00	7,308.03				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,476.42				

Table A-6-11: Well 6 - Raw Data, Sample Run #11 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	36.92	9:00:10 AM	50.00	721.00	47.84	10.91	1783	16.31	190.38
2	26.01	37.08	9:00:24 AM	50.00	772.00	48.84	11.07	1833	17.31	200.39
3	25.81	36.18	9:00:36 AM	50.00	823.00	45.48	10.37	1883	13.95	173.49
4	25.82	36.66	9:00:49 AM	50.00	874.00	47.22	10.84	1934	15.69	187.87
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-7-1: Well 7 - Raw Data, Sample Run #1 (10/31/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.93	36.08	10:32:44 AM	50.00	257.00	75.52	10.15	529	43.35	452.45
2	25.86	36.78	10:33:06 AM	50.00	308.00	81.84	10.92	579	49.67	484.91
3	25.94	36.25	10:33:28 AM	50.00	359.00	78.02	10.31	630	45.85	477.15
4	25.84	36.61	10:33:48 AM	50.00	410.00	84.78	10.77	680	52.61	527.43
5	25.97	36.18	10:34:07 AM	50.00	461.00	80.66	10.21	731	48.49	516.10
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.52				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.62				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.34				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,260.15				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,523.81				

Table A-7-2: Well 7 - Raw Data, Sample Run #2 (11/14/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.98	35.30	10:11:45 AM	50.00	257.00	63.62	9.32	3344	32.07	519.70
2	25.98	36.20	10:12:05 AM	50.00	308.00	67.60	10.22	3394	36.05	536.11
3	25.98	35.82	10:12:33 AM	50.00	359.00	61.78	9.84	3444	30.23	469.87
4	25.98	36.37	10:12:48 AM	50.00	410.00	63.78	10.39	3495	32.23	477.50
5	25.92	35.73	10:13:15 AM	50.00	461.00	63.64	9.81	3546	32.09	506.78
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.30				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.02				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	33.02				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,206.48				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,601.91				

Table A-7-3: Well 7 - Raw Data, Sample Run #3 (12/1/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	35.16	10:42:08 AM	50.00	989.00	70.70	9.15	1181	38.34	478.99
2	26.03	35.58	10:42:22 AM	50.00	1,040.00	72.14	9.55	1232	39.78	479.23
3	25.98	34.84	10:42:38 AM	50.00	1,090.00	72.16	8.86	1282	39.80	520.08
4	26.00	35.01	10:42:49 AM	50.00	1,141.00	71.18	9.01	1332	38.82	501.98
5	26.13	35.81	10:43:22 AM	50.00	1,192.00	74.02	9.68	1383	41.66	504.65
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	33.16				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.06				
Blank 3	26.05	36.59	N/A	50.00	153.00	32.74				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.36	205.00	7,380.88				
952 pCi STD	N/A	N/A	N/A	1.06	207.00	9,477.36				

Table A-7-4: Well 7 - Raw Data, Sample Run #4 (12/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.92	35.99	10:35:43 AM	50.00	1,010.00	71.46	10.07	2070	40.38	521.97
2	25.92	35.02	10:35:56 AM	50.00	1,061.00	67.96	9.10	2121	36.88	530.93
3	26.03	35.71	10:36:13 AM	50.00	1,112.00	71.44	9.68	2172	40.36	549.75
4	26.03	36.11	10:36:28 AM	50.00	1,163.00	69.98	10.08	2223	38.90	512.11
5	26.03	35.20	10:36:43 AM	50.00	1,213.00	69.18	9.17	2273	38.10	554.84
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.00				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.32				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.64				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,330.66				
952 pCi STD	N/A	N/A	N/A	1.09	207.00	9,214.68				

Table A-7-5: Well 7 - Raw Data, Sample Run #5 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.01	36.02	10:32:07 AM	50.00	1,018.00	65.02	10.01	2869	32.86	475.89
2	26.02	35.12	10:32:20 AM	50.00	1,069.00	67.04	9.10	2920	34.88	559.24
3	26.15	35.92	10:32:38 AM	50.00	1,120.00	62.90	9.77	2970	30.74	461.95
4	26.05	35.74	10:32:56 AM	50.00	1,170.00	65.92	9.69	3021	33.76	514.83
5	25.95	35.15	10:33:12 AM	50.00	1,221.00	62.28	9.20	3071	30.12	486.83
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-7-6: Well 7 - Raw Data, Sample Run #6 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.89	37.01	9:30:07 AM	50.00	999.00	85.62	11.12	1179	54.04	548.97
2	25.98	36.55	9:30:21 AM	50.00	1,050.00	78.64	10.57	1230	47.06	506.18
3	25.98	35.96	9:30:37 AM	50.00	1,101.00	71.62	9.98	1280	40.04	459.01
4	25.95	36.64	9:30:52 AM	50.00	1,152.00	80.44	10.69	1331	48.86	526.29
5	25.91	37.19	9:31:05 AM	50.00	1,202.00	80.48	11.28	1382	48.90	502.39
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-7-7: Well 7 - Raw Data, Sample Run #7 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.73	36.33	9:36:40 AM	50.00	990.00	72.62	10.60	1919	40.91	496.40
2	25.51	36.86	9:36:56 AM	50.00	1,041.00	73.96	11.35	1970	42.25	481.87
3	25.64	35.58	9:37:09 AM	50.00	1,092.00	70.62	9.94	2021	38.91	509.99
4	25.66	35.42	9:37:27 AM	50.00	1,142.00	69.26	9.76	2072	37.55	504.47
5	25.61	36.77	9:37:42 AM	50.00	1,193.00	74.66	11.16	2121	42.95	507.76
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-7-8: Well 7 - Raw Data, Sample Run #8 (2/16/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.60	36.15	9:28:06 AM	50.00	511.00	80.58	10.55	592	48.91	494.99
2	25.64	37.42	9:28:20 AM	50.00	562.00	80.10	11.78	643	48.43	441.79
3	25.63	36.35	9:28:32 AM	50.00	612.00	77.16	10.72	693	45.49	458.88
4	25.69	35.63	9:28:50 AM	50.00	663.00	73.98	9.94	743	42.31	463.20
5	25.69	35.83	9:29:06 AM	50.00	714.00	77.32	10.14	794	45.65	493.07
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.84				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.52				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.74				
714 pCi STD	N/A	N/A	N/A	1.37	204.00	7,308.03				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,476.42				

Table A-7-9: Well 7 - Raw Data, Sample Run #9 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.94	35.69	9:18:12 AM	50.00	924.00	73.58	9.75	1968	42.05	562.19
2	25.87	36.02	9:18:24 AM	50.00	975.00	70.76	10.15	2018	39.23	507.00
3	25.86	36.06	9:18:36 AM	50.00	1,026.00	72.86	10.20	2068	41.33	534.88
4	25.87	34.95	9:18:47 AM	50.00	1,077.00	69.10	9.08	2119	37.57	549.71
5	25.77	36.12	9:18:58 AM	50.00	1,128.00	71.00	10.35	2170	39.47	509.92
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-8-1: Well 8 - Raw Data, Sample Run #1 (10/31/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.87	35.56	10:55:28 AM	28.62	490.00	349.55	9.69	750	317.38	3,567.79
2	25.90	37.21	10:55:58 AM	27.74	518.00	360.60	11.31	778	328.43	3,174.35
3	25.76	35.60	10:56:26 AM	30.63	550.00	326.51	9.84	807	294.34	3,281.83
4	25.79	36.37	10:56:48 AM	27.19	577.00	367.82	10.58	837	335.65	3,493.85
5	25.86	36.10	10:57:13 AM	28.59	607.00	349.81	10.24	864	317.64	3,427.80
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.52				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.62				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.34				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,260.15				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,523.81				

Table A-8-2: Well 8 - Raw Data, Sample Run #2 (11/14/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.03	36.19	10:46:47 AM	44.99	506.00	222.32	10.16	3561	190.77	2,914.45
2	26.14	35.71	10:47:08 AM	47.95	555.00	208.57	9.57	3607	177.02	2,887.80
3	25.97	36.02	10:47:28 AM	46.39	603.00	215.56	10.05	3655	184.01	2,875.80
4	25.95	36.72	10:47:45 AM	42.84	646.00	233.52	10.77	3701	201.97	2,962.58
5	26.02	36.38	10:48:08 AM	43.37	690.00	230.60	10.36	3744	199.05	3,051.79
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.30				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.02				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	33.02				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,206.48				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,601.91				

Table A-8-3: Well 8 - Raw Data, Sample Run #3 (12/1/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.11	36.18	11:32:14 AM	36.30	1,229.00	275.54	10.07	1378	243.18	2,830.20
2	26.14	36.86	11:32:42 AM	34.71	1,264.00	288.19	10.72	1414	255.83	2,809.61
3	26.13	35.70	11:33:02 AM	38.90	1,304.00	257.12	9.57	1450	224.76	2,777.57
4	25.90	35.40	11:33:28 AM	41.60	1,346.00	240.38	9.50	1491	208.02	2,603.04
5	26.12	36.26	11:33:45 AM	40.20	1,387.00	248.78	10.14	1532	216.42	2,550.37
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	33.16				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.06				
Blank 3	26.05	36.59	N/A	50.00	153.00	32.74				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.36	205.00	7,380.88				
952 pCi STD	N/A	N/A	N/A	1.06	207.00	9,477.36				

Table A-8-4: Well 8 - Raw Data, Sample Run #4 (12/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.13	36.12	11:08:09 AM	40.05	1,254.00	249.76	9.99	2287	218.68	2,928.64
2	26.10	35.94	11:08:19 AM	38.74	1,294.00	258.21	9.84	2327	227.13	3,103.78
3	26.02	36.78	11:08:37 AM	37.72	1,332.00	265.11	10.76	2366	234.03	2,939.03
4	25.88	36.59	11:08:52 AM	38.36	1,371.00	260.69	10.71	2404	229.61	2,910.89
5	25.99	36.85	11:09:08 AM	38.32	1,410.00	260.96	10.86	2443	229.88	2,888.21
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.00				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.32				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.64				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,330.66				
952 pCi STD	N/A	N/A	N/A	1.09	207.00	9,214.68				

Table A-8-5: Well 8 - Raw Data, Sample Run #5 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.96	34.92	10:58:09 AM	47.70	1,270.00	209.71	8.96	3096	177.55	2,956.34
2	26.02	35.90	10:58:21 AM	43.33	1,314.00	230.79	9.88	3142	198.63	3,016.81
3	25.98	35.47	10:58:38 AM	45.16	1,360.00	221.46	9.49	3187	189.30	3,010.28
4	26.17	36.58	10:58:54 AM	43.27	1,404.00	231.18	10.41	3232	199.02	2,901.55
5	26.02	36.70	10:59:07 AM	41.75	1,446.00	239.59	10.68	3275	207.43	2,963.72
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-8-6: Well 8 - Raw Data, Sample Run #6 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.95	36.34	9:58:08 AM	35.54	1,239.00	281.40	10.39	1398	249.82	2,792.09
2	25.95	36.08	9:58:23 AM	35.88	1,275.00	278.71	10.13	1435	247.13	2,846.15
3	25.97	37.00	9:58:40 AM	33.57	1,309.00	297.89	11.03	1469	266.31	2,828.88
4	25.97	36.67	9:59:00 AM	35.86	1,346.00	278.86	10.70	1504	247.28	2,719.71
5	26.13	37.55	9:59:14 AM	33.34	1,380.00	299.94	11.42	1539	268.36	2,777.69
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-8-7: Well 8 - Raw Data, Sample Run #7 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.76	37.02	10:09:11 AM	28.91	1,223.00	345.97	11.26	2130	314.26	3,686.77
2	25.69	37.32	10:09:26 AM	28.23	1,252.00	354.23	11.63	2160	322.52	3,677.17
3	25.63	37.49	10:09:40 AM	27.25	1,279.00	367.08	11.86	2188	335.37	3,762.78
4	25.68	37.72	10:09:55 AM	27.74	1,308.00	360.56	12.04	2215	328.85	3,646.85
5	25.61	37.07	10:10:10 AM	29.35	1,338.00	340.92	11.46	2245	309.21	3,616.23
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-8-8: Well 8 - Raw Data, Sample Run #8 (2/16/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.56	36.68	9:55:09 AM	29.88	744.00	334.71	11.12	809	303.04	2,990.61
2	25.50	36.47	9:55:19 AM	28.53	774.00	350.51	10.97	838	318.84	3,201.23
3	25.53	34.14	9:55:30 AM	37.47	812.00	266.88	8.61	872	235.21	3,021.77
4	25.73	37.26	9:55:40 AM	28.85	841.00	346.72	11.53	906	315.05	3,035.44
5	25.73	36.38	9:55:55 AM	31.33	873.00	319.41	10.65	936	287.74	3,012.75
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.84				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.52				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.74				
714 pCi STD	N/A	N/A	N/A	1.37	204.00	7,308.03				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,476.42				

Table A-8-9: Well 8 - Raw Data, Sample Run #9 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.71	38.50	9:43:05 AM	34.95	1,163.00	286.27	12.79	2189	254.74	2,669.55
2	25.61	36.27	9:43:21 AM	41.56	1,205.00	240.64	10.66	2227	209.11	2,641.85
3	25.51	36.56	9:43:38 AM	42.06	1,248.00	237.83	11.05	2269	206.30	2,527.70
4	25.64	36.75	9:43:51 AM	40.92	1,290.00	244.38	11.11	2312	212.85	2,607.96
5	25.65	37.01	9:44:07 AM	39.21	1,330.00	255.06	11.36	2352	223.53	2,692.08
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-9-1: Well 9 - Raw Data, Sample Run #1 (10/31/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.83	34.63	11:15:42 AM	48.31	656.00	207.02	8.80	885	174.85	2,201.47
2	25.95	35.21	11:16:17 AM	46.30	703.00	216.00	9.26	933	183.83	2,212.90
3	25.84	34.90	11:16:45 AM	48.99	753.00	204.16	9.06	981	171.99	2,128.91
4	25.89	35.48	11:17:10 AM	47.58	801.00	210.21	9.59	1030	178.04	2,094.89
5	25.95	36.47	11:17:40 AM	42.08	844.00	237.64	10.52	1075	205.47	2,216.45
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.52				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.62				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.34				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,260.15				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,523.81				

Table A-9-2: Well 9 - Raw Data, Sample Run #2 (11/14/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.12	36.08	11:19:25 AM	50.00	741.00	162.10	9.96	3760	130.55	2,086.15
2	25.90	36.31	11:19:45 AM	50.00	792.00	187.84	10.41	3810	156.29	2,404.60
3	26.05	35.77	11:20:08 AM	50.00	843.00	165.50	9.72	3861	133.95	2,221.42
4	25.95	36.86	11:20:33 AM	50.00	894.00	177.74	10.91	3911	146.19	2,173.61
5	25.79	35.87	11:20:57 AM	50.00	944.00	178.16	10.08	3962	146.61	2,374.56
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.30				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.02				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	33.02				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,206.48				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,601.91				

Table A-9-3: Well 9 - Raw Data, Sample Run #3 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.97	35.60	11:18:15 AM	50.00	1,497.00	185.22	9.63	3302	153.06	2,433.58
2	26.06	35.01	11:18:26 AM	50.00	1,548.00	174.46	8.95	3353	142.30	2,450.09
3	25.99	35.64	11:18:37 AM	50.00	1,598.00	181.44	9.65	3403	149.28	2,398.89
4	26.01	35.61	11:18:54 AM	50.00	1,649.00	180.18	9.60	3453	148.02	2,406.14
5	26.01	34.91	11:19:05 AM	50.00	1,700.00	164.04	8.90	3503	131.88	2,326.99
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-9-4: Well 9 - Raw Data, Sample Run #4 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.05	35.60	10:14:04 AM	50.00	1,431.00	190.12	9.55	1567	158.54	1,969.24
2	25.96	35.13	10:14:19 AM	50.00	1,481.00	180.76	9.17	1618	149.18	1,942.21
3	26.09	35.84	10:14:32 AM	48.92	1,531.00	204.42	9.75	1667	172.84	2,129.49
4	26.02	35.57	10:14:44 AM	50.00	1,582.00	198.70	9.55	1717	167.12	2,115.42
5	25.91	34.94	10:15:05 AM	50.00	1,633.00	176.92	9.03	1768	145.34	1,958.21
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-9-5: Well 9 - Raw Data, Sample Run #5 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.55	36.17	10:23:10 AM	48.38	1,387.00	206.70	10.62	2271	174.99	2,215.61
2	25.72	36.35	10:23:25 AM	49.53	1,437.00	201.90	10.63	2320	170.19	2,166.14
3	25.66	36.46	10:23:37 AM	47.02	1,485.00	212.68	10.80	2369	180.97	2,281.13
4	25.65	35.38	10:23:51 AM	50.00	1,536.00	194.92	9.73	2418	163.21	2,297.63
5	25.57	35.87	10:24:03 AM	50.00	1,587.00	194.90	10.30	2469	163.19	2,184.20
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-9-6: Well 9 - Raw Data, Sample Run #6 (2/16/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.63	36.95	10:15:06 AM	44.09	918.00	226.90	11.32	955	195.23	1,927.74
2	25.60	36.21	10:15:18 AM	47.30	966.00	211.50	10.61	1001	179.83	1,905.51
3	25.61	35.71	10:15:30 AM	49.49	1,017.00	202.06	10.10	1050	170.39	1,908.39
4	25.67	36.90	10:16:00 AM	44.87	1,062.00	222.87	11.23	1098	191.20	1,937.67
5	25.62	36.23	10:16:14 AM	47.85	1,111.00	209.01	10.61	1145	177.34	1,913.52
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.84				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.52				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.74				
714 pCi STD	N/A	N/A	N/A	1.37	204.00	7,308.03				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,476.42				

Table A-9-7: Well 9 - Raw Data, Sample Run #7 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.44	35.17	10:03:06 AM	50.00	1,381.00	164.88	9.73	2379	133.35	1,881.43
2	25.58	36.04	10:03:17 AM	50.00	1,431.00	174.62	10.46	2430	143.09	1,890.06
3	25.96	36.36	10:03:30 AM	50.00	1,482.00	178.64	10.40	2480	147.11	1,966.72
4	25.98	37.27	10:03:43 AM	50.00	1,533.00	181.84	11.29	2530	150.31	1,862.79
5	25.93	36.66	10:03:58 AM	50.00	1,584.00	169.88	10.73	2581	138.35	1,815.68
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				

Table A-10-1: Well 10 - Raw Data, Sample Run #1 (10/31/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.79	35.90	12:37:50 PM	36.91	1,136.00	270.93	10.11	1289	238.76	2,753.24
2	25.96	34.90	12:38:15 PM	40.62	1,177.00	246.26	8.94	1328	214.09	2,805.60
3	25.83	37.40	12:38:35 PM	33.88	1,212.00	295.25	11.57	1365	263.08	2,676.37
4	25.84	36.16	12:39:02 PM	36.70	1,249.00	272.53	10.32	1401	240.36	2,753.87
5	25.77	36.32	12:39:15 PM	37.63	1,288.00	265.75	10.55	1439	233.58	2,630.41
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	32.20				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.52				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.62				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.34				
714 pCi STD	N/A	N/A	N/A	1.38	205.00	7,260.15				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,523.81				

Table A-10-2: Well 10 - Raw Data, Sample Run #2 (11/14/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.05	37.24	1:12:57 PM	50.00	1,491.00	177.56	11.19	4396	146.01	2,249.97
2	26.15	36.59	1:13:15 PM	50.00	1,542.00	171.36	10.44	4447	139.81	2,324.09
3	25.95	36.58	1:13:30 PM	50.00	1,593.00	175.22	10.63	4498	143.67	2,360.69
4	25.96	36.58	1:13:50 PM	50.00	1,643.00	177.08	10.62	4548	145.53	2,408.62
5	25.76	36.81	1:14:06 PM	50.00	1,694.00	183.34	11.05	4598	151.79	2,429.73
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	30.30				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.02				
Blank 3	26.05	36.59	N/A	50.00	153.00	30.86				
Blank 4	26.03	36.15	N/A	50.00	203.00	33.02				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,206.48				
952 pCi STD	N/A	N/A	N/A	1.05	207.00	9,601.91				

Table A-10-3: Well 10 - Raw Data, Sample Run #3 (12/1/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.03	37.03	12:07:07 PM	35.93	1,424.00	278.32	11.00	1538	245.96	2,673.90
2	26.04	37.85	12:07:20 PM	32.74	1,457.00	305.44	11.81	1573	273.08	2,777.34
3	25.94	35.43	12:07:36 PM	42.91	1,501.00	233.14	9.49	1611	200.78	2,553.40
4	25.96	36.36	12:07:50 PM	37.55	1,539.00	266.42	10.40	1652	234.06	2,730.26
5	25.95	37.49	12:08:01 PM	34.06	1,574.00	293.63	11.54	1688	261.27	2,759.08
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	33.16				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.06				
Blank 3	26.05	36.59	N/A	50.00	153.00	32.74				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.50				
714 pCi STD	N/A	N/A	N/A	1.36	205.00	7,380.88				
952 pCi STD	N/A	N/A	N/A	1.06	207.00	9,477.36				

Table A-10-4: Well 10 - Raw Data, Sample Run #4 (12/15/94)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.93	37.69	11:37:04 AM	41.81	1,453.00	239.25	11.76	2456	208.17	2,419.24
2	25.75	36.76	11:37:22 AM	44.25	1,498.00	226.03	11.01	2500	194.95	2,433.38
3	25.99	36.68	11:37:33 AM	43.70	1,542.00	228.86	10.69	2544	197.78	2,556.74
4	25.90	37.31	11:37:45 AM	40.53	1,583.00	246.73	11.41	2587	215.65	2,626.03
5	25.93	36.16	11:37:58 AM	45.23	1,629.00	221.22	10.23	2630	190.14	2,596.48
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.38				
Blank 2	26.03	36.07	N/A	50.00	102.00	31.00				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.32				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.64				
714 pCi STD	N/A	N/A	N/A	1.37	205.00	7,330.66				
952 pCi STD	N/A	N/A	N/A	1.09	207.00	9,214.68				

Table A-10-5: Well 10 - Raw Data, Sample Run #5 (1/5/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	26.08	36.31	11:35:03 AM	50.00	1,751.00	182.40	10.23	3539	150.24	2,316.79
2	25.91	36.33	11:35:20 AM	50.00	1,802.00	191.24	10.42	3590	159.08	2,423.91
3	26.02	36.25	11:35:35 AM	50.00	1,852.00	185.54	10.23	3640	153.38	2,395.50
4	26.03	36.81	11:35:48 AM	48.41	1,902.00	206.61	10.78	3689	174.45	2,601.59
5	26.04	37.67	11:36:09 AM	46.28	1,949.00	216.12	11.63	3738	183.96	2,558.65
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	32.68				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.20				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.96				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.82				
714 pCi STD	N/A	N/A	N/A	1.40	204.00	7,165.00				
952 pCi STD	N/A	N/A	N/A	1.08	206.00	9,298.15				

Table A-10-6: Well 10 - Raw Data, Sample Run #6 (1/19/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.93	36.16	10:34:08 AM	43.42	1,677.00	230.33	10.23	1797	198.75	2,372.35
2	26.02	35.97	10:34:20 AM	43.22	1,721.00	231.37	9.95	1840	199.79	2,465.19
3	25.90	35.94	10:34:29 AM	42.36	1,764.00	236.07	10.04	1884	204.49	2,514.47
4	26.00	36.04	10:34:40 AM	43.71	1,809.00	228.80	10.04	1927	197.22	2,438.25
5	25.92	36.54	10:34:53 AM	39.95	1,849.00	250.31	10.62	1970	218.73	2,570.38
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.14				
Blank 2	26.03	36.07	N/A	50.00	101.00	31.96				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.54				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.68				
714 pCi STD	N/A	N/A	N/A	1.35	204.00	7,423.70				
952 pCi STD	N/A	N/A	N/A	1.04	206.00	9,648.08				

Table A-10-7: Well 10 - Raw Data, Sample Run #7 (2/2/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.57	37.71	10:42:07 AM	36.47	1,624.00	274.23	12.14	2495	242.52	2,763.07
2	25.73	37.02	10:42:19 AM	39.22	1,664.00	254.97	11.29	2533	223.26	2,748.27
3	25.74	36.06	10:42:38 AM	43.15	1,708.00	231.77	10.32	2575	200.06	2,708.44
4	25.69	35.78	10:42:49 AM	44.40	1,753.00	225.23	10.09	2619	193.52	2,694.51
5	25.68	37.09	10:43:00 AM	40.52	1,794.00	246.89	11.41	2662	215.18	2,663.88
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.42				
Blank 2	26.03	36.07	N/A	50.00	102.00	30.76				
Blank 3	26.05	36.59	N/A	50.00	152.00	32.12				
Blank 4	26.03	36.15	N/A	50.00	203.00	32.56				
714 pCi STD	N/A	N/A	N/A	1.41	205.00	7,104.26				
952 pCi STD	N/A	N/A	N/A	1.07	206.00	9,379.44				

Table A-10-8: Well 10 - Raw Data, Sample Run #8 (2/16/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.64	37.89	10:35:05 AM	32.52	1,144.00	307.56	12.25	1167	275.89	2,585.53
2	25.65	38.22	10:35:20 AM	31.76	1,177.00	314.96	12.57	1200	283.29	2,598.08
3	25.52	36.42	10:35:32 AM	36.10	1,213.00	277.04	10.90	1235	245.37	2,606.54
4	25.53	36.17	10:35:49 AM	38.45	1,253.00	260.13	10.64	1270	228.46	2,497.20
5	25.56	37.95	10:36:00 AM	32.63	1,286.00	306.53	12.39	1308	274.86	2,592.42
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	50.00	31.84				
Blank 2	26.03	36.07	N/A	50.00	101.00	32.60				
Blank 3	26.05	36.59	N/A	50.00	152.00	31.52				
Blank 4	26.03	36.15	N/A	50.00	203.00	30.74				
714 pCi STD	N/A	N/A	N/A	1.37	204.00	7,308.03				
952 pCi STD	N/A	N/A	N/A	1.06	206.00	9,476.42				

Table A-10-9: Well 10 - Raw Data, Sample Run #9 (3/9/95)

Sample #	Pre-Weight (g)	Post-Weight (g)	Collection Time (hrs:min:sec)	Count Time (min)	LSC Time (min)	Gross Count (cpm)	Weight Difference (g)	Elapsed Time (min)	Net Count (cpm)	Radon Concentration (pCi/L)
1	25.54	37.16	10:22:07 AM	42.21	1,627.00	236.91	11.62	2610	205.38	2,498.03
2	25.53	37.01	10:22:22 AM	40.91	1,668.00	244.49	11.48	2652	212.96	2,635.72
3	25.57	37.05	10:22:34 AM	40.94	1,710.00	244.26	11.48	2693	212.73	2,646.51
4	25.72	37.71	10:22:48 AM	38.05	1,749.00	262.84	11.99	2733	231.31	2,769.18
5	25.66	38.10	10:23:02 AM	38.08	1,788.00	262.61	12.44	2772	231.08	2,679.48
Calibration Data										
Blank 1	26.07	36.29	N/A	50.00	51.00	31.24				
Blank 2	26.03	36.07	N/A	50.00	102.00	32.40				
Blank 3	26.05	36.59	N/A	50.00	153.00	31.08				
Blank 4	26.03	36.15	N/A	50.00	203.00	31.40				
714 pCi STD	N/A	N/A	N/A	1.39	205.00	7,200.00				
952 pCi STD	N/A	N/A	N/A	1.10	207.00	9,115.45				