BPA

Radon 3-Month/12-Month Field Study

U.S. Department of Energy
Bonneville Power Administration

July 1988

RADON
3-MONTH / 12-MONTH
FIELD STUDY

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Bonneville Power Administration
Division of Resource Engineering

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July 1988

BPA PERSPECTIVE

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Background

The Bonneville Power Administration (BPA) is required by law to provide electricity for its Northwest customers. Before embarking upon programs to conserve or produce electricity, BPA must analyze how these programs might affect the environment and human health.

One way to conserve energy is to seal air leaks in homes. This action can save significant energy used for space heating and cooling. BPA began to study air quality in homes when it started planning its weatherization program in 1980. BPA was one of the first Federal agencies to get involved in this issue.

When BPA began its weatherization program in 1981, little was known about indoor air quality at that time. Restrictions on the eligibility of homes to qualify for participation meant that 70 percent of the region's electrically-heated homes could not get house-tightening measures.

In 1984, BPA published an Environmental Impact Statement (EIS) on the proposed expansion of its weatherization program. As a result of the analysis, BPA decided to expand the program by removing all qualification restrictions and to provide the participants information on indoor air quality and the opportunity for free testing for radon.

BPA requires the period of monitoring to include three months of the heating season (October through March) and sets an level of 5 pCi/l or greater as a level where the participant is eligible to receive financial assistance for the installation of a proven mitigation device to return the indoor radon to the level prior to weatherization.

Residential radon levels are best characterized by annual averages, but monitoring for an entire year has obvious disadvantages. The alternative of monitoring for any three-month period and to utilize the result to estimate the annual average would be most advantageous.

Project Objectives

To assess the prediction of the annual average radon concentration in a residence from any three month average measurement, BPA contracted the Ronson Management Corporation to:

- collect site specific data and monitoring results from over 300 sites in the BPA service area,
- analyse the data to determine the existence of a pattern of seasonality in indoor radon concentrations, and
- develop an algorithm, utilizing linear regression analysis, to estimate the annual average concentration from a three month average measurement and analyse the reliability of the estimate.

Project Approach

Site specific data was compiled from participant questionaires, utility weatherization program files and U. S. Department of Agriculture soil survey maps. The data included, but was not limited to, characteristics addressing occupant behavior, house structure, appliances, climate and soil

Terradex alpha track detectors were utilized to measure the annual average and the three month averages beginning each month of the monitoring period.

Key Findings

Average radon levels were found to be twice as high in the heating season as those in the summer. Radon levels in the spring and fall were about the same as the average level measured for the entire year. The greatest variance between the measured annual average level and the estimated annual average occurs when using the summer three-month measurement. The algorithm may be applied to estimate the annual average radon concentration from any three-month measurement, but the researchers determined that the error of prediction may be of the same magnitude as the measurement itself.

More Information

The report is available from BPA's Residential Technology Section by calling (503) 230-5488.

If you have any technical questions, call Chuck Eastwood at (503) 230-4992, or write to:

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(VS1-RMRD-0503d)

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RADON 3-MONTH / 12-MONTH FIELD STUDY

Executive Summary

Large temporal fluctuations in residential radon levels create a problem for accurate characterization of long-term average levels in homes. Numerous three-month long average measurements have been made by Bonneville Power Administration (BPA) in their residential weatherization programs using passive, integrating alpha-track monitors. This study assessed the prediction of annual averages from three-month averages by linear regression analysis.

Algorithms for predicting annual average levels from three-month detector placements were derived and tested based on monitoring done March, 1987 through May, 1988. Site specific data and monitoring results were collected for 306 sites in the Bonneville Service Area, including the states of Oregon, Washington, Idaho, and Montana. Sites were selected for moderately high levels, resulting in a mean annual level of 2.8 pCi./l. and a geometric mean of 1.6 pCi./l.

Differences between three-month and annual measurements (using the same type of detector) were of the same magnitude as the measurements themselves, with the greatest differences occurring in the summer months. Compared with the variance of these differences between three-month and annual levels, the variance of errors from predictions based on the algorithms was not significantly better.

A seasonal pattern was clearly demonstrated by regression analysis: reversing the algorithm for annual average levels, the seasonal levels were obtained from the best straight-line fit to each set of three-month data. Average summer levels were roughly half the heating season levels. The accuracy of prediction was improved by the seasonal correction in the algorithms.

The geographic climate zone was not demonstrated to be a factor in making seasonal adjustments. Climatic factors may have played a large role in determining residential radon levels. However, climate differences could not be separated from concurrent geographical differences in determining seasonal adjustments. When the range of radon levels included in regression analyses was made the same for each climate zone by deleting extreme values, the winter season regression coefficients converged. As a result, the same algorithms were applied to all climate zones even though the levels were higher in zones two and three.

Background and Goals

Residential radon levels are best characterized by annual averages, but monitoring for an entire year has obvious disadvantages: the delay of waiting over a year for results, the increased chance of loss or damage to the detector, and the loss of comparisons with historical three-month exposure data. An attractive alternative is monitoring for three months: long enough to average out day-to-day fluctuations yet short enough to be convenient. It would be most advantageous to be able to monitor for any three-month period regardless of season. The primary objective of the study was to develop conversion equations that predicted twelve-month average radon exposure levels from each of the possible three-month average periods.

At the outset, three-month averaged levels appeared to be adequate to characterize residential radon levels (1,2). Radon levels were known to vary from time to time within each home, but it was anticipated that time differences associated with diurnal fluctuations, wind direction, and other rapidly changing factors would average out. An adjustment would need to be made for a seasonal pattern if this were found to be significant. The resulting annual prediction should then reflect the radon level due to the permanent characteristics of each site. An overall goal was to test these expectations.

The study contributed new information on the seasonal variation in radon levels (Figure 1.) We sought to characterize this seasonal pattern and to discover any dependence on climate differences. Earlier studies indicated that differences in ventilation and heating generally increased winter levels (3,4), and BPA policy has been to monitor during the heating season to cover the higher levels.

Data was collected on each site because a typical mix of single family homes was desired, and potential reference information was sought for causes of unusual results. Data on soil conditions, weather, house construction, and weatherization were gathered for the sites selected for the study and are reported in a Site Audit Report (attached.) Participants were sent a questionnaire regarding the number of occupants, ages, and the time spent in the home by each of the family members. Early in the study, volunteers in multi-family residences were sought without success. All but three of the final sites were in single-family residences.

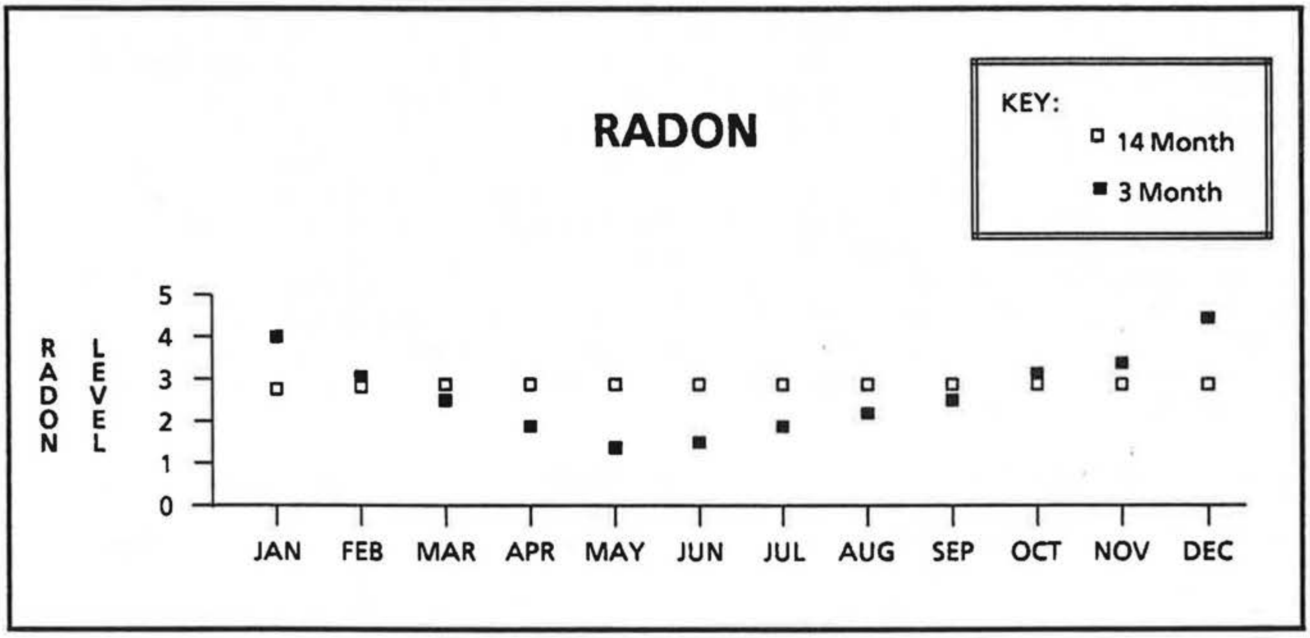


Figure 1. Seasonal Radon Levels Based on All Zones

Monitoring Methodology

Monitoring was done in 306 homes in the BPA Service Area from March, 1987 through May, 1988 using passive alpha-track film detectors (5). Detectors were both supplied and read by Terradex Corporation. The participants were volunteers, and the detectors were distributed and returned by mail. Instructions for deployment were enclosed with the detectors. In the first month (March, 1987), two detectors were sent. Both were placed in the same location in a main living area on the first floor. One was to be kept for fourteen months, rather than twelve, because it would then cover the entire monitoring period. The other detector was to be the first in a series of three-month detectors. The second month, a third detector was sent to be deployed along with the previous two. A fourth detector was sent the next month, and at the beginning of the fourth month (June, 1987) a detector was sent to replace one of the four detectors which now had three months of exposure. A pattern of sending one new detector and requesting one old detector for analysis was maintained until twelve overlapping three-month exposures were obtained. With the completion of fourteen months, the last three-month detector was returned along with the fourteen-month detector. All detectors were mailed directly to the manufacturer for reading.

The residents were asked to expose the detectors on the first floor of the home in an effort to obtain a more representative radon level, not necessarily the highest level in a home. Because many homes in the study had basements, but not all, a further constraint was implied by the objective of comparing results between homes. Studies have indicated that levels are higher in basements, lower on second floors (6,7). This pattern may not be entirely consistent. Some first floor levels have been found to be higher than basement levels (8).

Selection Criteria

The ideal study design for developing annual predictions would provide approximately equal numbers of sites at each level of radon commonly found in the BPA Service Area (9,10). This is in contrast with a study to determine typical radon levels in geographical regions. We sought the cooperation of several electric utilities contracting with BPA weatherization programs, and they solicited volunteers in areas where moderately high levels of radon were known to be prevalent. Other volunteers were obtained through informal inquiry among BPA employees, through their contacts in state and federal agencies. Approximately half of the study population had participated in BPA weatherization programs, and we obtained detailed information on house construction and weatherization from weatherization program files.

Apart from the effort to obtain a range of values, approximately equal numbers of volunteers were sought in each of three climate zones, defined geographically within the BPA Service Area to correspond with heating degree-days per year. Over four hundred volunteers were contacted. The exact number is not known because several cooperative sources were used, and the methods varied with each source. Following early attrition, 306 volunteers were retained from the initial selection. Of these, 261 remained in the program, and 225 usable fourteen-month detectors were obtained. The largest loss from the program came from participants who failed to expose detectors properly, and secondarily from participants who moved out of a monitored home.

Algorithms

The basis for the prediction of annual averages was a linear regression of the 14-month detector readings on each set of three-month readings where the same detector type was used for both measurements. Please refer to Appendix A for the analytical method used. All measurements in the study are expressed in picoCuries of Radon-222 per liter of air (pCi./l.) The prediction had two components: the regression coefficients and the estimate of the uncertainty in the prediction. For each linear regression, a constant term was estimated in the model. As an example, consider the regression for December-through-February data shown in Figure 2. A straight line is fit to the points by the least-squares error criterion. The slope of the line is 0.7 indicating that the annual averages are higher than the winter season readings. The constant term is 0.3 pCi./l. indicating that predictions based on three-month readings must be adjusted upward by this amount. The mean-square error was found to be 2.1 pCi./l. indicating that the prediction is uncertain by approximately this amount. Clearly, the analysis is not helpful for very low readings. Based on fourteen-month data for three-month readings less than 0.3 pCi./l. we estimate an upper limit to annual levels when the three-month result is small.

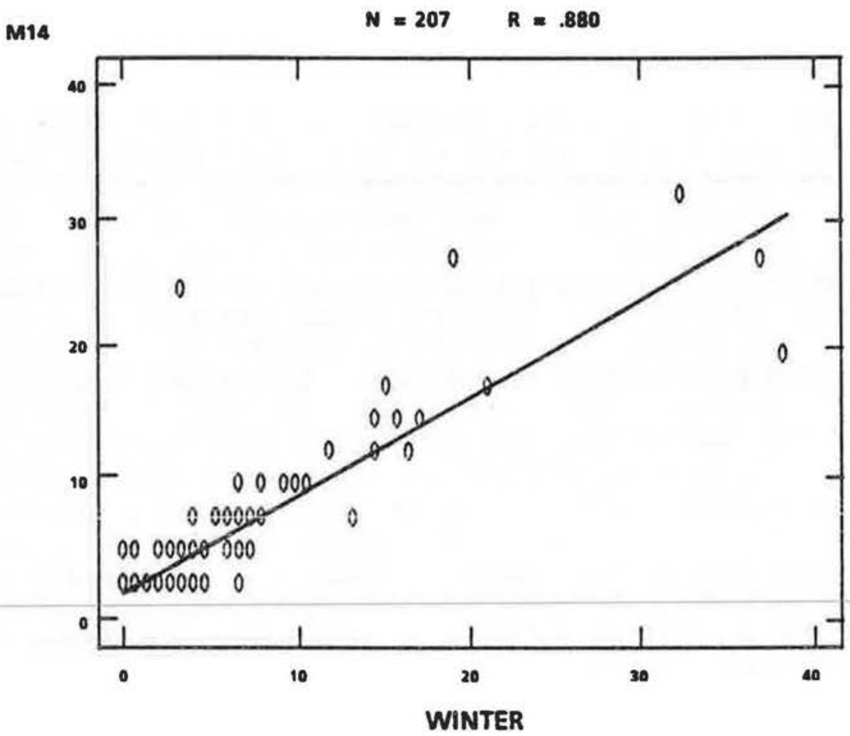


Figure 2. Regression Line for December-February

The data was found to be high in variance and decidedly non-normal in distribution such that the usual descriptors of error, the standard error of the coefficient and the standard error of the estimate, were not good measures of the reproducibility. In every case, only a small reduction in the mean-square error was accomplished by application of the algorithms rather than simply taking the three-month value as an estimate of the annual average. On the other hand, a consistent seasonal pattern was apparent in the analysis of annual vs. three-month averages. (Please see Appendix B for the derivation of Figure 1.) The winter season measurements were highly correlated with annual averages and generally exceeded the annual levels.

For Spring and Fall periods, the regression coefficient was sufficiently close to 1.0 that conversion of these measurements to annual values was not necessary: multiplication by one makes no difference. The April through September overlapping periods showed that the Summer levels were generally a little more than half of the annual average. Error levels were greater in these months also, making any prediction based on these readings relatively unreliable. The significance of the multiplier was such that it confirmed the seasonal pattern of radon levels across the selection of homes in the study.

The non-zero constant terms in linear estimation tended to be positive which reflected the large number of very low three-month levels in the study which did not agree closely with annual levels. The matching annual levels were also found to be low but varied within a range below 5 pCi./l. To reduce the effect of these indeterminate cases, the regressions were performed excluding all three-month values less than 0.3 pCi./l., a level corresponding to a 25% error in the value as determined by the manufacturer in calibration. It is necessary to do the same thing when applying the algorithms. The choice of this lower cut-off is somewhat arbitrary. Considering a factor of two to be the approximate seasonal effect, a 25% standard deviation is an upper limit to obtain that factor within two standard deviations. This in turn implies a lower limit to radon levels. This cut-off is in agreement with the detector manufacturer's reporting policy as well.

Regression coefficients for each of the twelve three-month monitoring periods are presented in Table 1. Also shown are the maximum values for annual (fourteen-month average) measurements corresponding to those three-month detectors read as 0.3 pCi./l. or less. Because three-month readings less than this lower limit are excluded, the algorithm did not apply to these values. When the three-month value was 0.3 pCi./l. or less we could only predict that annual levels would be less than the largest annual values for that group of excluded sites. The use of fourteen-month averages as if they were annual averages gave higher weight to the months March and April, but these months were shown to have levels close to the annual averages.

Conversion is accomplished by applying the following algorithm:

1. Let x equal the three-month average radon level measured in pCi./l.
2. If x is less than 0.3, estimate the annual average to be less than 2 pCi./l.
3. If x is equal to or greater than 0.3, apply the formula $y = mx + c$

Here y is the estimated annual average in pCi./l., m is the multiplier obtained for the closest corresponding three-month period from Table 1, and c is the corresponding constant, also from Table 1.

4. Apply the corresponding mean-square residual from Table 2 as an estimate of variability. An overlap with excluded values occurs for low levels. For example, in January through May, note that any result for y less than 2.2 pCi./l. provides only an upper limit to the estimate, as does the result where $x < 0.3$ pCi./l. The difference between x and y is not significant in this case.

As an example of the algorithm, suppose that a detector was exposed from May 1 through July 31, with the result of 1.5 pCi./l. Let x equal 1.5 and use the fifth line from Table 1 (the line corresponding to May). We find the multiplier is 2.1 and the constant term is -0.2. Applying the formula:

$$(2.1 \times 1.5) + (-0.2) = 2.95$$

The corresponding mean-square residual from Table 2., line 5, is 2.4. Note that the prediction then includes values from 0.6 to 5.4. Had the detector shown less than 0.3 we would have predicted an annual average of less than 2.0 which overlaps the first result. All results are in pCi./l.

Discussion

An important issue was the error introduced in using three-month averaged levels for prediction. The evidence was against the expectation that diurnal fluctuations would average out. The inaccuracy in measured levels under controlled exposure for calibration was very small compared with the variance of field readings which included the actual fluctuation of radon levels over the exposure period. Despite the selection of sites made deliberately to obtain a range of radon levels, the results appear to be log-normally distributed (Figure 3.) This distribution also distorted the standard error. The error incurred in using the algorithms was estimated by residuals, the difference between predictions and corresponding measured annual values. Please see Appendix A for a discussion of residuals and the standard error. In order to place the residuals in scale, a comparison is made to the difference between three-month and fourteen-month readings (Figures 4, 5 and 6.)

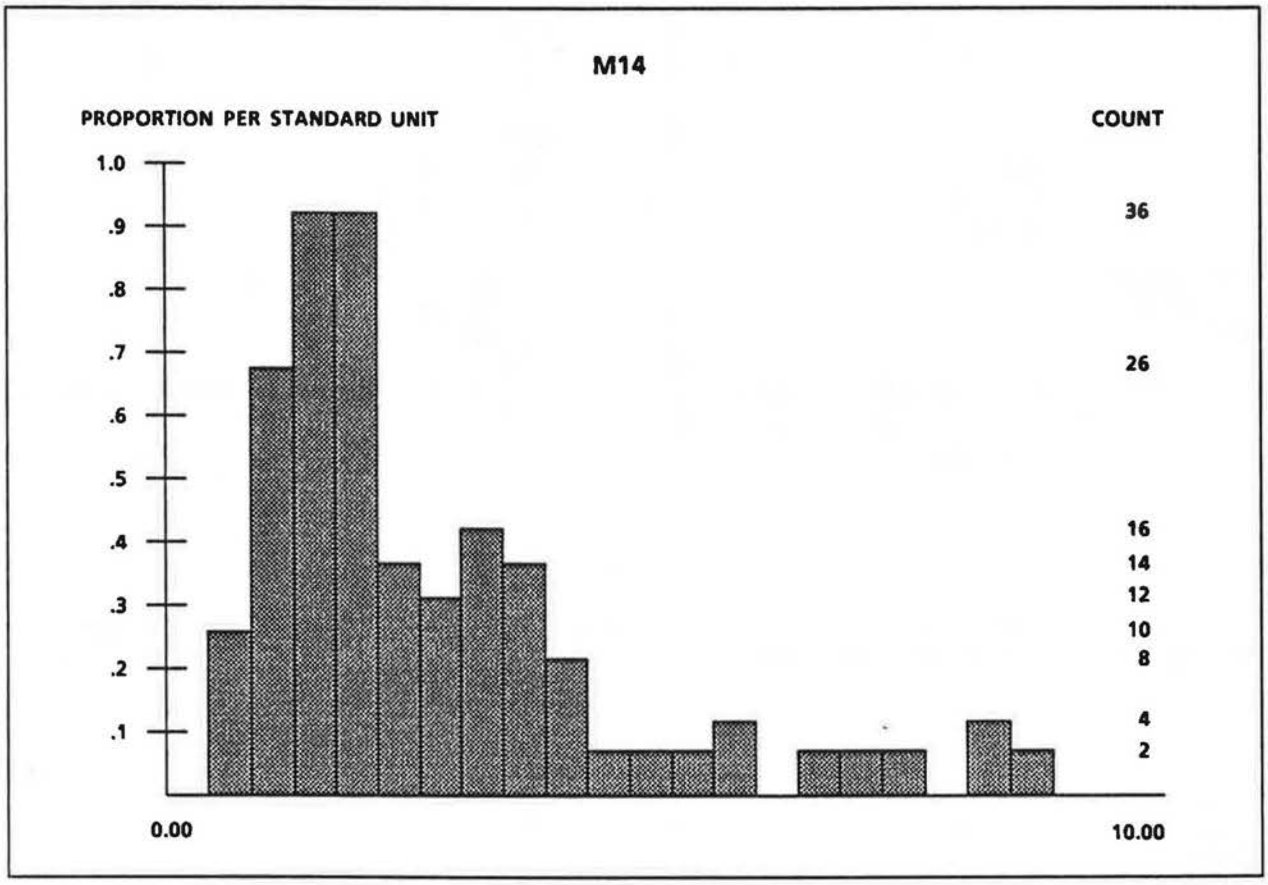


Figure 3. Distribution of Annual Radon Levels

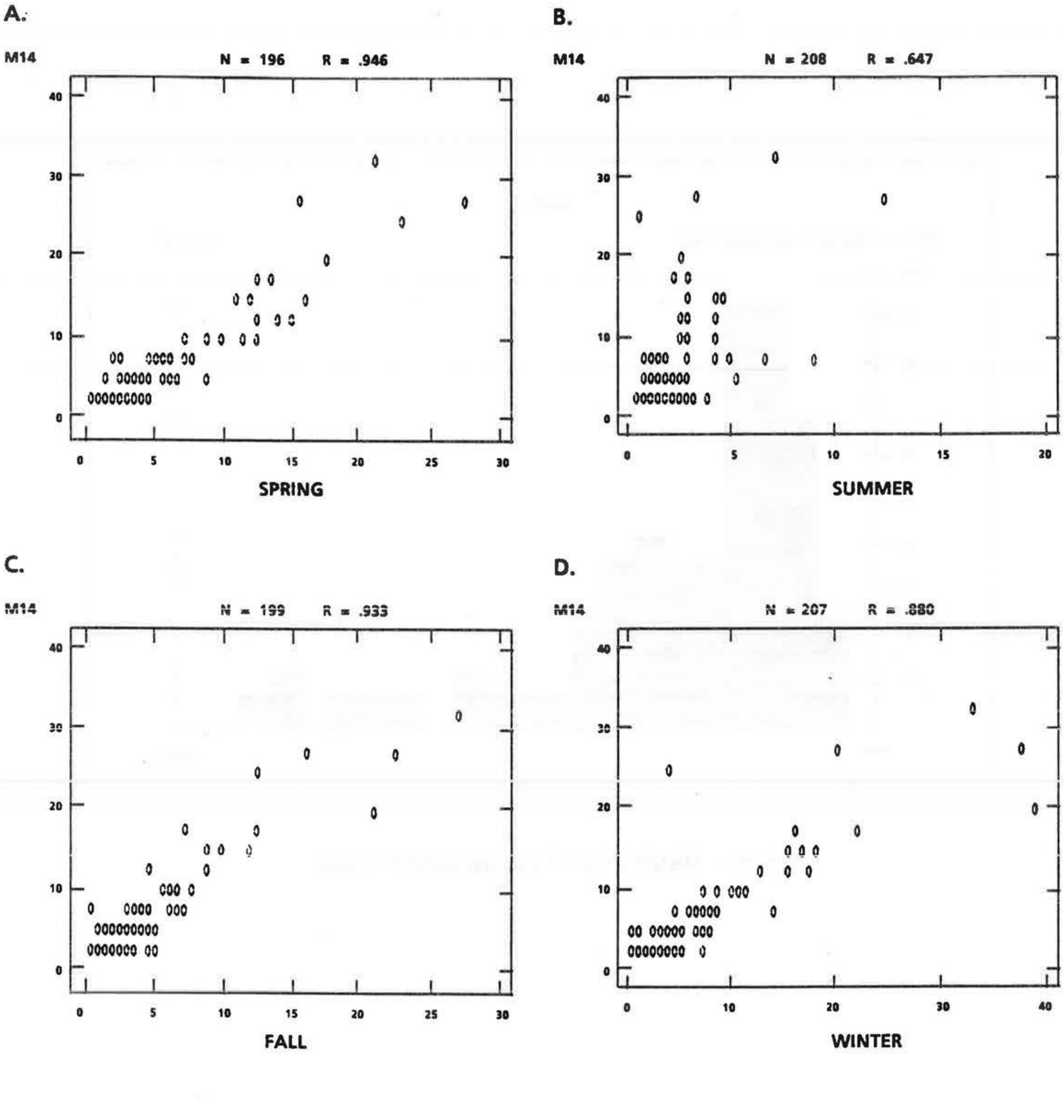


Figure 4. Scatter Plots for Four Seasons

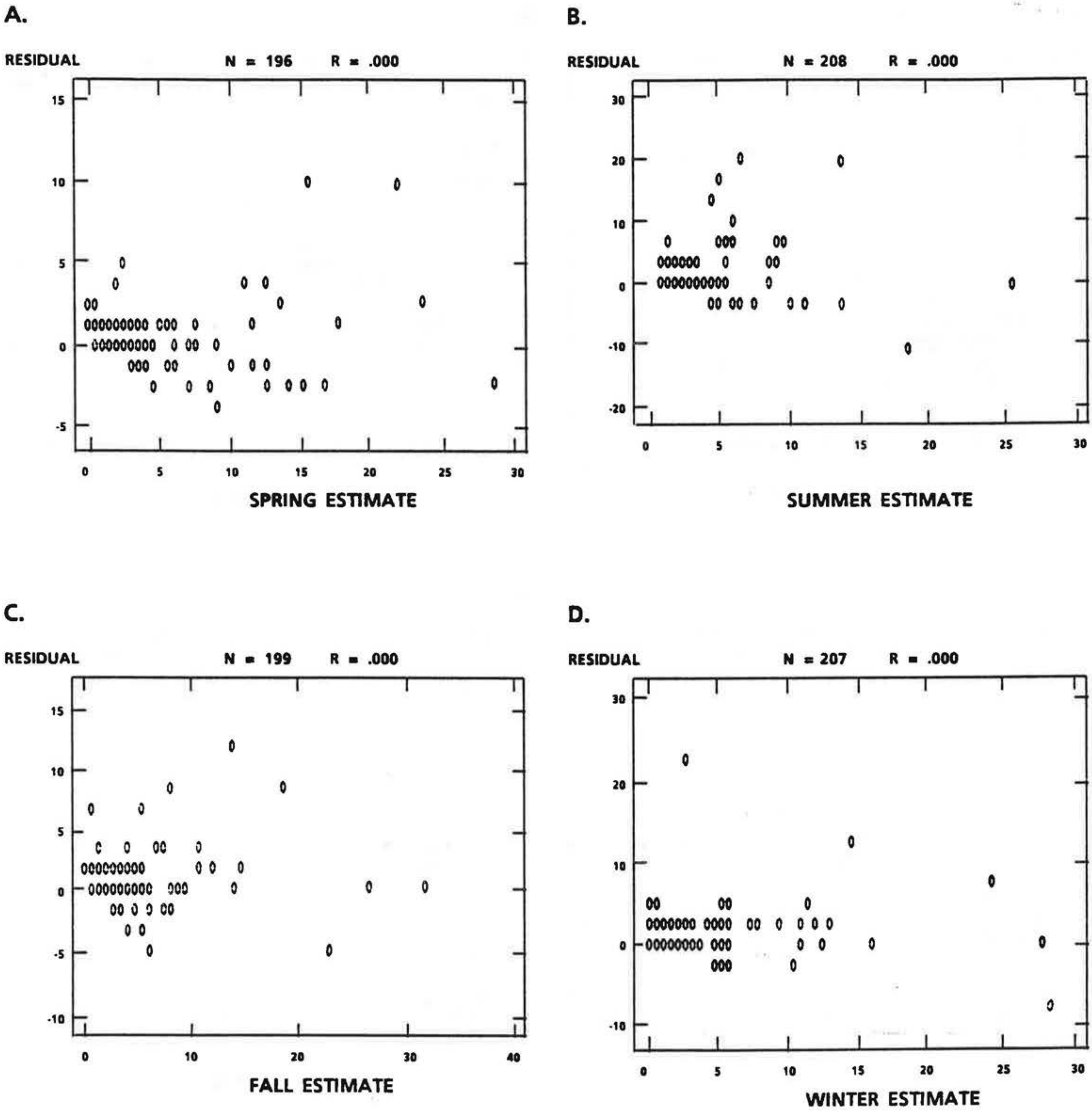


Figure 5. Residuals Plotted Against the 14-Month Levels Predicted for Each Season

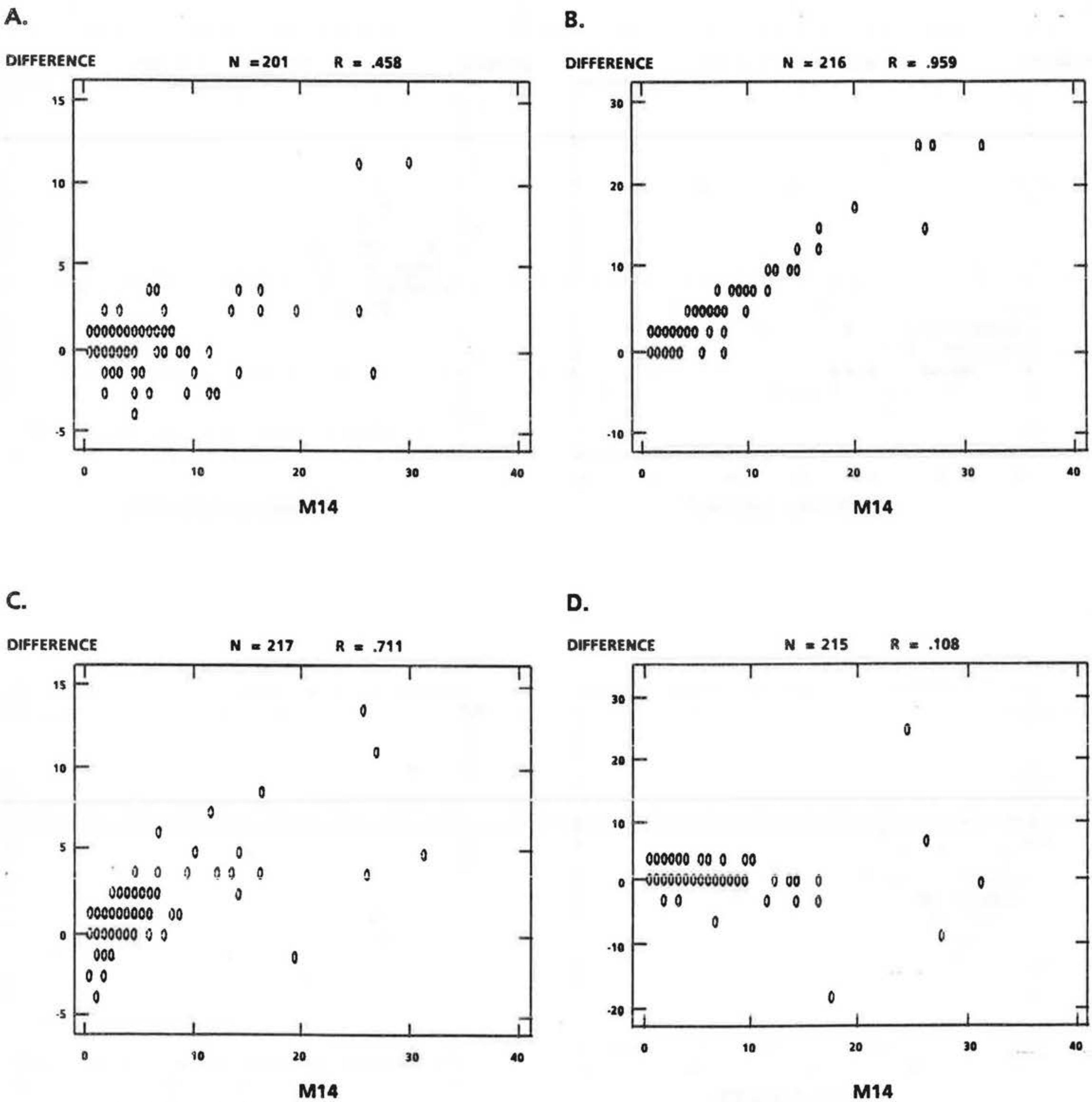


Figure 6. Differences Between 14-Month and 3-Month Readings Plotted Against the 14-Month Levels for Each Season

The scatter-plots for Spring, Summer, Fall, and Winter seasons are presented in Figure 4. The data are presented in Table 7. In Figure 5a-d, the residuals were plotted against the estimates for each season. We see that the errors were greatest in the summer months, but were almost as large as the levels predicted by the algorithms in all seasons. Figure 6a-d shows the matching differences obtained by simply using the three-month readings as estimates. The differences are calculated by subtracting the three-month from the fourteen-month readings. Table 2 summarizes the residuals and differences for all twelve of the three-month periods. We see that the error is only slightly reduced by using the algorithms (as shown by residuals), but the accuracy is improved (over the differences) by adjusting for the seasonal pattern. This is most clearly shown in Figure 5b where the summer readings are consistently low. In contrast, Figure 6b makes no adjustment for the season and the differences grow larger with the radon levels.

The error was not constant for all predictions. The residuals tended to increase in magnitude with the estimated level in any season which showed that a single value for the error does not apply for all estimates, particularly those above 3.0 pCi./l.

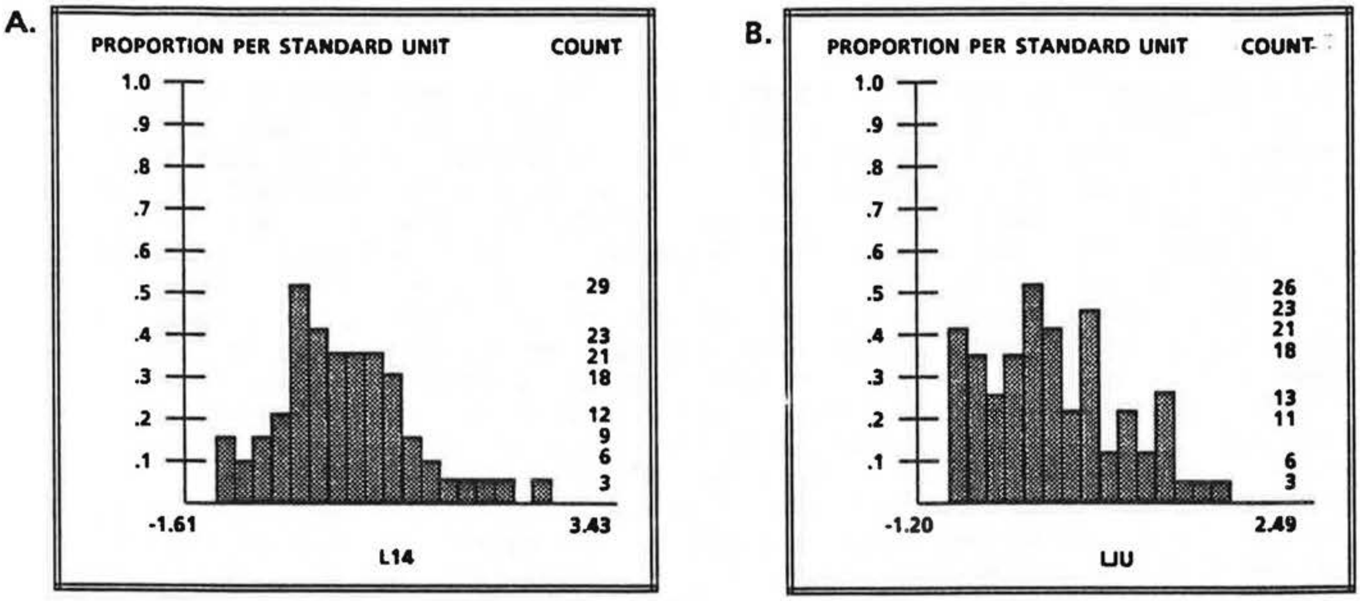
The variation was bounded from below for lower levels by the obvious absence of negative values. Both the regression coefficient and the variance were dominated by the higher levels. The choice of a simple linear model is discussed below. The result of using a linear model for log-normally distributed data was that confidence limits of a normally distributed prediction error did not apply. As noted, the variance increased with the estimate. The use of a constant root-mean-square residual error would tend to be conservative for predictions in the range of 3.0 pCi./l. to 10 pCi./l. This measure was approximately 2 pCi./l., except during the Summer intervals.

The upper limit of prediction from regression analyses was the upper limit of the data used, but the variance of the few readings above 10 pCi./l. suggested that this was an upper limit to reliability.

A common measure of the relationship between variables is the R statistic. This was included in Table 2 because of common use. However, two serious limitations must be considered in reading this value. First, the annual average in the study included the three-month period which tended to guarantee some correlation if R were interpreted as a correlation coefficient. Second, the ideal regression would have independent values distributed evenly over the range with no error in the measurement. In this case, R is usually required to be very close to 1.0. The influence of several pairs in each analysis was high, partly due to the roughly log-normal distribution of the independent values. These points were retained. Restricting the range of the independent variable does little to improve this kind of bias in log-normally distributed data where the variance of the dependent variable increases with the magnitude. Also, there was poor justification for eliminating the problem cases as outliers. Because the outliers were the higher values, the result is essentially the same as limiting the range.

Examination of logarithmically transformed data did not reveal further structure in the study data. The annual and June-through-August detector readings were replaced by their logarithms and a linear regression was performed. This summer time period was chosen as a worst case. The resulting distribution of variables and the regression of log-annual on log-three-month values is shown in Figure 7a-c. The resulting regression coefficient was close to 1.0, indicating that a linear model was the practical choice for constructing algorithms. A similar scatter plot for March-through-May is shown for comparison in Figure 7d.

As mentioned above, any systematic removal of cases outside an outlier criterion would selectively remove the higher values in any range extending above the mean. The cases corresponding to outlier values were considered separately in an effort to identify any characteristics associated with the group other than the higher levels of radon. We found that the ten outliers in the total group all came from Climate Zones 2 and 3.



Model: $Y = 0.97X + 0.6$

L14 = log-fourteen-month-average

LJU = log-three-month-average for June-July-August

LMR = log-three-month-average for March-April-May

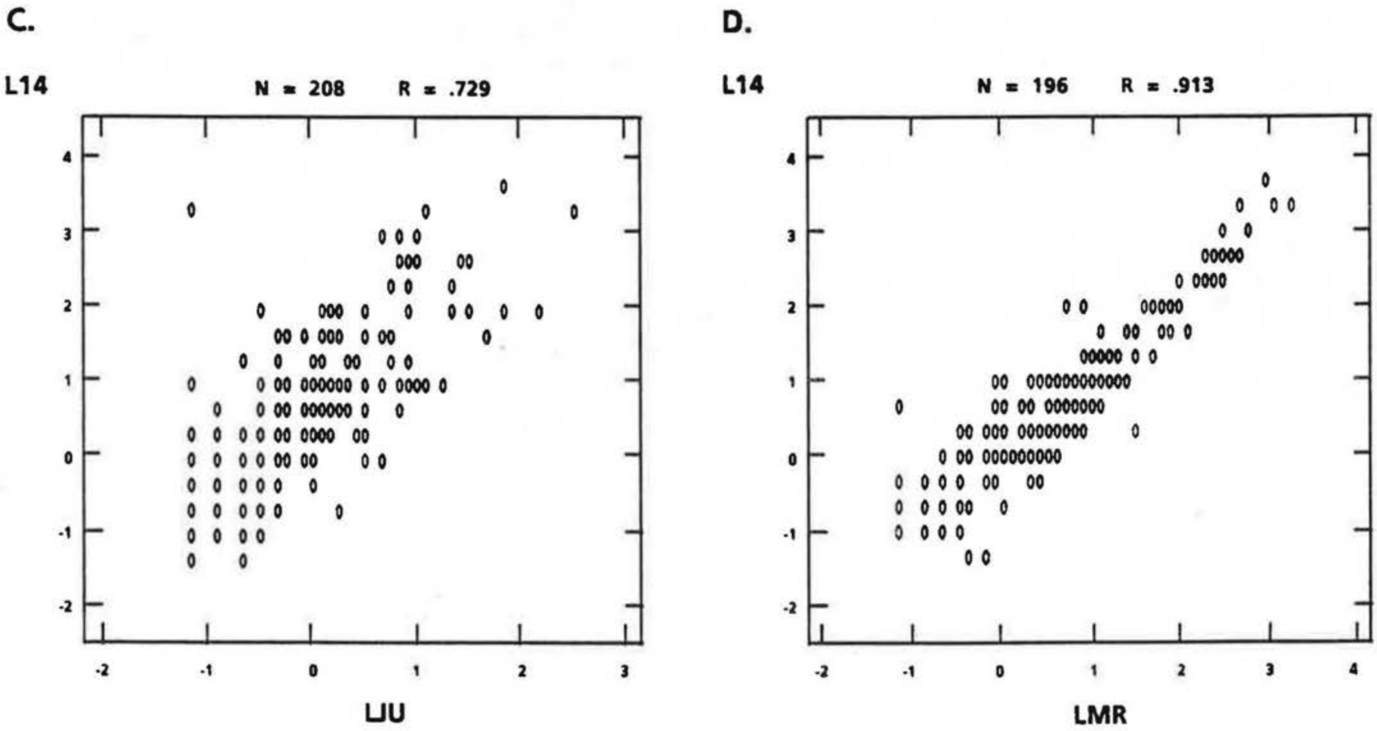


Figure 7. Logarithmic Transformation

Climate Zone Effects

Separate algorithms for each climate zone could have been based on separate linear regressions for each climate zone. The result of just such an analysis is presented in Tables 3. A - C. The crucial issue was whether to regard the slope of the regression line as a legitimate difference between climate zones. There were some clear differences between climate zones. The tendency for lower values to be found in Climate Zone 1 could have been utilized in predicting lower values on the average, but this raised the question, "does a specific result for a home in Climate Zone 1 properly indicate a lower annual average than the same result for a home in Climate Zone 2 ?" In order to test the multiplier apart from the level, data for December-through- February were edited. The high and low values were deleted from the data to create the same range of values for all climate zones. Values below 1.0 pCi./l. were deleted to compensate for the large number of low values in zone 1, and values above 6.5 pCi./l. were deleted to remove the higher values in zones 2 and 3. The result is shown in Table 4. We see that the differences between climate zones were reduced, and Climate Zone 2 moved from the highest to the lowest multiplier of the three zones. We concluded that if climate zones had any influence apart from coincidentally higher values, it was not detectable in the large variance.

Radon levels are thought to depend on the strength of the source in soil beneath the home, which is not expected to change with the seasons or with climatic factors. Clearly, the larger proportion of higher values in Zones 2 and 3 in this study should not be attributed to climatic factors without proof, although such factors might play a role. Even more suspect was the climatic effect on the slope of the regression line. While colder weather might have contributed to higher radon levels, particularly in winter months, we could not have separated the increase from the concurrent geological differences between Climate Zone 1 and the other two zones (12). We further conclude that each individual prediction benefits from the consideration of data from the whole study population without considering climate zones.

The correspondence of local heating degree-days per year to the geographically identified climate zone was poor for the sites that were retained in the study. A value for each site was determined individually. In Climate Zone 1 where the definition was "less than 6000" the mean value was 4872. For Climate Zone 2, nominally 6000 to 8000, the mean was 6005. Climate Zone 3, nominally "greater than 8000", had a mean of 7523.

Outliers

The overlapping exposures of the three-month detectors provided information on variability not available from independent measurements. Individual pairs were not deleted for undue leverage or as outliers but two cases were removed from the analysis because of poor agreement between successive detectors. One home had levels measured from 6.5 pCi./l. to 40 pCi./l. throughout the year, but the 14-month detector was read at 0.1 pCi./l. A second home had a reading of 82 pCi./l. for the period from April through June. This was contradicted by an average of 6.7 pCi./l. from March through May, and 6.5 pCi./l. from May through July. In a third case, a single value of 14.1 pCi./l. for June-through-August was deleted because of values of only 0.3 pCi./l. for May-through-July and 1.3 pCi./l. for July-through-September.

A group of sites was selected for having undue influence on the correlation coefficient in three or more three-month periods. This group of ten sites was then reviewed for unusual site characteristics. The group represented many of the highest annual averages in the study with a mean annual average of 17.5 pCi./l. We noted that four of the eight participants who reported installing radon mitigation measures prior to the study period appeared in this small outlier group. Three of the four had annual averages above the predicted values, the other one had high predictions. The most probable explanation remains that the large variance of higher values selectively placed the homes with high values in the outlier group. The participants having higher levels were also more likely to attempt mitigation. The results of mitigation are suggested in the differences between levels measured in the winter of 1986 and during the corresponding period in the study as shown in Table 6. The seemingly paradoxical reduction of measured levels while annual averages are higher than predictions is actually to be anticipated where the predictions are based on unseasonably low three-month values. A uniform reduction in levels all year long would not preferentially change the residuals.

Occupant Characteristics

Each participant was asked to estimate the time each resident spent in the home on typical workdays and weekends. These data were used to compute the total hours spent by occupants in each home per week. No correlation was found with radon levels. The distribution of this statistic was also roughly lognormal, and is shown in Figure 8. An interesting contrast was the total square feet of living area in each home. The distribution of home sizes in square feet of living area is shown in Figure 9. In both distributions, the probability of higher radon levels increased with the proportion of homes represented. The occupancy data provides a basis for estimating dose to the study population. The distribution of square-feet of living area per person is shown in Figure 10.

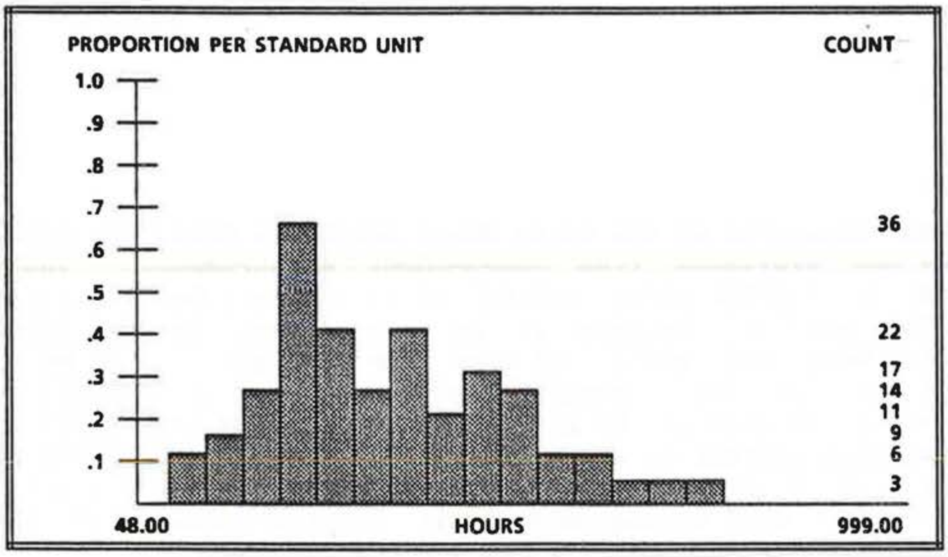


Figure 8. Hours Per Week

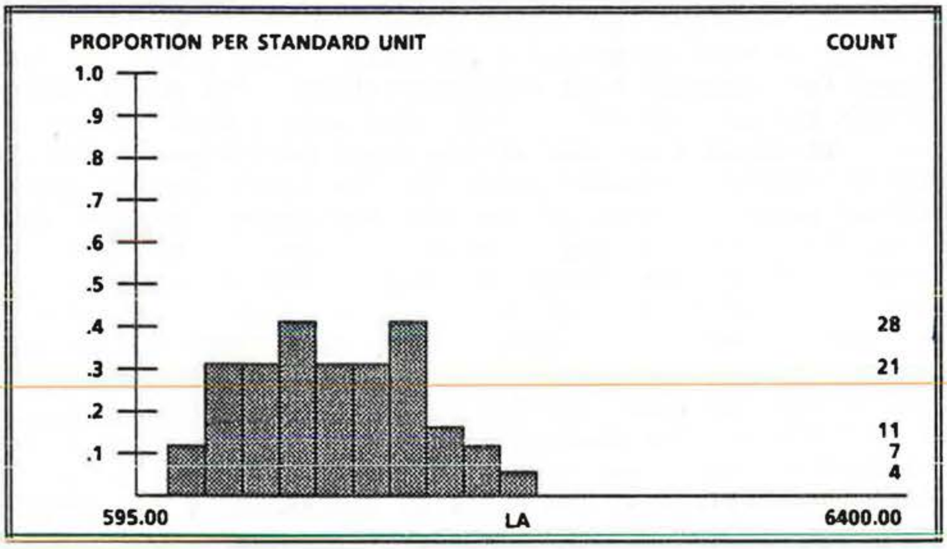


Figure 9. Total Living Area

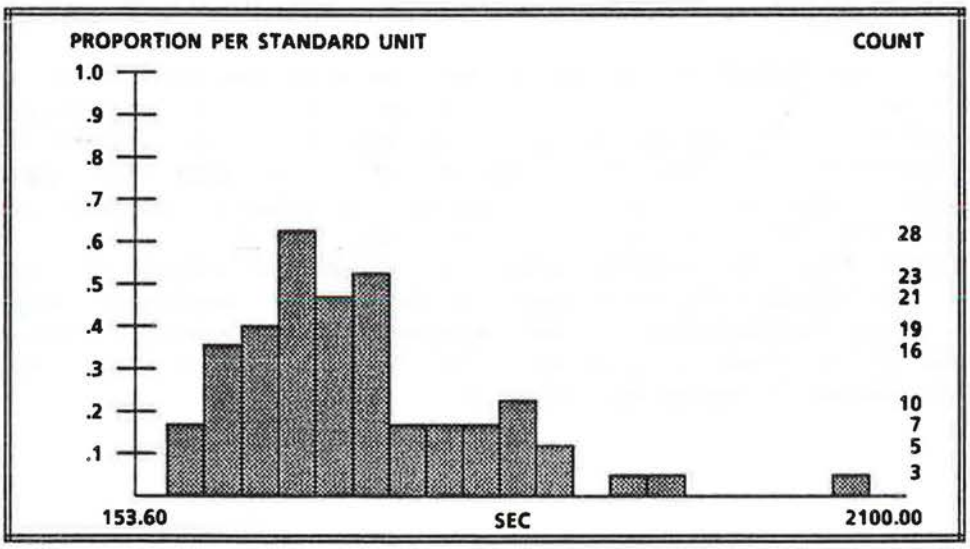


Figure 10. Living Area Per Person

Conclusion

The accuracy of annual radon level predictions based on three-month average measurements using passive alpha-track detectors is improved by seasonal corrections. The correspondence between three-month and annual averages is poor but generally linear for all monitoring seasons, and levels are lower by about one-half during the summer. Monitoring in the summer months was also less reliable. Little is known about the variation of residential radon levels from year to year, such that an advantage of annual average radon exposures in characterizing radon exposure in the home was assumed.

Robust methods of regression should be used in further studies of the data because the least-squares method of line fitting is unduly influenced by the outliers (12). Analyses of the individual radon time patterns found in participant's homes was beyond the scope of this report but could provide insight into the factors associated with those seasonal patterns that differed from the usual. Other consistent structure in the seasonal patterns might be discovered by comparing similar homes, where the variance is reduced for the group. The overlapping exposure periods provided a suggestive three-point smoothing of the time series at each site which also should be exploited in further studies.

Acknowledgments

The author is most appreciative of the expert advice provided throughout this study by Mr. Bradley D. Miller. We acknowledge the cooperation of all of the volunteers, and of numerous personnel in the various Electric Utilities who assisted in establishing communication essential to the completion of our common effort. Many thanks go to them, and to my wife and my son for their patient support.

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APPENDIX A

The linear regression method applied in this study fits a straight line to points obtained by plotting all of the fourteen-month readings against sets of matched three-month readings.

Let x_i represent any of the three-month readings, y_i the corresponding fourteen-month reading. The equation predicting the "annual" average y_i from a three-month reading x_i is:

$$(1) \qquad y_i = a + bx_i$$

The residuals d_i are then:

$$(2) \qquad d_i = y_i - (a + bx_i)$$

The values of a and b which minimize the sum of squares of the residuals are:

$$(3) \qquad b = \frac{\Sigma (x_i - \bar{x})(y_i - \bar{y})}{\Sigma (x_{\bar{k}} - x)^2}$$

$$(4) \qquad a = \bar{y} - b\bar{x}$$

Here, $\bar{x}$ = average of x_i, $\bar{y}$ = average of y_i. It remains to decide what values of d_i are "large." We can standardize the residuals d_i to values s_i. Then, if the x_i are normally distributed, the scale for s_i will be that of the standard deviation: 68% of the points should have s_i less than 1. We re-write (3) as:

$$b = \Sigma c_i y_i$$

We define c_i as the influence of the point "i" on the regression coefficient. The result is:

$$(5) \qquad c_i = \frac{(x_i - \bar{x})}{\Sigma (x_k - \bar{x})^2}$$

We may also re-write equation (1) as:

$$y_i = \sum_j h_{ij} y_j$$

$$(6) \qquad h_{ij} = \frac{1}{n} + \frac{(x_i - \bar{x})(x_j - \bar{x})}{\sum_k (x_k - \bar{x})^2}$$

Of the above coefficients, h_{ii} is defined as the leverage of point "i." Note that c_i and h_{ii} depend only on the x-values. The coefficient h_{ii} ranges in value from 0 to 1 and indicates which points have the most adverse effect on the fit.

We take the residuals and determine the standard error "s" as:

$$(7) \qquad s = \sqrt{\frac{\Sigma d_i^2}{n-2}}$$

Using this value we standardize the residuals:

$$(8) \qquad s_i = \frac{d_i}{s\sqrt{(1 - h_{ii})}}$$

There are two conditions for these standardized residuals to be interpreted on the standard error scale: the x's are assumed to be measured with negligible error and the residuals are independent of the mean. Both of these conditions fail in the present case. We use as a conservative measure of error the root-mean square difference, knowing the error tends to increase with the mean.

APPENDIX B

Once the linear regression method has been used to fit a best straight line to the data for a three-month period, its slope, m, and constant, b, are known. For that period, the equation is:

(9) $y = mx + b$

It then follows that for any point on the line:

(10) $x = (y-b)/m$

Using the mean value of the fourteen-month readings for y, a representative level for three-month readings is obtained for x. The process is simply repeated for each of the twelve linear regressions to plot the seasonal pattern through the year. In Figure 1, the three-month long periods are identified by the first month of the three. That is, "MAR" stands for the March-April-May period. The fourteen-month level is the constant "y".

Table 1.

ALGORITHMS

Months	Multiplier	Constant (pCi./1.)	Maximum Annual For 3 Months <0.3 (pCi./1.)	Total Number of Homes
Jan-Mar	0.8	0.4	0.5	225
Feb-Apr	0.9	0.0	0.6	225
Mar-May	1.1	-0.2	0.8	196
Apr-Jun	1.5	0.0	1.6	186
May-Jul	2.1	-0.2	1.2	194
Jun-Aug	2.1	0.3	2.1	208
Jul-Sep	1.7	0.2	2.1	209
Aug-Oct	1.5	0.0	1.2	212
Sep-Nov	1.2	-0.1	2.1	199
Oct-Dec	0.9	0.0	0.8	210
Nov-Jan	0.9	0.2	0.8	206
Dec-Feb	0.7	0.3	0.6	207

Table 2.

VARIABILITY

Months	Mean Square Residual	Mean Square Difference	R
Jan-Mar	2.2	2.3	0.867
Feb-Apr	1.3	1.4	0.957
Mar-May	1.5	1.5	0.948
Apr-Jun	2.4	2.7	0.860
May-Jul	2.4	3.0	0.844
Jun-Aug	3.4	3.8	0.647
Jul-Sep	3.1	3.3	0.730
Aug-Oct	1.9	2.3	0.907
Sep-Nov	1.6	1.7	0.933
Oct-Dec	1.4	1.5	0.947
Nov-Jan	2.1	2.1	0.885
Dec-Feb	2.1	2.5	0.880

Table 3A.

CLIMATE ZONE 1

Months	Multiplier	Constant (pCi./1.)	Total Number of Homes
Jan-Mar	0.7	0.2	80
Feb-Apr	0.7	0.2	82
Mar-May	0.7	0.3	73
Apr-Jun	0.8	0.5	80
May-Jul	1.1	0.4	73
Jun-Aug	0.8	0.7	85
Jul-Sep	0.8	0.6	85
Aug-Oct	0.9	0.4	84
Sep-Nov	0.9	0.3	77
Oct-Dec	0.7	0.2	81
Nov-Jan	0.6	0.4	81
Dec-Feb	0.6	0.3	79

Table 3B.

CLIMATE ZONE 2

Months	Multiplier	Constant (pCi./1.)	Total Number of Homes
Jan-Mar	0.9	-0.1	62
Feb-Apr	0.9	-0.1	63
Mar-May	1.0	-0.1	60
Apr-Jun	1.7	0.1	50
May-Jul	2.3	-0.4	56
Jun-Aug	2.0	0.8	58
Jul-Sep	1.8	0.1	56
Aug-Oct	1.4	0.3	62
Sep-Nov	1.2	0.0	58
Oct-Dec	0.9	-0.1	61
Nov-Jan	1.0	0.4	60
Dec-Feb	0.8	0.2	61

Table 3C.

CLIMATE ZONE 3

Months	Multiplier	Constant (pCi./1.)	Total Number of Homes
Jan-Mar	0.7	0.7	64
Feb-Apr	0.8	0.0	65
Mar-May	1.1	-0.3	63
Apr-Jun	1.5	0.1	56
May-Jul	2.2	0.3	65
Jun-Aug	2.3	0.8	64
Jul-Sep	1.6	0.6	66
Aug-Oct	1.7	0.1	66
Sep-Nov	1.2	0.0	64
Oct-Dec	0.8	0.2	68
Nov-Jan	0.8	0.3	65
Dec-Feb	0.7	0.7	67

Table 4.

REGRESSION COEFFICIENTS

CLIMATE ZONE	ALL HOMES	EDITED*
ONE	0.644	0.544
TWO	0.759	0.493
THREE	0.692	0.542

* Homes with 14-month readings between 1.0 and 6.5 pCi./1.

Table 5.

SUMMARY STATISTICS

Climate Zone	Number	Mean	G.M.	Maximum
1	91	1.5	1.09	6.5
2	64	4.0	2.41	30.9
3	70	3.5	1.8	25.1
Total	225	2.8	1.6	30.9

Table 6.

RESULTS OF RADON MITIGATION

Seasonal Radon Study

Mitigation Description	1986 Level pCi./1.	1988 Level pCi./1.	Climate Zone
AAHX	45.81	38.50	3
AAHX	66.62	3.50	3
AAHX	12.91	6.10	3
Filled Cracks in Basement Floor	35.08	15.50	3
Sub-slab Ventilation Fan	54.07	32.80	2
Walled Off Crawl Space & Isolated Basement	15.20	4.70	1

Radon 3-Month / 12-Month Study

RADON LEVELS

CLIMATE ZONE	ID #	14-MONTH (pCi./l.)	MAR-MAY	JUN-AUG	SEP-NOV	DEC-FEB
3	1	1.20	1.0	0.3	0.0	1.00
2	2	1.30	1.7	0.6	0.7	2.40
3	4	0.30	0.6	0.4	0.0	0.70
2	5	1.30	0.0	0.6	0.0	1.30
3	6	3.40	2.8	0.7	2.8	4.60
2	7	1.40	1.0	0.4	1.8	1.60
3	9	0.60	0.4	0.3	0.5	0.90
2	10	1.40	1.4	0.6	1.6	2.30
2	11	30.90	20.6	6.5	26.5	32.80
3	13	1.00	1.0	0.7	1.8	0.90
3	14	2.70	3.5	1.1	1.8	4.60
2	15	1.30	1.7	1.0	1.5	2.30
2	16	2.50	3.8	2.4	1.5	2.70
1	17	0.80	0.9	0.9	0.7	1.10
1	20	1.10	1.2	0.8	1.1	0.00
1	21	1.30	1.5	0.8	1.1	2.10
2	23	1.00	0.9	0.5	0.4	1.10
1	24	0.40	0.4	0.3	0.8	0.50
3	25	0.90	1.3	0.5	0.9	2.00
2	26	6.10	2.4	0.6	3.3	13.60
2	27	2.40	1.9	2.0	2.3	1.60
2	29	3.60	3.3	2.2	2.2	4.50
2	30	2.40	2.0	0.7	1.8	2.80
1	32	0.30	0.3	0.6	0.8	0.00
1	33	0.20	0.8	0.3	0.0	0.40
2	34	1.90	3.1	0.7	0.5	3.50
3	35	1.30	2.4	1.2	2.1	1.70
2	37	0.90	1.2	0.6	1.1	1.50
2	40	3.20	4.4	0.7	4.1	3.70
1	41	1.90	2.1	0.6	1.6	2.60
1	43	0.80	0.0	0.0	0.0	1.70
2	44	7.60	7.1	2.5	6.7	9.70
3	45	1.20	0.0	0.8	0.5	1.10
3	46	2.00	1.8	1.2	0.9	2.30
2	48	1.00	0.7	0.0	1.2	1.00
3	49	0.60	0.4	1.0	0.3	0.50
2	52	5.40	5.0	1.2	4.2	5.90
3	53	1.10	0.8	0.5	0.6	1.90
3	54	2.00	2.8	0.7	1.8	2.20
1	56	0.40	0.7	0.7	0.0	1.30
1	57	1.20	1.4	0.8	1.1	1.60
1	58	1.30	0.0	0.5	2.0	2.30
3	60	2.80	2.8	1.0	3.1	3.80
1	61	0.40	0.5	0.0	0.6	0.90
3	62	2.10	0.0	0.0	0.0	0.80
3	63	0.30	0.5	0.5	3.3	1.10
1	65	3.20	0.0	1.5	1.6	0.30

Radon 3-Month / 12-Month Study

RADON LEVELS

CLIMATE ZONE	ID #	14-MONTH (pCi./l.)	MAR-MAY	JUN-AUG	SEP-NOV	DEC-FEB
2	66	3.30	4.3	1.1	2.3	0.60
2	68	15.20	11.8	2.8	12.1	21.10
3	69	2.90	5.3	0.5	3.7	7.60
2	71	2.20	1.7	2.4	2.2	2.70
3	72	1.50	3.1	0.7	2.2	3.10
2	73	1.60	0.3	0.0	0.6	0.90
2	74	6.20	5.5	1.6	4.5	6.80
2	75	10.90	12.1	4.1	4.5	16.40
1	76	0.80	0.9	0.4	0.8	1.30
1	79	1.20	0.9	0.4	1.4	1.00
3	83	5.80	5.9	1.1	3.4	7.60
3	87	15.10	12.8	1.9	6.8	15.50
1	89	1.50	1.2	0.8	2.0	2.10
3	90	13.30	10.4	2.7	8.7	15.70
3	91	2.70	2.4	0.7	3.3	7.40
3	93	2.30	1.9	1.4	1.7	1.70
3	94	1.60	1.7	0.0	1.4	3.00
3	95	0.90	1.6	0.5	1.3	2.00
3	96	1.60	2.7	1.6	2.6	1.80
3	97	25.10	14.9	12.1	21.8	19.30
3	98	2.70	4.2	1.7	2.2	4.00
3	100	1.00	0.0	0.7	1.0	1.20
3	103	1.10	1.2	1.6	1.4	1.60
3	104	2.70	3.5	1.3	1.7	0.00
3	105	2.70	0.0	0.8	2.0	3.50
3	106	0.90	0.0	0.0	0.4	0.00
3	108	2.60	1.5	1.6	2.3	2.30
2	109	2.50	1.6	0.9	2.9	0.80
3	110	1.60	1.2	0.0	0.7	1.60
3	111	18.50	16.8	2.3	20.3	38.50
3	112	2.10	3.6	0.9	1.7	0.00
3	113	1.70	1.9	1.4	1.9	2.40
1	114	0.50	0.0	0.6	0.0	0.50
2	116	4.70	6.1	0.8	0.0	6.80
2	117	6.90	5.6	6.3	7.0	7.70
1	119	0.60	0.9	0.4	1.0	0.50
3	121	0.90	0.8	0.7	0.8	1.50
3	122	13.50	15.6	4.3	11.5	17.60
1	123	1.10	0.7	1.5	1.4	1.70
3	124	0.80	1.0	0.5	1.3	1.30
3	125	1.20	1.7	0.7	0.4	1.50
1	126	2.50	1.6	2.8	1.4	3.20
3	127	8.90	11.9	2.2	5.9	10.60
3	128	24.70	22.3	0.3	11.8	3.50
3	129	4.90	0.0	1.2	3.2	6.10
3	130	9.60	11.0	2.5	5.5	8.10
3	132	2.50	3.5	1.6	2.5	1.10
3	133	0.80	0.9	0.6	0.6	1.10
3	134	1.20	1.2	1.1	1.4	3.90

Radon 3-Month / 12-Month Study

RADON LEVELS

CLIMATE ZONE	ID #	14-MONTH (pCi./l.)	MAR-MAY	JUN-AUG	SEP-NOV	DEC-FEB
3	137	0.80	1.1	0.4	2.2	0.60
3	139	0.70	0.6	0.6	0.5	1.50
3	140	5.10	4.7	1.6	3.2	4.30
3	141	1.00	0.6	0.5	2.1	1.60
1	142	1.00	0.9	0.7	0.0	1.30
1	143	2.40	0.9	1.2	1.7	1.70
3	144	0.50	1.0	0.0	0.5	0.40
3	145	0.90	1.4	0.9	1.0	1.60
3	146	1.10	1.8	0.7	0.3	1.20
3	149	0.60	0.3	0.3	0.5	1.30
3	150	6.10	5.1	1.3	0.0	8.00
1	152	1.80	3.1	0.9	1.5	3.40
1	155	1.40	1.4	1.2	0.0	0.00
3	157	1.00	2.1	0.9	2.6	1.47
3	158	0.96	1.2	0.7	0.6	1.40
3	160	2.00	1.3	1.0	1.8	2.00
1	161	1.70	2.8	2.3	2.1	2.00
2	163	4.00	4.4	2.1	5.0	4.60
2	164	1.00	1.2	0.9	1.6	1.80
1	169	6.40	7.4	8.6	6.8	5.90
2	170	1.10	1.6	1.0	1.1	1.70
1	171	0.90	0.9	0.4	1.0	1.40
2	172	0.90	0.9	0.6	0.6	1.60
1	173	3.50	2.9	2.5	2.1	2.60
3	176	0.60	0.5	0.7	0.7	0.50
1	177	2.30	3.4	1.2	2.3	4.70
1	179	0.90	0.6	0.9	1.3	0.00
1	181	2.60	3.8	1.2	1.1	2.90
1	182	0.80	1.5	0.6	1.5	1.00
1	183	2.30	3.0	3.5	2.2	0.00
1	184	1.00	1.3	0.0	1.7	1.20
1	186	1.60	0.9	0.4	1.7	1.60
1	187	2.60	0.0	0.0	0.0	1.90
1	188	2.50	0.0	0.6	1.2	3.60
1	189	1.10	4.5	0.0	4.5	6.40
1	190	3.80	2.9	2.0	1.1	3.80
1	191	2.10	1.7	1.0	1.7	1.90
1	193	1.10	0.0	0.4	0.9	3.00
1	195	2.40	2.8	3.0	1.2	1.10
1	196	4.30	6.0	1.1	3.7	7.10
1	197	0.90	0.0	0.5	0.7	1.40
1	199	1.40	0.9	0.4	1.0	2.40
1	200	1.70	1.2	1.3	1.1	2.30
1	202	4.30	8.5	0.7	4.8	6.90
1	204	2.10	2.0	0.3	1.4	3.00
1	206	1.70	2.0	1.1	1.9	1.60
1	207	1.90	1.0	1.6	1.1	0.90
1	208	6.40	6.8	4.5	6.5	5.40
1	209	1.10	0.8	0.3	1.8	2.30

Radon 3-Month / 12-Month Study

RADON LEVELS

CLIMATE ZONE	ID #	14-MONTH (pCi./1.)	MAR-MAY	JUN-AUG	SEP-NOV	DEC-FEB
1	210	0.70	1.5	0.6	0.7	1.10
1	212	6.50	5.9	2.5	6.7	7.20
1	213	4.00	6.7	1.3	4.4	6.30
1	214	1.00	0.9	1.0	1.2	1.50
1	216	2.50	0.0	0.7	1.6	4.10
1	217	0.30	0.5	0.3	0.4	1.00
1	223	1.80	1.6	0.6	1.6	2.00
1	224	0.80	1.1	0.7	0.6	1.10
1	225	0.60	0.0	0.3	0.9	1.00
1	227	0.50	0.4	0.4	0.4	0.00
1	229	0.80	0.7	1.0	0.0	1.10
1	230	2.50	0.0	2.3	2.0	3.00
1	231	2.30	0.0	1.0	1.4	2.50
2	233	2.10	1.3	1.9	1.1	0.00
2	234	0.50	0.3	0.4	4.8	1.00
2	235	1.60	1.8	0.0	0.0	3.00
2	238	1.10	0.9	0.4	1.1	2.00
2	239	2.30	2.6	1.3	2.8	2.40
2	240	0.90	0.9	0.8	1.1	0.00
2	241	1.80	1.4	1.0	1.4	2.80
2	244	4.50	4.1	5.1	4.4	4.10
2	246	0.70	0.8	0.7	0.0	0.90
2	247	1.90	0.9	0.4	3.7	1.60
2	248	2.20	1.7	2.0	1.2	1.50
2	249	3.70	3.6	1.0	2.4	6.30
2	250	8.60	9.6	3.9	5.3	6.80
2	251	1.70	2.4	1.3	2.0	2.60
2	252	1.80	2.3	1.3	2.7	1.90
2	254	1.20	2.0	0.9	1.3	2.60
2	255	2.20	2.8	0.8	1.8	2.20
2	256	2.70	2.6	1.3	3.2	2.20
2	257	1.10	1.5	0.7	0.7	2.10
2	259	0.30	0.3	0.5	0.0	0.60
2	260	0.90	1.1	0.3	0.7	1.20
2	261	1.30	0.0	0.7	0.8	2.10
1	262	1.60	1.7	0.6	1.6	2.80
1	263	1.30	2.2	0.3	0.7	2.50
2	266	1.50	1.6	0.4	1.0	1.60
2	271	1.60	2.1	1.3	1.3	1.20
2	272	2.50	2.3	1.4	3.5	2.00
3	276	5.40	2.0	3.9	5.9	6.80
3	277	12.60	11.3	4.1	9.7	14.80
2	280	8.10	8.7	2.4	7.6	9.50
1	281	0.60	0.5	0.3	0.6	0.60
1	282	0.90	1.2	0.6	0.8	0.90
1	283	0.30	0.0	0.3	0.0	0.80
2	284	6.10	0.0	0.0	0.4	0.00
1	285	0.60	0.5	0.3	0.7	0.90
2	286	0.80	1.2	0.3	0.3	1.40

Radon 3-Month / 12-Month Study

RADON LEVELS

CLIMATE ZONE	ID #	14-MONTH (pCi./l.)	MAR-MAY	JUN-AUG	SEP-NOV	DEC-FEB
2	287	25.70	27.0	3.0	15.4	37.50
2	289	0.80	0.0	0.0	0.7	1.10
1	292	0.40	0.5	0.3	0.0	0.00
1	294	0.50	0.0	1.3	0.6	0.00
1	298	0.42	0.0	0.4	0.0	0.00
1	300	0.30	0.4	0.3	0.9	0.40
1	303	0.50	0.4	0.7	1.7	0.70
1	304	0.40	0.3	0.4	0.7	0.50
1	305	0.30	0.6	0.0	0.0	0.00
1	307	0.50	0.6	0.7	0.7	0.30
1	308	0.20	0.7	0.5	0.0	0.00
1	309	0.50	0.0	0.3	0.9	0.50
1	311	0.40	0.0	0.3	0.0	0.40
2	315	10.48	13.6	2.6	0.0	14.60
1	318	2.90	2.4	1.4	3.4	3.10
1	320	0.40	1.0	0.3	0.9	0.40
3	321	0.80	0.0	0.6	0.3	1.30
1	322	2.00	1.0	0.7	1.3	4.00
2	324	11.60	14.4	2.3	8.6	12.30
3	325	1.00	0.6	0.8	0.0	1.49
3	326	0.30	0.4	0.3	1.2	1.00
3	328	0.80	0.6	0.0	0.0	1.90
3	329	0.70	1.3	0.5	1.4	0.90
1	330	0.60	0.0	0.4	0.6	0.00
1	332	0.80	1.9	0.7	0.5	0.90
1	334	0.50	0.3	0.5	0.3	0.40
1	335	0.80	0.5	0.8	1.2	1.20
3	336	0.90	0.7	1.0	0.8	1.30
1	338	0.90	1.4	1.7	2.0	0.40
1	377	0.90	0.7	1.9	1.3	0.70
2	382	5.00	8.3	0.9	3.7	6.80

RADON

3-MONTH / 12-MONTH

FIELD STUDY

SITE AUDIT REPORT

RONSON MANAGEMENT CORPORATION

September 28, 1987

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SITE AUDIT REPORT

RADON 3-MONTH / 12-MONTH FIELD STUDY

INTRODUCTION

The purpose of the 3-month / 12-month study is to determine a statistical relationship between year-long averaged residential radon levels and three-month averaged levels measured at any time of year at the same sites. A seasonal pattern is anticipated, to be verified and quantified by the field measurements using passive, integrating detectors. It is possible that by placing a detector for any three-month period the year-long average can be predicted from the result. The accuracy of such predictions is to be tested. Although a three-month wait for results is long, it is better than a year or more. Exposures shorter than three months are expected to show increasingly larger fluctuations limiting further reduction in the exposure time.

Site audits have been done as a part of the on-going 3-month/12-month study. 322 homes were selected and the initial detector distributions made. Sixteen of these sites were lost to the study in the first three months. A site audit of each of the remaining 306 homes was made to characterize the selection of homes included in the study: the homes were not selected on the basis of site audits. The selection was not randomized. The main goal of the audits was to record information on factors which could have major effects on the seasonal pattern of radon levels in the homes.

It is not known if specific kinds of homes have different seasonal patterns. Thus, the choice of factors was made on very general principles. Some factors are thought to influence the level of radon, and may in turn influence the seasonal pattern. The climate is such a factor. Otherwise, the seasonality is hoped to be independent of radon level. This result is to be checked in the final analysis. The specific items were selected to be reasonable and most likely to be significant, yet obtainable without visiting the sites. The end result was a database with 50 individual items on the site and the occupants of the site.

Because another goal of the study design was to minimize the inconvenience to participants and avoid all invasion of their privacy, no visits were made to the sites by the contractor. Several site audits were made by the utility representative in Idaho Falls, Idaho that involved visits. A "drive by" of several homes was made in Cheney, Washington. The data set for each site is referred to as a site audit even though no visit was made to the site.

Site specific information was gathered from three main sources: questionnaires mailed to the participants, weatherization program files kept by the utilities, and soil survey maps compiled by the U.S. Department of Agriculture. As a result, the data presented does not have independent validation, and is repeated from original sources. The factors supporting the reliability of the data are discussed briefly under "data sources" in this report.

The broad factors identified for these site audits were climate zone, occupant characteristics, house construction characteristics, and the extent of participation in the BPA weatherization programs. Soil and climate information was also gathered. This information applies to geographic regions rather than individual sites. The sample of sites is to be subdivided in the final analysis according to climate zone. The influence of other factors will be analyzed as required by the radon data, and the methods to be used is dependent on the outcome of the study.

It is emphasized that these influences on seasonality are hypothetical. The seasonal pattern itself is hypothetical, and anticipation of results was avoided. It is desirable to have a range of site characteristics in the sample because it is possible that significant statistical distribution differences do exist for radon levels selected for certain characteristics. We are interested in the aggregate error introduced into predictions of year-long averages based on three-month measurements. The inclusion of a variety of sites tends to include representative variability. It is not anticipated that this limited, non-random sample will evaluate individual characteristics. On the other hand, it may be possible to associate atypical radon levels and patterns with certain characteristics in retrospect.

An additional task of the study was to locate each site by range and township in order to include the sites in the larger data base of radon monitoring results from the BPA weatherization program.

A secondary objective of the site audits was to identify sites with previously measured radon levels. We sought to record changes which may have influenced the levels since the earlier measurements were made. Relevant to this objective, we note that the sites selected included 83 sites with previously reported results. Seven of these had made reported changes. Four of these were the installation of air-to-air heat exchangers as radon mitigation. As these numbers show, we found little interest on the part of volunteers to do "before" and "after" monitoring. Most of our participants had elected to monitor their home after weatherizing, and very few had made efforts to reduce the radon levels. There were no coincidental home modifications reported for the previously monitored group.

DATA SOURCES

Site Locations. For those participants with utility weatherization files, the range, township, and section were requested from the utility. In most cases, however, the section number was not available. The original determination of location was based on a variety of secondary sources: special service maps kept by the utility, and USGS topographical maps. Participants without utility files were located by their addresses. In these cases, street and road maps were used in conjunction with USDA soil survey maps to identify the soil type at the same time range, township, and section were recorded. In a small number of cases, the address permitted only an approximate location from the post office box number. The section number was not known. For several sites, USDA soil survey maps were not available and the site was located approximately on a USGS base map.

Occupancy. The source of all occupancy data was a questionnaire sent to all prospective participants. In 13 cases the occupancy information was declined, and 6 of these have dropped from the program. The information requested was the total number of occupants, their ages, and the hours each spent in the home during a typical week. The hours in the home for each family member were estimated by the person filling out the form. Approximately 14% of the responses to this last question could not be interpreted rationally. Confusion between hours spent in the home as opposed to hours worked or spent in school was apparent. The hours in the home are reported in a separate table, and will be summed for the final report. The number of occupants and their ages are complete except where the information as refused.

House Characteristics. All sites were characterized by foundation type, house size, and heating fuel type. The specific items are the number of floors above grade, the basement floor area in square feet, the fraction of the basement wall perimeter below grade, and the depth at the deepest point. The crawlspace area and additional slab area in square feet are also recorded, and the total square feet of living space as well. Whether the heating system uses ducted and/or forced air heat distribution is recorded. The principle wall construction as asked for. In most cases this is wood frame construction. In some cases, exterior finish was noted and recorded, but the information is considered incomplete. For three of the cooperating utilities (Cascade Locks, Cheney, and Springfield) the information was recorded directly from files by Ronson. The other utilities filled out the site audit forms and returned them to us by mail. The participants without weatherization files were sent separate questionnaires. These asked house characteristics questions in addition to the occupancy questions, and were returned by mail. 17 questionnaires were not returned, and 7 of these subsequently dropped from the program.

A listing of combustion appliances, air conditioning and ventilating devices was requested, but most utility files had incomplete information on record. Therefore, the presence and use of fireplaces, woodstoves, and air conditioning are noted where found, but the reporting rate for any of these devices is unknown.

Weatherization. 174 participants have utility sponsors. Only these could be evaluated for participation in a BPA weatherization program. Many of these are nominally weatherization program participants, but have no house-tightening measures installed. Some had not been audited. For those with weatherization files, the measures selected were the measures previously assigned values for computing a "composite" radon concentration: window treatments (including sliding doors), window and door weather stripping, wall blown-in insulation, and caulking. These were identified as house tightening measures by BPA in the Indoor Air Quality Procedures, October, 1984. The percentage added at each site is given. It is to be noted that other house tightening measures may be in place, but not recorded because they were installed outside of a weatherization program. As a result, the total degree of house tightening is not shown. We only record the changes made to decrease infiltration from a previous (undetermined) level. Also recorded if the home had been previously monitored for radon: the level found, and what measures, if any, had been taken to reduce radon levels.

Soil. The soil texture, drainage, permeability, and the existence of hardpan, bedrock, or permeable sub-surface layers were obtained from Soil Survey maps published by the U.S. Department of Agriculture. These maps vary in age from a 1964 study of Walla County to a 1983 report for Multnomah County. One site in each state of Oregon, Washington, and Idaho was in an area not covered by USDA maps in addition to 10 sites in the service area of Springfield, Oregon where data was not yet published. Only general regional soil maps were available for sites in Lincoln, Missoula, and Ravalli, Montana.

The soil texture and drainage are non-numerical classifications. Permeability is classed in intervals, the units being inches per hour for water migration. The numbers tabulated under "perm" are midpoints for the nominal ranges, e.g. 1.3 corresponds to moderate permeability. Older USDA soil surveys did not report numerical values for soil permeability.

"Ponding" and "snow cover" columns tabulate the responses to questionnaire items "Does water accumulate or stand for more than two days at a time on unpaved ground or lawns near where you live?" and "Does snow cover the ground in your area for more than two months of the year?" These questions were asked as a check on the weather and soil data obtained from maps. As noted, these map data are for conditions prevalent in the geographical area, and the conditions at the site can be different.

The heating degree-days (HDD) values correspond to the nearest weather station to the site. Again, where the site was sponsored by a utility, the HDD reading was supplied by the utility and corresponds to the value used for computation in the weatherization program. In all other cases, the data was supplied by Ronson. The heating degree-days (HDD) and precipitation data were obtained from Climates of the States, Third Edition (1985), NOAA.

RESULTS

The results of the site audits are presented in five tables attached to this report titled "Location, Climate, and Soil", "Occupancy and Ventilation", "Construction", "Weatherization", and "Hours Spent in the Home".

Of the 306 sites, 130 are in Climate Zone 1, 85 are in Climate Zone 2, and 91 are in Climate Zone 3. Three of the sites are in multi-family residences, one with four, one with six, and one seven units. There are no sites in buildings with eight or more units. 199 homes have basements. Ten homes are of masonry construction; one is a log home; the remainder are of wood frame construction.

The number of occupants ranges from one to nine. 136 homes have occupants under 18 years of age. 96 homes have installed house tightening measures. Of all single family dwellings, 26 are less than 1000 square feet and 18 are over 3000 square feet in size.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO		T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
3 IF 1	ID	2 N	37 E	7995	10	SILT LOAM	WELL	1.30		.F.	.T.
3 IF 4	ID	2 N	37 E	7995	10	SILT LOAM	WELL	1.30		.F.	.T.
3 IF 141	ID	2 N	37 E	7995	10	SILT LOAM	WELL	1.30		.F.	.T.
3 IF 156	ID	2 N	37 E	7995	10	SILT LOAM	WELL	1.30		.F.	.T.
3 IF 326	ID	2 N	37 E	7995	10	SILT LOAM	WELL	1.30		.T.	.T.
3 IF 329	ID	2 N	37 E	7995	10	SILT LOAM	WELL	1.30		.F.	.T.
3 IF 25	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V. PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 46	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V. PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 47	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V. PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 53	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 54	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 60	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 72	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 137	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 138	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.RAPID PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 139	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 140	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM.LAYER BELOW 23 IN.	.F.	.T.
3 IF 146	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V. PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 150	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 151	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.RAPID PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 157	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.F.	.T.
3 IF 321	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM. LAYER BELOW 23 IN.	.T.	.T.
3 IF 325	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERMEABLE LAYER BELOW 23 IN.	.F.	.T.
3 IF 327	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V.PERM.LAYER BELOW 23 IN.	.F.	.T.
3 IF 328	ID	2 N	38 E	7995	10	LOAM	WELL	1.30	V. PERM. LAYER BELOW 23 IN.	.F.	.T.
3 NI 176	ID	3 N	2 E	5802	11	SILT LOAM	S.POOR	0.40		.F.	.F.
3 NI 178	ID	36 N	5 W	5429	13			0.00		.F.	.F.
3 KH 93	ID	48 N	5 W	6882	45	STONY CLAY	WELL	1.30	BASALT ORIGIN	.F.	.T.
3 KH 9	ID	49 N	4 W	6882	27	SILT LOAM	WELL	0.04	GNEISS & SCHIST BEDROCK	.T.	.T.
3 KH 6	ID	50 N	4 W	6882	22	GRAV. SAND L	S. EXCESS	20.00	GLACIAL OUTWASH	.F.	.T.
3 KH 13	ID	50 N	4 W	6882	27	SANDY L	WELL	4.00	WEATHERED GNEISS BEDROCK 40-60 IN.	.T.	.T.
3 KH 14	ID	50 N	4 W	6882	22	SILT LOAM	WELL	4.00		.F.	.T.
3 KH 45	ID	50 N	4 W	6882	22	SILT LOAM	WELL	1.30	GNEISS AND METAMORPHIC BEDROCK	.T.	.T.
3 KH 62	ID	50 N	4 W	6882	22	SILT LOAM	WELL	1.30	GNEISS AND METAMORPHIC BEDROCK	.T.	.T.
3 KH 63	ID	50 N	4 W	6882	22	SILT LOAM	WELL	1.30	GNEISS AND METAMORPHIC BEDROCK	.T.	.T.
3 KH 98	ID	50 N	4 W	6882	22	GRAV SAND L	S. EXCESS	20.00	GLACIAL OUTWASH	.F.	.T.
3 KH 129	ID	50 N	4 W	6882	22	GRAV SAND L	S. EXCESS	20.00	GLACIAL OUTWASH	.F.	.T.
3 KH 130	ID	50 N	4 W	6882	22	GRAV/SAND L	S. EXCESS	20.00	GLACIAL OUTWASH	.F.	.T.
3 KH 87	ID	50 N	5 W	6882	22	GRAV. SAND L	S. EXCESS	20.00	GLACIAL OUTWASH	.F.	.T.
3 KH 104	ID	50 N	5 W	6882	24	GRAV SILT	WELL	1.30		.T.	.T.
3 KH 69	ID	51 N	4 W	6882	24	F. GRAV SILT	WELL	1.30	GLACIAL OUTWASH	.F.	.T.
3 KH 49	ID	51 N	5 W	6882	35	SILT LOAM	WELL	13.00		.F.	.T.
3 KH 111	ID	52 N	4 W	6882	27	GRAV SILT L	WELL	1.30	GLACIAL OUTWASH MANTLED BY LOESS/ASH	.F.	.T.
3 KH 128	ID	52 N	4 W	6882	27	GRAV SILT L	WELL	1.30	GLACIAL OUTWASH MANTLED BY LOESS/ASH	.F.	.T.
3 KH 118	ID	53 N	3 W	6882	27	GRAV SILT L	WELL	4.00		.F.	.T.
3 XH 149	ID	9 S	23 E	6704	9	LOAM	WELL	1.30		.F.	.F.
3 XH 133	ID	10 S	22 E	6704	9	SILT LOAM	WELL	1.30		.F.	.T.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO	T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
3 XH 145 ID	10 S	22 E	6704	9	SILT LOAM	WELL	1.30		.F.	.T.
3 XH 323 ID	10 S	22 E	6704	9	SILT LOAM	WELL	1.30	HIGH WATER TABLE IN SUMMER	.T.	.T.
3 XH 132 ID	10 S	23 E	6704	9	LOAM	WELL	1.30		.F.	.F.
3 XH 134 ID	10 S	23 E	6704	9	SILT LOAM	MOD.WELL	0.40		.F.	.T.
3 XH 135 ID	10 S	23 E	6704	9	LOAM	WELL	1.30		.F.	.T.
3 XH 144 ID	10 S	23 E	6704	9	F.SAND LOAM	S.POOR	4.00	HIGH WATER TABLE IN SUMMER	.F.	.T.
3 XH 158 ID	10 S	23 E	6704	9	SANDY LOAM	S.POOR	6.30	HIGH WATER TABLE IN SUMMER/VAR.SOI	.F.	.T.
3 XH 159 ID	10 S	23 E	6704	9	SANDY LOAM	S.POOR	6.30	HIGH WATER TABLE SUMMER/V.SOILS	.F.	.T.
3 XH 160 ID	10 S	23 E	6704	9	LOAM F. SAND	WELL	6.30		.F.	.T.
3 XH 265 ID	10 S	23 E	6704	9	SANDY LOAM	S.POOR	4.00	HIGH WATER TABLE IN SUMMER	.F.	.T.
3 XH 336 ID	10 S	23 E	6704	9	SANDY LOAM	S.POOR	6.30	HIGH WATER TABLE SUMMER/V.SOILS	.F.	.T.
3 XH 136 ID	11 S	23 E	6704	9	CLAY LOAM	WELL	0.60		.F.	.T.
3 RC 127 MT	2 N	20 W	7303	16	GRAV.SILT L.	WELL	0.00		.F.	.F.
3 RC 86 MT	3 N	21 W	7303	16	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 RC 106 MT	6 N	20 W	7253	16	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 RC 108 MT	6 N	20 W	7253	16	GRAV.SILT L.		0.00		.F.	.T.
3 RC 125 MT	7 N	20 W	7253	16	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 RC 100 MT	7 N	21 W	7253	16	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 RC 88 MT	10 N	19 W	7570	16	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 ME 90 MT	10 N	20 W	7839	12	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 RC 102 MT	10 N	20 W	7570	16	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 ME 105 MT	10 N	20 W	7839	12	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 ME 122 MT	10 N	20 W	7839	12	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 ME 277 MT	10 N	20 W	7839	12	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 ME 276 MT	11 N	20 W	7839	12	GRAV.SILT L.	WELL	0.00		.T.	.T.
3 ME 83 MT	12 N	17 W	7839	12	GRAV.SILT L.	WELL	0.00		.T.	.T.
3 ME 91 MT	13 N	20 W	7839	12	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 ME 112 MT	15 N	21 W	7839	12	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 FK 124 MT	27 N	19 W	8631	13	FINE SAND	S. EXCESS	4.00		.F.	.T.
3 FK 95 MT	27 N	20 W	8361	13	FINE SAND	S. EXCESS	4.00		.F.	.T.
3 FK 97 MT	28 N	20 W	8361	13	FINE SAND	S. EXCESS	4.00		.F.	.T.
3 FK 103 MT	29 N	21 W	8361	13	FINE SAND	S. EXCESS	4.00		.T.	.T.
3 FK 12 MT	29 N	21 W	8361	13	FINE SAND	S. EXCESS	4.00		.F.	.T.
3 FK 35 MT	29 N	21 W	8361	13	FINE SAND	S. EXCESS	4.00		.F.	.T.
3 FK 110 MT	30 N	21 W	8361	13	FINE SAND	S. EXCESS	4.00		.T.	.T.
3 GC 84 MT	33 N	6 W	9028	13	SAND	WELL	1.30	HILLSIDE SHALE BEDROCK	.F.	.T.
3 GC 99 MT	33 N	6 W	9028	13	SAND	WELL	1.30	SHALE BEDROCK	.F.	.T.
3 GC 101 MT	33 N	6 W	9028	13	SAND	WELL	1.30	SHALE BEDROCK	.F.	.T.
3 GC 113 MT	33 N	6 W	9028	13	SAND	WELL	1.30	SHALE BEDROCK	.F.	.F.
3 GC 120 MT	33 N	6 W	9028	13	SAND	WELL	1.30	SHALE BEDROCK	.F.	.T.
3 LE 96 MT	35 N	27 W	8424	19	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 LE 94 MT	36 N	26 W	8424	19	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 LE 121 MT	36 N	27 W	8424	19	GRAV.SILT L.	WELL	0.00		.F.	.T.
3 LE 92 MT	37 N	27 W	8424	19	GRAV.SILT L.	WELL	0.00		.F.	.T.
1 NO 77 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.T.	.F.
1 NO 79 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 81 OR	1 N	1 E	4681	50	LOAM	WELL	1.30		.F.	.F.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO	T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
1 NO 169 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 171 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 177 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 183 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 185 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 186 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 187 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 188 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 189 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 190 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 191 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 193 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 195 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 196 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 197 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 199 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 200 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 202 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 203 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.T.	.F.
1 NO 204 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 206 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 215 OR	1 N	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 231 OR	1 N	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 377 OR	1 N	1 E	4691	50	SILT LOAM	S.POOR DR.	0.40		.F.	.F.
1 NO 80 OR	1 N	2 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 82 OR	1 N	2 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 181 OR	1 N	2 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 182 OR	1 N	2 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 184 OR	1 N	2 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 213 OR	1 N	2 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 216 OR	1 N	2 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 224 OR	1 N	2 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 318 OR	1 N	2 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 227 OR	1 N	2 W	4827	45	SILT LOAM	S.POOR	1.30		.F.	.F.
1 NO 226 OR	1 N	3 W	4827	45	LOAM	MOD. WELL	0.40		.T.	.F.
1 CL 152 OR	2 N	7 E	4943	35	F.SANDY LOAM	WELL	4.00		.F.	.F.
1 CL 153 OR	2 N	7 E	4943	35	F.SANDY LOAM	WELL	4.00		.T.	.F.
1 CL 154 OR	2 N	7 E	4943	35	F.SAND LOAM	WELL	4.00		.T.	.F.
1 CL 155 OR	2 N	7 E	4943	35	F.SANDY LOAM	WELL	4.00		.T.	.F.
1 NO 209 OR	3 N	2 W	5226	61	SILT LOAM	MOD. WELL	0.40		.T.	.F.
2 MF 2 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.F.
2 MF 7 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.F.
2 MF 15 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.F.
2 MF 34 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.F.
2 MF 40 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.F.
2 NO 243 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	0.00	BEDROCK 8-20 FT.	.F.	.F.
2 NO 246 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.F.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO	T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
2 NO 257 OR	5 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.T.
2 MF 70 OR	6 N	35 E	4822	16	COBBLY LOAM	EXCESS	20.00	BEDROCK 8-20 FT.	.F.	.T.
1 NO 76 OR	1 S	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 194 OR	1 S	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 207 OR	1 S	1 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 223 OR	1 S	1 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 225 OR	1 S	1 E	4691	50	SILT LOAM	S.POOR	0.13		.T.	.F.
1 NO 228 OR	1 S	1 E	4415	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 230 OR	1 S	1 E	4691	50	SILT LOAM	S.POOR	0.13		.T.	.F.
1 NO 330 OR	1 S	1 E	4415	50	SILT LOAM	S. POOR	0.40	TILL PAN	.F.	.F.
1 NO 180 OR	1 S	2 E	4691	55	SILT LOAM	S. POOR	1.30	DEPTH TO HARD PAN VARIES	.F.	.F.
1 NO 198 OR	1 S	2 E	4691	50	SILT LOAOM	WELL	1.30		.F.	.F.
1 NO 229 OR	1 S	2 E	4691	55	SILT LOAM	S.POOR	1.30	DEPTH TO HARD PAN VARIES	.F.	.F.
1 NO 263 OR	1 S	2 E	4691	50	LOAM	WELL	1.30		.F.	.F.
1 NO 217 OR	1 S	3 E	4691	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 214 OR	1 S	1 W	4827	50	SILT LOAM	MOD.WELL	0.13		.F.	.F.
1 NO 322 OR	1 S	1 W	4691	50	SILT LOAM	MOD. WELL	0.13		.F.	.F.
1 NO 331 OR	1 S	1 W	4827	45	SILT LOAM	S. POOR	0.40		.T.	.F.
1 NO 333 OR	1 S	1 W	4827	45	SILT LOAM	MOD. WELL	0.13		.F.	.F.
1 NO 338 OR	1 S	1 W	4691	50	SILT LOAM	MOD. WELL	0.13		.T.	.F.
1 NO 212 OR	1 S	4 W	4827	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 179 OR	2 S	1 E	4415	50	SILT LOAM	WELL	1.30		.F.	.F.
1 NO 335 OR	2 S	3 E	5030	50	SILT LOAM	MOD. WELL	0.13		.T.	.F.
1 NO 208 OR	3 S	2 W	4827	45	SILT LOAM	S.POOR	1.30	HIGH WATER TABLE W.&SPG.	.F.	.F.
1 NO 210 OR	4 S	1 E	4415	45	SANDY LOAM	S. EXCESS	4.00		.T.	.F.
1 NO 218 OR	7 S	3 W	4974	45	SILT LOAM	S. POOR	0.40		.T.	.F.
2 NO 172 OR	8 S	17 E	6633	11			0.00		.F.	.F.
1 SS 21 OR	17 S	2 W	4799	46			0.00		.F.	.F.
1 SS 61 OR	17 S	2 W	4799	46			0.00		.F.	.F.
1 SS 64 OR	17 S	2 W	4799	46			0.00		.F.	.F.
1 SS 24 OR	17 S	3 W	4799	46			0.00		.F.	.F.
1 SS 33 OR	17 S	3 W	4799	46			0.00		.T.	.F.
1 SS 50 OR	17 S	3 W	4799	46			0.00		.F.	.F.
1 SS 57 OR	17 S	3 W	4799	46			0.00		.F.	.F.
1 SS 270 OR	17 S	3 W	4799	46			0.00		.F.	.F.
1 SS 56 OR	18 S	2 W	4799	46			0.00		.F.	.F.
1 SS 17 OR	18 S	3 W	4799	46			0.00		.T.	.F.
1 NW 332 WA	1 N	4 E	5224	45	SILT LOAM	WELL	1.30		.T.	.F.
1 NW 173 WA	2 N	1 E	5026	45	GRAV. LOAM	S.EXCESS	1.30		.F.	.F.
1 NW 175 WA	2 N	1 E	5026	45	GRAV. LOAM	S.EXCESS	1.30		.F.	.F.
1 NW 262 WA	2 N	2 E	5026	45	GRAV. LOAM	S.EXCESS	1.30		.F.	.F.
2 NW 234 WA	7 N	35 E	4807	14	SILT LOAM	MOD.WELL	1.30	LAKE DEPOSIT 3 TO 4 FT. DEEP	.F.	.F.
2 NW 247 WA	7 N	35 E	4807	14	SILT LOAM	MOD.WELL	1.30	LAKE DEPOSITS 3 TO 4 FT. DEEP	.F.	.F.
2 NW 233 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.T.
2 NW 235 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 236 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 237 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO	T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
2 NW 238 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.T.
2 NW 239 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 240 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 241 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 242 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 244 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 245 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.T.
2 NW 248 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.T.
2 NW 249 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 250 WA	7 N	36 E	4807	16	GRAV.SILT L.	EXCESS	4.00	VERY PERM. GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 251 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 252 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.T.
2 NW 253 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 254 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 255 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 256 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM. GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 258 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.T.
2 NW 259 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 260 WA	7 N	36 E	4807	16	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAV.BELOW 13 IN.	.F.	.T.
2 NW 261 WA	7 N	36 E	4807	14	GRAV.SILT L.	EXCESS	4.00	V.PERM.GRAVEL BELOW 13 IN.	.F.	.F.
2 NW 284 WA	9 N	28 E	4700	6			0.00		.F.	.F.
1 LC 119 WA	12 N	1 E	5423	50	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 28 WA	12 N	3 E	5423	50	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 38 WA	12 N	3 E	5423	70	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 114 WA	12 N	4 E	5664	70	SILT LOAM	WELL	1.30		.T.	.F.
1 LC 123 WA	12 N	2 W	5423	50	SILT LOAM	WELL	0.40		.F.	.F.
1 LC 126 WA	12 N	2 W	5423	50	SILT LOAM	WELL	0.40		.F.	.F.
1 LC 162 WA	12 N	2 W	5423	50	SILT LOAM	WELL	0.40		.F.	.F.
1 LC 32 WA	13 N	1 E	5423	70	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 89 WA	13 N	1 E	5423	70	SILT LOAM	WELL	1.30		.F.	.F.
1 LC 41 WA	13 N	3 E	5423	60	SILT CLAY	WELL	0.40		.F.	.F.
1 LC 39 WA	13 N	2 W	5423	50	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 43 WA	13 N	2 W	5423	50	SILT LOAM	WELL	4.00		.T.	.F.
1 LC 51 WA	13 N	2 W	5423	50	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 65 WA	13 N	2 W	5423	50	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 143 WA	13 N	2 W	5423	50	SILT LOAM	WELL	4.00		.F.	.F.
1 LC 161 WA	13 N	3 W	5423	60	SILT CLAY	WELL	0.40		.F.	.F.
1 LC 20 WA	14 N	2 W	5081	60	SILT CLAY	WELL	0.40		.F.	.F.
1 LC 58 WA	14 N	2 W	5081	60	SILT CLAY	WELL	0.40		.T.	.F.
1 LC 142 WA	14 N	2 W	5081	60	SILT CLAY	WELL	0.40		.F.	.F.
1 LC 19 WA	14 N	3 W	5433	60	SILT CLAY	WELL	0.40		.F.	.F.
1 LC 42 WA	14 N	3 W	5423	60	SILT CLAY	WELL	0.40		.T.	.F.
1 NW 290 WA	17 N	10 W	5298	70	SAND LOAM	MODERATE	4.00		.T.	.F.
1 NW 281 WA	18 N	1 W	5709	51	GRAV.SAND.L.	S.EXCESS	20.00		.F.	.F.
1 NW 264 WA	18 N	2 W	5709	51	F.SAND LOAM	MODERATE	0.00		.F.	.F.
1 NW 285 WA	18 N	2 W	5709	52	F.SAND LOAM	MOD. WELL	20.00		.F.	.F.
1 NW 291 WA	18 N	2 W	5709	52	F.SAND LOAM	MOD.WELL	20.00		.F.	.F.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO	T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
1 NW 292 WA	18 N	2 W	5709	52	F.SAND L.	MOD.WELL	20.00		.F.	.F.
1 NW 293 WA	18 N	2 W	5709	52	F.SAND L.	MOD.WELL	20.00		.F.	.F.
1 NW 296 WA	18 N	2 W	5709	52	F.SAND LOAM	MOD. WELL	20.00		.T.	.F.
1 NW 320 WA	18 N	2 W	5709	52	F.SAND LOAM	MOD.WELL	20.00		.T.	.F.
1 NW 339 WA	20 N	3 E	5121	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 283 WA	23 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 298 WA	23 N	5 E	4681	50	GRAV.SAND L.	POOR	0.06		.F.	.F.
2 CC 5 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 8 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.T.	.T.
2 CC 10 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 23 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 27 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 29 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 30 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 31 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 37 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 67 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.T.	.T.
2 CC 71 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 73 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.F.
2 CC 75 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 147 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.T.	.T.
2 CC 148 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 170 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 266 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 267 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 268 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
2 CC 271 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.T.	.T.
2 CC 272 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.F.
2 CC 314 WA	23 N	41 E	6882	22	SILT LOAM	WELL	10.00		.F.	.T.
1 NW 309 WA	24 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 308 WA	24 N	5 E	4681	50	GRAV.SAND L.	MOD.WELL	0.06		.F.	.F.
1 NW 278 WA	25 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 279 WA	25 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 302 WA	25 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 304 WA	25 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 306 WA	25 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 307 WA	25 N	4 E	4681	50	GRAV.SAND L.	MOD. WELL	4.00		.F.	.F.
1 NW 378 WA	25 N	4 E	4681	50	LOAM	MOD.WELL	4.00		.F.	.F.
1 NW 300 WA	25 N	5 E	4681	50	GRAV.SAND L.	MOD.WELL	0.06		.F.	.F.
1 NW 305 WA	25 N	5 E	4681	50	GRAV.SAND L.	MOD.WELL	0.06		.F.	.F.
1 NW 334 WA	25 N	5 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
2 NW 312 WA	25 N	41 E	6882	17	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 55 WA	25 N	43 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 66 WA	25 N	43 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 74 WA	25 N	43 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.T.	.T.
2 NW 289 WA	25 N	43 E	6882	20	GRAV. L.	S. EXCESS	4.00		.F.	.T.
2 IS 324 WA	25 N	43 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.

RADON 3-MONTH/12-MONTH FIELD STUDY

LOCATION, CLIMATE, AND SOIL

NO	T	R	HDD	PREC	SOIL	DRAINAGE	PERM	COMMENTS	POND	SNOW COVER
2 VV 11 WA	25 N	44 E	6882	20	GRAV.LOAM	S. EXCESS	4.00		.F.	.T.
2 VV 16 WA	25 N	44 E	6882	20	GRAV.SAND L	S. EXCESS	4.00		.F.	.T.
2 VV 26 WA	25 N	44 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 VV 44 WA	25 N	44 E	6882	20	GRAV.SAND L.	S. EXCESS	4.00		.F.	.F.
2 VV 48 WA	25 N	44 E	6882	20	GRAV.SAND L.	S. EXCESS	4.00		.F.	.T.
2 VV 52 WA	25 N	44 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 VV 59 WA	25 N	44 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 VV 68 WA	25 N	44 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 NW 287 WA	25 N	45 E	6882	17	GRAV. L.	S. EXCESS	4.00		.F.	.F.
1 NW 303 WA	26 N	5 E	4681	50	GRAV.SAND L.	MOD.WELL	0.06		.F.	.F.
1 NW 294 WA	26 N	6 E	4681	50	GRAV.SAND L.	MOD.WELL	0.06		.F.	.F.
2 IS 116 WA	26 N	42 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 315 WA	26 N	42 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.T.	.T.
2 IS 317 WA	26 N	42 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 382 WA	26 N	42 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 117 WA	26 N	43 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.T.	.T.
1 NW 282 WA	27 N	3 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
1 NW 311 WA	27 N	4 E	4681	50	GRAV.SAND L.	MOD.WELL	4.00		.F.	.F.
2 IS 163 WA	27 N	43 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 IS 109 WA	28 N	42 E	6882	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 NW 319 WA	28 N	42 E	6882	20	GRAV. L.	S.EXCESS	4.00		.F.	.F.
2 NW 280 WA	31 N	45 E	7434	30	GRAV.SILT L.	WELL	1.30	V.PERM. LAYER BELOW 29 IN.	.T.	.T.
2 IS 164 WA	33 N	44 E	7434	20	GRAV. LOAM	S. EXCESS	4.00		.F.	.T.
2 NW 286 WA	35 N	39 E	7133	18	SILT LOAM	MOD.WELL	0.40	P.WATER TABLE 2-3 FT. IN SPRING	.F.	.T.

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)	COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
3 IF 1	2	56 53 0 0 0 0 0 0	FIREPLACE/NON AT STOVE	
3 IF 4	4	44 40 13 11 0 0 0 0	FIREPLACES (2)	
3 IF 141	2	54 50 0 0 0 0 0 0		
3 IF 156	3	46 62 19 0 0 0 0 0	FIREPLACE (2)-1 W/INSERT	
3 IF 326	3	18 63 66 0 0 0 0 0	FIREPLACE (2)	WINDOW AC 1 MO. SUMMER
3 IF 329	3	35 33 2 0 0 0 0 0	WOODSTOVE (AIRTIGHT)	
3 IF 25	2	82 84 0 0 0 0 0 0	FIREPLACE	
3 IF 46	2	57 57 0 0 0 0 0 0	FIREPLACE (2)	
3 IF 47	7	3 6 8 10 13 35 35 0	FIREPLACE INSERT	
3 IF 53	5	39 32 9 6 5 0 0 0	WOODSTOVE - AIRTIGHT	
3 IF 54	3	37 29 3 0 0 0 0 0		
3 IF 60	2	63 63 0 0 0 0 0 0	FIREPLACE INSERT	
3 IF 72	4	43 38 17 14 0 0 0 0	WOODSTOVE	
3 IF 137	3	20 49 51 0 0 0 0 0	FIREPLACES (3)	
3 IF 138	3	35 31 12 0 0 0 0 0		
3 IF 139	2	27 34 0 0 0 0 0 0	WOODSTOVE NON AIRTIGHT	
3 IF 140	3	40 40 17 0 0 0 0 0	FIREPLACES (3)	AC
3 IF 146	4	47 43 16 7 0 0 0 0	FIREPLACES (2)	
3 IF 150	2	73 67 0 0 0 0 0 0	WOODSTOVE	
3 IF 151	1	51 0 0 0 0 0 0 0	FIREPLACE	
3 IF 157	2	23 23 0 0 0 0 0 0	FIREPLACE /STOVE	NONE
3 IF 321	2	77 75 0 0 0 0 0 0	FIREPLACES (2)	
3 IF 325	3	65 49 15 0 0 0 0 0	FIREPLACES (3)	
3 IF 327	2	65 51 0 0 0 0 0 0	WOODSTOVE (AIRTIGHT)	
3 IF 328	5	30 27 7 5 3 0 0 0		
3 NI 176	2	53 52 0 0 0 0 0 0	FIREPLACES (2 LEVELS)	NONE
3 NI 178	1	60 0 0 0 0 0 0 0		
3 KH 93	3	35 29 2 0 0 0 0 0	WOODSTOVE	
3 KH 9	5	42 41 19 17 15 0 0 0	NONE	NONE
3 KH 6	3	33 27 2 0 0 0 0 0	NONE	NONE
3 KH 13	7	4 4 7 8 10 31 35 0	WOODSTOVE	NONE
3 KH 14	2	66 67 0 0 0 0 0 0	WOODSTOVE & INSERT	NONE
3 KH 45	4	35 29 12 4 0 0 0 0	WOODSTOVE	NONE
3 KH 62	4	40 37 9 6 0 0 0 0	WOODSTOVE	NONE
3 KH 63	4	33 34 9 6 0 0 0 0	WOODSTOVE	NONE
3 KH 98	3	42 47 15 0 0 0 0 0	WOODSTOVE	NONE
3 KH 129	4	46 46 20 14 0 0 0 0	WOODSTOVE	
3 KH 130	4	48 44 13 11 0 0 0 0	WOODSTOVE	NONE
3 KH 87	3	55 53 14 0 0 0 0 0	WOODSTOVE	NONE
3 KH 104	4	35 39 16 9 0 0 0 0	WOODSTOVE	NONE
3 KH 69	5	5 12 17 35 39 0 0 0	WOODSTOVE	NONE
3 KH 49	1	36 0 0 0 0 0 0 0	WOODSTOVE	NONE
3 KH 111	2	47 46 0 0 0 0 0 0	WOODSTOVE	
3 KH 128	5	44 39 20 18 10 0 0 0	WOODSOTVE	
3 KH 118	2	75 76 0 0 0 0 0 0	WOODSTOVE	NONE
3 XH 149	4	63 58 18 16 0 0 0 0		EVAP.COOLER

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)								COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
3 XH 133	2	45	62	0	0	0	0	0	0	NONE	NONE
3 XH 145	2	59	61	0	0	0	0	0	0	NONE	NONE
3 XH 323	6	38	35	14	11	9	5	0	0	NONE	NONE
3 XH 132	8	47	45	19	14	12	10	8	5	NONE	NONE
3 XH 134	4	40	39	17	12	0	0	0	0	NONE	HEATPUMP
3 XH 135	4	42	40	15	12	0	0	0	0	NONE	NONE
3 XH 144	2	50	48	0	0	0	0	0	0	NONE	NONE
3 XH 158	5	43	39	16	12	10	0	0	0	NONE	REFRIG
3 XH 159	2	53	53	0	0	0	0	0	0	NONE	NONE
3 XH 160	2	68	67	0	0	0	0	0	0	NONE	
3 XH 265	3	52	47	11	0	0	0	0	0	NONE	NONE
3 XH 336	2	47	47	0	0	0	0	0	0	NONE	NONE
3 XH 136	3	41	40	6	0	0	0	0	0	NONE	NONE
3 RC 127	2	48	53	0	0	0	0	0	0		
3 RC 86	1	0	0	0	0	0	0	0	0	WOODSTOVE	NONE
3 RC 106	3	47	43	22	0	0	0	0	0	WOODSTOVE	
3 RC 108	2	50	55	0	0	0	0	0	0	WOODSTOVE	NONE
3 RC 125	2	65	65	0	0	0	0	0	0	WOODSTOVE	NONE
3 RC 100	4	14	17	48	55	0	0	0	0	NONE	NONE
3 RC 88	4	38	38	16	13	0	0	0	0		
3 ME 90	1	63	0	0	0	0	0	0	0	NONE	NONE
3 RC 102	2	69	75	0	0	0	0	0	0	WOODSTOVE	NONE
3 ME 105	4	37	30	2	1	0	0	0	0	FIREPLACE	
3 ME 122	4	34	33	10	5	0	0	0	0	WOODSTOVE	NONE
3 ME 277	4	35	33	2	1	0	0	0	0	WOODSTOVE	
3 ME 276	4	33	33	9	6	0	0	0	0	WOODSTOVE	NONE
3 ME 83	3	45	45	17	0	0	0	0	0	WOODSTOVE	
3 ME 91	2	33	31	0	0	0	0	0	0	FIREPLACE	NONE
3 ME 112	7	46	46	21	20	18	17	16	0	FIREPLACE INSERT/WDSTOVE	NONE
3 FK 124	2	62	59	0	0	0	0	0	0	WOODSTOVE	
3 FK 95	2	48	46	0	0	0	0	0	0		
3 FK 97	3	45	35	1	0	0	0	0	0	WOODSTOVE	
3 FK 103	6	30	29	8	6	4	1	0	0	WOODSTOVE	
3 FK 12	6	38	36	8	7	5	3	0	0	FIREPLACE	
3 FK 35	2	62	68	0	0	0	0	0	0	FIREPLACE	
3 FK 110	2	53	53	0	0	0	0	0	0	WOODSTOVE	
3 GC 84	2	60	57	0	0	0	0	0	0	FIREPLACE	NONE
3 GC 99	5	43	40	14	12	8	0	0	0	NONE	NONE
3 GC 101	3	39	33	13	0	0	0	0	0		
3 GC 113	2	31	32	0	0	0	0	0	0	NONE	NONE
3 GC 120	2	67	60	0	0	0	0	0	0	FIREPLACE	NONE
3 LE 96	2	57	55	0	0	0	0	0	0	FIREPLACE/WOODSTOVE	KITCHEN STOVE FAN
3 LE 94	5	44	33	10	4	2	0	0	0	WOODSTOVE	NONE
3 LE 121	1	61	0	0	0	0	0	0	0	WOODSTOVE	NONE
3 LE 92	2	42	35	0	0	0	0	0	0	WOODSTOVE	2 BATH FANS
1 NO 77	4	31	26	4	2	0	0	0	0	FIREPLACE	KITCHEN FAN

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)								COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
1 NO 79	2	43	44	0	0	0	0	0	0	FIREPLACE INSERT	NONE
1 NO 81	4	36	36	2	1	0	0	0	0	FIREPLACE	BATH & KITCHEN FAN
1 NO 169	2	31	25	0	0	0	0	0	0	FIREPLACE (NOT USED)	HEATER/BATHROOM FANS
1 NO 171	2	33	31	0	0	0	0	0	0		BATH EXHUAST
1 NO 177	5	42	41	15	14	9	0	0	0	WOOD STOVE	3 VENT FANS
1 NO 183	4	40	37	11	7	0	0	0	0	FIREPLACE	BATH/KITCHEN/BSMT FANS
1 NO 185	0	0	0	0	0	0	0	0	0		
1 NO 186	2	47	37	0	0	0	0	0	0	FIREPLACE/WOODSTOVE	3 BATH FANS
1 NO 187	0	0	0	0	0	0	0	0	0		
1 NO 188	3	35	35	3	0	0	0	0	0	NONE	KITCHEN STOVE FAN (1)
1 NO 189	2	55	56	0	0	0	0	0	0	FIREPLACE (UNUSED)	BATH/KITCHEN FANS/DR VNT
1 NO 190	5	33	32	7	5	1	0	0	0	FIREPLACE (2)	KITCHEN(1)/BATH FANS (2)
1 NO 191	2	36	42	0	0	0	0	0	0	FIREPLACES (2)	KITCHEN EXHAUST FAN
1 NO 193	3	41	38	13	0	0	0	0	0	FIREPLACE	NONE
1 NO 195	1	40	0	0	0	0	0	0	0	FIREPLACE	JENNAIR FAN
1 NO 196	2	45	40	0	0	0	0	0	0	FIREPLACE	KITCHEN FAN EXHAUST
1 NO 197	3	42	40	15	0	0	0	0	0	FIREPLACE	FANS STOVE/CL DRYER
1 NO 199	3	15	49	55	0	0	0	0	0	FIREPLACE	ATTICFANS(2)VENTS/K.FAN
1 NO 200	2	40	35	0	0	0	0	0	0	FIREPLACES (2)	EXHAUST FANS (3)
1 NO 202	4	12	16	44	45	0	0	0	0	FIREPLACES (4)	NONE
1 NO 203	4	40	34	6	4	0	0	0	0	FIREPLACE	BATH FAN
1 NO 204	4	3	6	32	32	0	0	0	0	FIREPLACES (2)	AC 2 EXHAUST FANS
1 NO 206	5	45	37	17	13	18	0	0	0		HEATPUMP
1 NO 215	2	31	29	0	0	0	0	0	0	FIREPLACE	BATH FAN
1 NO 231	2	35	38	0	0	0	0	0	0	FIREPLACE	NONE
1 NO 377	4	53	47	17	19	0	0	0	0	2 FIREPLACES	3 EXHAUST FANS
1 NO 80	4	34	35	8	6	0	0	0	0	FIREPLACE	AC
1 NO 82	2	35	38	0	0	0	0	0	0	FIREPLACE	NONE
1 NO 181	1	36	0	0	0	0	0	0	0	NONE	NONE
1 NO 182	3	47	46	17	0	0	0	0	0	FIREPLACE (NOT USED)	BATHFAN(3)KITCHEN/ATTIC
1 NO 184	2	36	41	0	0	0	0	0	0	FIREPLACE/OIL FURNACE	K/STOVE EXHAUST FAN
1 NO 213	5	40	35	5	3	1	0	0	0	FIREPLACE (NOT USED)	ELECTRIC DRYER VENT
1 NO 216	4	28	27	8	3	0	0	0	0	WOODSTOVE	NONE
1 NO 224	2	37	35	0	0	0	0	0	0	FIREPLACE	KITCHEN/BATH FANS
1 NO 318	2	34	34	0	0	0	0	0	0	FIREPLACE/WOODSTOVE	2 EXHAUST FANS
1 NO 227	1	39	0	0	0	0	0	0	0	NONE	NONE
1 NO 226	4	46	43	14	13	0	0	0	0	FIREPLACE/WOODSTOVE	NONE
1 CL 152	1	38	0	0	0	0	0	0	0	WOODSTOVE	
1 CL 153	3	40	13	10	0	0	0	0	0	WOODSTOVE	
1 CL 154	4	40	37	5	2	0	0	0	0	WOODSTOVE	NONE
1 CL 155	2	72	70	0	0	0	0	0	0	WOODSTOVE	
1 NO 209	3	16	40	42	0	0	0	0	0	FIREPLACE	BATHROOM FAN
2 MF 2	2	70	68	0	0	0	0	0	0	NONE	UNKNOWN
2 MF 7	2	42	38	0	0	0	0	0	0	FIREPLACE	UNKNOWN
2 MF 15	2	39	28	0	0	0	0	0	0	FIREPLACE	UNKNOWN
2 MF 34	3	45	44	18	0	0	0	0	0		WALL AC

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)								COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
2 MF 40	4	4	12	39	42	0	0	0	0	FIREPLACE	HEAT PUMP
2 NO 243	0	0	0	0	0	0	0	0	0		
2 NO 246	2	53	49	0	0	0	0	0	0	WOODSTOVE	AC/ROOF VENT
2 NO 257	0	0	0	0	0	0	0	0	0	NONE	AC/EXHAUST FAN
2 MF 70	2	56	56	0	0	0	0	0	0	FIREPLACE	UNKNOWN
1 NO 76	3	43	44	17	0	0	0	0	0	NONE	STOVE/BATHROOM FANS
1 NO 194	3	13	40	41	0	0	0	0	0	FIREPLACE/WOODSTOVE	STOVE VENT/BATHFANS
1 NO 207	1	44	0	0	0	0	0	0	0	WOODSTOVE	KITCHEN/BATH FANS
1 NO 223	2	26	28	0	0	0	0	0	0	FIREPLACE	NONE
1 NO 225	3	17	44	50	0	0	0	0	0	FIREPLACES (2)	KITCHEN/BATH FANS
1 NO 228	3	43	43	12	0	0	0	0	0	FIREPLACES (2)	NONE
1 NO 230	2	32	30	0	0	0	0	0	0	WOODSTOVE (NOT USED)	KITCHEN/BATH FANS
1 NO 330	2	26	50	0	0	0	0	0	0	WOODSTOVE/DRYER	AC/KITCHEN EXHAUST
1 NO 180	0	0	0	0	0	0	0	0	0		
1 NO 199	5	29	29	8	6	4	0	0	0	FIREPLACE/FURNACE	BATH FAN
1 NO 229	4	42	41	9	7	0	0	0	0	NONE	BATHROOM FAN
1 NO 263	7	34	36	11	5	5	5	38	0	FIREPLACE	BATH FAN
1 NO 217	5	36	33	8	2	1	0	0	0	NONE	F/A CAN BE USED W/O FURN
1 NO 214	4	44	42	18	13	0	0	0	0	WOODSTOVE	NONE
1 NO 322	3	32	30	14	0	0	0	0	0	WOODSTOVE	NONE
1 NO 331	3	48	40	5	0	0	0	0	0	FIREPLACE	2 WINDOW AC
1 NO 333	4	30	8	8	27	0	0	0	0	FIREPLACE	BATH,KITCHEN,LNDRY FANS
1 NO 338	2	40	44	0	0	0	0	0	0	FIREPLACES (2)	5 EXHAUST FANS
1 NO 212	2	32	38	0	0	0	0	0	0	WOODSTOVE	NONE
1 NO 179	1	37	0	0	0	0	0	0	0	FIREPLACE	BATH/KITCHEN FANS
1 NO 335	4	39	35	11	8	0	0	0	0	FPLACE/WDSTOVE/GASFURN	BATH FAN(3) KIT FAN (1)
1 NO 208	3	18	46	52	0	0	0	0	0	FPLACE WDSTOVE OILFURN	NONE
1 NO 210	3	39	31	40	0	0	0	0	0	WOODSTOVE	HEATPUMP/KFAN/BFAN(3)
1 NO 218	4	44	43	23	8	0	0	0	0	WOODSTOVE	ATTIC FAN
2 NO 172	3	60	52	30	0	0	0	0	0	WOODSTOVES	3 VENTS/AC
1 SS 21	5	35	36	12	10	7	0	0	0	WOODSTOVE	
1 SS 61	5	1	3	6	33	33	0	0	0	NONE	
1 SS 64	4	25	23	2	1	0	0	0	0	NONE	
1 SS 24	3	34	0	0	0	0	0	0	0	FIREPLACE?	
1 SS 33	2	36	32	0	0	0	0	0	0	FIREPLACE	
1 SS 50	3	70	70	60	0	0	0	0	0	NONE	
1 SS 57	3	47	46	23	0	0	0	0	0	NONE	
1 SS 270	3	4	37	44	0	0	0	0	0	FIREPLACE	
1 SS 56	4	37	34	10	4	0	0	0	0	FIREPLACE	
1 SS 17	2	33	41	0	0	0	0	0	0	WOODSTOVE	
1 NW 332	3	9	29	38	0	0	0	0	0	FIREPLACE	NONE
1 NW 173	4	45	39	4	6	0	0	0	0	FIREPLACES (2)	KITCHEN FAN
1 NW 175	3	2	35	36	0	0	0	0	0	WOODSTOVE/FIREPLACE	NONE
1 NW 262	4	14	15	38	43	0	0	0	0	FIREPLACE	AC/KIT FAN/BATH FAN
2 NW 234	2	7	38	0	0	0	0	0	0	NONE	EVAP. COOLER
2 NW 247	2	45	46	0	0	0	0	0	0	WOODSTOVES (2) NOT USED	(2) WINDOW AC

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)								COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
2 NW 233	1	36	0	0	0	0	0	0	0	NONE	CENTRAL AC
2 NW 235	4	43	43	6	8	0	0	0	0		AC
2 NW 236	2	74	61	0	0	0	0	0	0	WOODSTOVE	NONE
2 NW 237	1	29	0	0	0	0	0	0	0	NONE	NONE
2 NW 238	1	33	0	0	0	0	0	0	0	NONE	HEAT PUMP/ELECTRIC
2 NW 239	2	66	58	0	0	0	0	0	0	FIREPLACE	AC
2 NW 240	2	48	23	0	0	0	0	0	0	(2) WOODSTOVES	NONE
2 NW 241	4	40	40	15	14	0	0	0	0	FIREPLACE	(4) EXHAUST FANS
2 NW 242	2	64	62	0	0	0	0	0	0	FIREPLACE/WOODSTOVE	AC
2 NW 244	3	45	46	18	0	0	0	0	0	FPLACE/WTR HTR & FURNACE	FORCED AIR HEAT PUMP
2 NW 245	3	29	27	2	0	0	0	0	0	NONE	NONE
2 NW 248	1	0	0	0	0	0	0	0	0	NONE	CENTRAL AC
2 NW 249	5	39	18	15	9	43	0	0	0	FIREPLACE	CENTRAL AC
2 NW 250	0	0	0	0	0	0	0	0	0		
2 NW 251	4	45	38	18	10	0	0	0	0	WOODSTOVE	AC
2 NW 252	2	54	55	0	0	0	0	0	0	FIREPLACE INSERT	AC
2 NW 253	4	6	10	35	35	0	0	0	0	WOODSTOVE	CENTRAL AIR/BSMT RETURN
2 NW 254	4	39	37	14	11	0	0	0	0	FIREPLACE	HP/STOVE/3 BATH LNDRY FN
2 NW 255	2	43	43	0	0	0	0	0	0	FIREPLACE	AC (3) EXHAUST FANS
2 NW 256	5	2	5	9	37	38	0	0	0	FIREPLACE INSERT	NONE
2 NW 258	2	28	28	0	0	0	0	0	0	WOODSTOVE	(2) FANS
2 NW 259	3	34	29	1	0	0	0	0	0	WOODSTOVE	NONE
2 NW 260	3	44	42	16	0	0	0	0	0	WOODSTOVE	CENTRAL AC
2 NW 261	5	46	43	18	17	15	0	0	0	FIREPLACES (2)	AC/ 1 EXHAUST FAN
2 NW 284	0	0	0	0	0	0	0	0	0		
1 LC 119	9	58	42	22	18	9	7	5	3	STOVE	
1 LC 28	1	55	0	0	0	0	0	0	0	NONE	NONE
1 LC 38	2	71	69	0	0	0	0	0	0	NONE	NONE
1 LC 114	1	0	0	0	0	0	0	0	0	NONE	
1 LC 123	3	32	28	2	0	0	0	0	0	STOVE	
1 LC 126	2	58	56	0	0	0	0	0	0	FIREPLACE	
1 LC 162	4	9	14	39	39	0	0	0	0	STOVE	
1 LC 32	2	30	32	0	0	0	0	0	0		
1 LC 89	2	63	59	0	0	0	0	0	0	WOOD FURNACE	
1 LC 41	4	39	37	12	8	0	0	0	0	INSERT	
1 LC 39	4	9	12	36	38	0	0	0	0	STOVE INSERT	
1 LC 43	2	57	58	0	0	0	0	0	0	NONE	
1 LC 51	4	41	38	13	3	0	0	0	0	STOVE	
1 LC 65	3	38	37	12	0	0	0	0	0	INSERT	
1 LC 143	2	20	60	0	0	0	0	0	0	FIREPLACE	NONE
1 LC 161	2	62	59	0	0	0	0	0	0	INSERT	
1 LC 20	5	50	46	18	16	14	0	0	0	NONE	NONE
1 LC 58	2	61	56	0	0	0	0	0	0	STOVE	
1 LC 142	2	48	46	0	0	0	0	0	0	NONE	
1 LC 19	5	40	37	15	11	9	0	0	0	FIREPLACE	NONE
1 LC 42	2	59	62	0	0	0	0	0	0	NONE	NONE

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)								COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
1 NW 290	4	55	52	28	5	0	0	0	0	WOODSTOVE INSERT	SUNRM FAN/BATH (2)
1 NW 281	2	60	24	0	0	0	0	0	0	WOODSTOVE	OVERHEAD FAN/BATHFAN (2)
1 NW 264	0	0	0	0	0	0	0	0	0		
1 NW 285	2	57	53	0	0	0	0	0	0	WOODSTOVE	STOVE FAN/BATH FANS(3)
1 NW 291	4	4	6	35	59	0	0	0	0	FIREPLACE	3 BATH FANS
1 NW 292	5	39	38	12	11	8	0	0	0	WOODSTOVE	NONE
1 NW 293	0	0	0	0	0	0	0	0	0		
1 NW 296	3	49	45	19	0	0	0	0	0	FIREPLACE	VENT CRWLSP TO FIREPLACE
1 NW 320	5	41	40	5	3	3	0	0	0	FIREPLACE	(3) EIHAUST FANS
1 NW 339	3	10	40	41	0	0	0	0	0	NONE	NONE
1 NW 283	3	32	63	65	0	0	0	0	0	FIREPLACE	KITCHEN/BATHROOM FANS(2)
1 NW 298	3	56	27	3	0	0	0	0	0	FIREPLACE/WOODSTOVE	2 BATH FANS
2 CC 5	3	52	44	11	0	0	0	0	0	FIREPLACE/WOODSTOVE	
2 CC 8	4	1	2	28	32	0	0	0	0		
2 CC 10	2	63	61	0	0	0	0	0	0	NONE	NONE
2 CC 23	4	32	32	7	5	0	0	0	0	FIREPLACE	
2 CC 27	2	51	50	0	0	0	0	0	0		
2 CC 29	2	51	52	0	0	0	0	0	0		
2 CC 30	3	55	0	0	0	0	0	0	0	WOODSTOVE	
2 CC 31	3	50	48	24	0	0	0	0	0		
2 CC 37	2	68	69	0	0	0	0	0	0		
2 CC 67	3	5	24	33	0	0	0	0	0		
2 CC 71	3	38	37	2	0	0	0	0	0	WOODSTOVE	
2 CC 73	3	49	49	19	0	0	0	0	0		
2 CC 75	4	43	40	13	10	0	0	0	0		
2 CC 147	2	71	68	0	0	0	0	0	0	WOODSTOVE/FIREPLACE	
2 CC 148	3	40	40	17	0	0	0	0	0	WOODSTOVE	
2 CC 170	3	41	40	4	0	0	0	0	0	FIREPLACE (2)	
2 CC 266	2	62	62	0	0	0	0	0	0	FIREPLACE	
2 CC 267	3	38	36	5	0	0	0	0	0	FIREPLACES (2)	
2 CC 268	2	59	57	0	0	0	0	0	0		
2 CC 271	2	49	49	0	0	0	0	0	0		
2 CC 272	4	56	52	19	19	0	0	0	0		
2 CC 314	4	16	19	44	60	0	0	0	0		
1 NW 309	3	39	39	7	0	0	0	0	0	FIREPLACE	NONE
1 NW 308	4	40	39	15	10	0	0	0	0	FIREPLACES (2)	KITCHEN FAN/BATH FAN
1 NW 278	0	0	0	0	0	0	0	0	0		
1 NW 279	2	50	45	0	0	0	0	0	0	FIREPLACE	KIT FAN/DRYER VENT
1 NW 302	2	37	33	0	0	0	0	0	0	FIREPLACE/GAS STOVE	KITCHEN FAN/(2) BATH FAN
1 NW 304	1	56	0	0	0	0	0	0	0	NONE	NONE
1 NW 306	0	0	0	0	0	0	0	0	0		
1 NW 307	2	40	35	0	0	0	0	0	0	FIREPLACE/GAS STOVE	GRILL FAN/BATH FAN
1 NW 378	0	0	0	0	0	0	0	0	0		
1 NW 300	2	48	45	0	0	0	0	0	0	FIREPLACE	STOVE FAN/BATH FAN/DRYER
1 NW 305	3	58	55	19	0	0	0	0	0	FIREPLACE	NONE
1 NW 334	4	54	53	24	26	0	0	0	0	FIREPLACE (2)	NONE

RADON 3-MONTH/12-MONTH FIELD STUDY

OCCUPANCY AND VENTILATION

NO	OCCUPANTS	AGES (YR.)								COMBUSTION APPLIANCES	AIR CONDITIONING VENTILATING FANS
2 NW 312	3	32	14	10	0	0	0	0	0		
2 IS 55	1	59	0	0	0	0	0	0	0		
2 IS 66	4	4	7	34	36	0	0	0	0	WOODSTOVE	
2 IS 74	2	48	26	0	0	0	0	0	0		
2 NW 289	1	46	0	0	0	0	0	0	0	FIREPLACE	NONE
2 IS 324	5	37	35	9	8	4	0	0	0		
2 VV 11	4	52	50	14	14	0	0	0	0	NONE	BATH & KITCHEN EXHAUST
2 VV 16	2	45	42	0	0	0	0	0	0	NONE	BATH & KITCHEN FANS
2 VV 26	3	59	44	22	0	0	0	0	0		BATH FAN
2 VV 44	2	55	54	0	0	0	0	0	0	NONE	AC/BATH EXHAUST FAN
2 VV 48	2	63	65	0	0	0	0	0	0	NONE	NONE
2 VV 52	4	43	42	15	12	0	0	0	0	NONE	BATH FANS
2 VV 59	3	0	0	0	0	0	0	0	0	NONE	BATH & KITCHEN FANS
2 VV 68	3	45	44	16	0	0	0	0	0		BATH FANS
2 NW 297	4	42	40	18	15	0	0	0	0	WOODSTOVE	CENTRAL AC
1 NW 303	5	1	2	5	34	42	0	0	0	FIREPLACES (2)	NONE
1 NW 294	1	42	0	0	0	0	0	0	0	WOODSTOVE (NOT USED)	NONE
2 IS 116	4	31	31	3	0	0	0	0	0	WOODSTOVE	NONE
2 IS 315	2	90	63	0	0	0	0	0	0	WOODSTOVE	NONE
2 IS 317	2	50	53	0	0	0	0	0	0		
2 IS 382	2	27	28	0	0	0	0	0	0	WOODSTOVE	NONE
2 IS 117	2	58	54	0	0	0	0	0	0	WOODSTOVE	
1 NW 282	5	48	46	20	16	8	0	0	0	WOODSTOVE	KIT FAN (2) BATH FANS
1 NW 311	1	39	0	0	0	0	0	0	0	WOODSTOVE	NONE
2 IS 163	2	74	73	0	0	0	0	0	0	WOODSTOVE	NONE
2 IS 109	1	53	0	0	0	0	0	0	0		
2 NW 319	0	0	0	0	0	0	0	0	0	WOOD STOVE	BATH EX.FAN
2 NW 280	2	46	19	0	0	0	0	0	0	WOODSTOVE	KITCHEN FAN/BATH FANS(2)
2 IS 164	5	34	31	12	7	4	0	0	0	WOODSTOVE	
2 NW 286	5	38	38	13	9	4	0	0	0	FIREPLACE	NONE

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
3 IF 1	2	1144	0.87	7	0	0	2392	ELE.CABLE/BB	.F.	.F.	
3 IF 4	1	1344	0.69	6	0	0	2688	ELECT. CABLE	.F.	.F.	
3 IF 141	1	1196	0.88	7	0	0	2392	ELECT. CABLE	.F.	.F.	
3 IF 156	1	1720	0.81	7	0	0	3440	ELECTRIC HW	.F.	.F.	BRICK FACE
3 IF 326	1	1650	0.98	7	0	0	3300	ELECTRIC FA	.F.	.F.	BRICK FACE
3 IF 329	1	1187	0.88	7	0	0	1187	ELECT.CABLE	.F.	.F.	
3 IF 25	1	704	0.88	7	0	0	1408	ELECTRIC FA	.F.	.F.	
3 IF 46	1	703	0.81	7	754	0	2160	ELECTRIC FA	.F.	.F.	
3 IF 47	1	1196	0.75	6	0	0	2392	CABLE/BB	.F.	.F.	
3 IF 53	2	728	0.98	7	0	0	2637	ELECT. CABLE	.F.	.F.	
3 IF 54	1	1176	0.98	7	0	0	2352	ELECT. CABLE	.F.	.F.	
3 IF 60	1	1144	0.81	7	0	275	2535	ELECTRIC FA	.F.	.F.	
3 IF 72	1	1092	0.88	7	0	0	2184	ELECT. CABLE	.F.	.F.	ALUM. SIDING
3 IF 137	3	598	0.88	7	0	624	2500	CABLE	.F.	.F.	
3 IF 138	1	884	0.88	7	0	0	884	ELECTRIC BB	.F.	.F.	
3 IF 139	1	1148	0.69	6	0	0	2314	OIL FURNACE	.F.	.F.	DBL BRICK
3 IF 140	2	1128	0.81	7	0	0	3336	ELECTRIC FA	.F.	.F.	BRICK FACE
3 IF 146	1	1703	0.91	7	0	0	3406	ELECTRIC FA	.F.	.F.	
3 IF 150	1	1026	0.63	5	0	0	2052	BASEBOARD	.F.	.F.	
3 IF 151	1	1240	0.88	7	0	0	2480	ELECTRIC FA	.F.	.F.	BRICK FACE
3 IF 157	1	780	0.88	7	0	0	1560	ELECTRIC FA	.F.	.F.	
3 IF 321	1	1575	0.88	7	0	0	3150	ELECT. CABLE	.F.	.F.	BRICK FACE
3 IF 325	1	1572	0.88	7	0	0	3419	ELECTRIC HW	.F.	.F.	BRICK FACE
3 IF 327	1	925	0.88	7	0	0	2004	ELECTRIC FA	.F.	.F.	METAL SIDING
3 IF 328	1	1040	0.75	6	0	0	2080	ELECT.CABLE	.F.	.F.	
3 NI 176	2	1352	1.00	7	0	0	1352	GAS	.T.	.T.	
3 NI 178	2	1600	1.00	5	0	0	2000	OIL	.T.	.T.	
3 KH 93	3	850	1.00	7	0	0	1600	ELECTRIC FA	.F.	.F.	
3 KH 9	2	1204	0.75	7	360	0	2950	ELECTRIC BB	.F.	.F.	
3 KH 6	3	390	1.00	6	390	0	1050	ELECTRIC BB	.F.	.F.	
3 KH 13	2	0	0.00	0	1202	0	1642	ELECTRIC BB	.F.	.F.	
3 KH 14	2	1084	0.66	7	0	0	2828	ELECTRIC FA	.F.	.F.	
3 KH 45	3	720	0.72	7	0	0	1440	ELECTRIC BB	.F.	.F.	
3 KH 62	2	0	0.00	0	1080	0	1960	ELECTRIC BB	.F.	.F.	
3 KH 63	2	0	0.00	0	0	1600	3200	ELECTRIC FA	.F.	.F.	
3 KH 98	3	676	0.75	3	624	0	1976	ELECTRIC FA	.F.	.F.	
3 KH 129	2	1196	1.00	7	0	0	2436	ELECTRIC FA	.F.	.F.	
3 KH 130	3	624	0.75	3	624	0	1872	ELECTRIC BB	.F.	.F.	
3 KH 87	2	1269	0.68	7	0	0	2585	ELECTRIC BB	.F.	.F.	
3 KH 104	2	1144	1.00	7	0	0	2288	ELECTRIC BB	.F.	.F.	
3 KH 69	2	1228	1.00	7	0	0	2456	ELECTRIC BB	.F.	.F.	
3 KH 49	2	264	0.25	5	239	92	595	ELECTRIC BB	.F.	.F.	
3 KH 111	1	0	0.00	0	1400	0	1400	ELE RAD/CEIL	.F.	.F.	
3 KH 128	3	816	1.00	6	0	0	2482	ELECTRIC FA	.F.	.F.	
3 KH 118	3	960	1.00	7	0	0	2641	ELECTRIC BB	.F.	.F.	
3 XH 149	1	0	0.00	0	1	416	1600	ELE.BB/SOLAR	.F.	.F.	

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
3 XH 133	1	0	0.00	0	1008	0	1008	ELECTRIC BB	.F.	.F.	
3 XH 145	1	1108	0.71	5	0	0	868	ELECTRIC	.F.	.F.	
3 XH 323	1	1316	0.64	5	0	0	2200	ELECT. CABLE	.F.	.F.	BRICK
3 XH 132	1	617	0.67	6	749	300	2100	ELECTRIC	.T.	.T.	BRICK
3 XH 134	1	0	0.00	0	1900	300	2200	HEATPUMP	.F.	.F.	
3 XH 135	1	1040	0.50	4	0	0	2080	ELECTRIC BB	.F.	.F.	BRICK
3 XH 144	1	0	0.00	14	0	0	1064	ELECTRIC BB	.F.	.F.	
3 XH 158	1	1040	0.50	4	0	0	2010	ELECT. CABLE	.T.	.T.	BRICK
3 XH 159	1	1600	0.73	6	0	0	1600	ELECTRIC	.F.	.F.	BRICK
3 XH 160	1	1640	0.50	4	0	0	3280	ELECTRIC	.F.	.F.	BRICK
3 XH 265	1	0	0.00	0	1100	270	1370	ELECTRIC BB	.F.	.F.	
3 XH 336	1	0	0.00	0	1260	0	1260	FURNACE	.F.	.F.	BRICK
3 XH 136	1	0	0.00	0	1352	0	1352	CABLE	.F.	.F.	
3 RC 127	1	470	1.00	7	360	0	968	ELECTRIC BB	.F.	.F.	C.S. OPENS TO BSMT.
3 RC 86	1	0	0.00	0	750	0	940	ELECTRIC BB	.F.	.F.	
3 RC 106	1	1260	0.50	8	0	0	2520	ELECTRIC BB	.F.	.F.	
3 RC 108	2	1420	0.50	8	0	0	2340	ELECTRIC BB	.F.	.F.	
3 RC 125	2	1332	1.00	8	572	0	4076	ELECTRIC BB	.F.	.F.	
3 RC 100	1	0	0.00	0	1856	0	1856	ELECTRIC BB	.F.	.F.	
3 RC 88	1	0	0.00	0	1670	336	2006	ELEC BOILER	.F.	.F.	
3 ME 90	1	0	0.00	0	1200	0	1200	ELECTRIC BB	.F.	.F.	METAL SIDING
3 RC 102	1	0	0.00	0	1310	0	1310	ELECTRIC BB	.F.	.F.	
3 ME 105	1	0	0.00	0	1176	0	1176	ELECTRIC BB	.F.	.F.	
3 ME 122	1	0	0.00	0	1430	0	1430	ELECTRIC BB	.F.	.F.	
3 ME 277	1	0	0.00	0	1280	0	1280	ELECTRIC BB	.F.	.F.	
3 ME 276	1	1400	1.00	6	0	1400	2800	ELECT/FRN/BB	.F.	.F.	
3 ME 83	2	1768	1.00	7	0	0	3456	ELECTRIC FRN	.F.	.F.	
3 ME 91	1	0	0.00	0	2634	0	2634	ELECTRIC BB	.F.	.F.	
3 ME 112	1	1452	1.00	4	286	1148	2600	HEAT PUMP	.F.	.F.	
3 FK 124	1	676	0.90	7	192	0	864	ELECTRIC BB	.F.	.F.	ATTIC & FLOOR INS.
3 FK 95	1	0	0.00	0	1566	0	1566	ELECTRIC BB	.F.	.F.	FLOOR & CEILING INS.
3 FK 97	2	208	0.80	6	624	208	1768	ELECTRIC BB	.F.	.F.	
3 FK 103	1	960	0.90	7	0	960	2000	ELECTRIC BB	.F.	.F.	BSMNT. WALLS INS.
3 FK 12	1	816	0.75	6	0	816	2266	ELECTRIC BB	.F.	.F.	CEILING INSULATED
3 FK 35	1	768	0.50	4	576	0	1344	ELECTRIC BB	.F.	.F.	FLOOR INSULATED
3 FK 110	1	1100	0.50	4	0	1100	2480	HEAT PUMP	.F.	.F.	CEILING & BSMT. INS.
3 GC 84	2	0	0.00	0	2100	0	1500	FORCED AIR	.F.	.F.	
3 GC 99	1	1200	1.00	5	0	0	2400	BASEBOARD	.F.	.F.	
3 GC 101	1	900	0.80	7	0	400	1300	ELECTRIC	.F.	.F.	
3 GC 113	2	0	0.00	0	1214	0	2080	ELECTRIC BB	.F.	.F.	
3 GC 120	1	0	0.00	0	1200	0	1200	ELECTRIC BB	.F.	.F.	
3 LE 96	1	1380	0.51	5	0	0	1380	ELECTRIC BB	.F.	.F.	
3 LE 94	1	0	0.00	0	768	0	768	ELECTRIC BB	.F.	.F.	
3 LE 121	1	1025	0.85	6	0	0	1025	ELECTRIC BB	.F.	.F.	
3 LE 92	1	0	0.00	0	2100	0	2100	ELECTRIC BB	.F.	.F.	
1 NO 77	1	1300	1.00	6	0	0	1300	OIL	.T.	.T.	

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
1 NO 79	1	850	1.00	6	200	0	1050	OIL	.T.	.T.	
1 NO 81	2	1000	1.00	6	0	0	2000	GAS	.T.	.T.	
1 NO 169	1	700	1.00	5	800	0	1504	OIL	.T.	.T.	
1 NO 171	2	873	1.00	6	0	0	1512	OIL	.T.	.T.	
1 NO 177	2	0	0.00	6	0	0	0		.F.	.F.	STORM WINDOWS
1 NO 183	2	950	1.00	5	125	140	1600	OIL	.T.	.T.	
1 NO 185	0	0	0.00	0	0	0	0		.F.	.F.	
1 NO 186	2	1000	1.00	3	0	0	3000	GAS HOT WTR	.F.	.F.	
1 NO 187	0	0	0.00	0	0	0	0		.F.	.F.	
1 NO 188	2	900	1.00	5	0	900	2400	GAS	.T.	.T.	
1 NO 189	2	1170	1.00	5	585	0	2925	OIL	.T.	.T.	
1 NO 190	2	1260	1.00	8	98	132	2810	OIL	.F.	.F.	
1 NO 191	3	1400	1.00	7	75	0	4100	OIL	.T.	.T.	
1 NO 193	2	750	1.00	4	600	0	1850	OIL	.T.	.F.	
1 NO 195	2	1200	1.00	5	0	0	2100	OIL	.T.	.T.	
1 NO 196	3	1020	1.00	5	180	0	3794	OIL	.T.	.T.	
1 NO 197	2	750	1.00	5	0	0	1500	OIL	.T.	.T.	
1 NO 199	2	920	1.00	0	677	0	2132	GAS	.T.	.T.	
1 NO 200	2	1050	1.00	5	400	0	2500	OIL/HOT WATR	.F.	.F.	
1 NO 202	2	1800	1.00	7	300	1800	6400	GAS/HOT WATR	.F.	.F.	
1 NO 203	2	720	1.00	0	0	0	1440	OIL	.T.	.T.	
1 NO 204	2	416	1.00	8	0	650	2600	GAS	.T.	.T.	
1 NO 206	2	400	1.00	0	0	0	1200	HEATPUMP	.T.	.T.	
1 NO 215	0	0	0.00	0	0	0	1000	ELECTRIC	.F.	.F.	MULTI-FAMILY
1 NO 231	1	900	1.00	0	600	0	1500	OIL	.T.	.T.	
1 NO 377	2	1500	0.50	8	0	1500	3000	OIL	.T.	.T.	
1 NO 80	2	900	1.00	5	0	0	2700	GAS	.T.	.T.	
1 NO 82	2	1200	1.00	6	0	0	2000	GAS	.T.	.T.	
1 NO 181	2	0	0.00	5	0	0	0	OIL	.T.	.T.	
1 NO 182	2	700	1.00	7	450	1200	2800	OIL	.T.	.T.	
1 NO 184	2	635	1.00	4	368	0	1700	OIL	.T.	.T.	
1 NO 213	2	817	1.00	5	176	27	1514	GAS	.T.	.T.	
1 NO 216	2	1000	1.00	5	0	0	1200	GAS	.T.	.T.	
1 NO 224	1	800	0.50	0	0	0	1200	OIL	.T.	.T.	
1 NO 318	3	950	1.00	6	0	0	2320	GAS	.T.	.T.	
1 NO 227	2	0	0.00	0	600	0	1200	GAS	.T.	.T.	
1 NO 226	3	792	0.10	2	720	0	3000	GAS	.T.	.T.	
1 CL 152	1	0	0.00	0	1048	0	1048	ELEC/PS/BB	.F.	.F.	FLOOR INS.,VENT.C.S.
1 CL 153	1	0	0.00	0	890	0	890	ELECTRIC BB	.F.	.F.	
1 CL 154	1	832	0.34	6	0	0	1664	ELECTRIC BB	.F.	.F.	
1 CL 155	2	0	0.00	0	1100	0	2200	ELEC/PS/BB	.F.	.F.	
1 NO 209	2	0	0.00	1	0	0	1500	OIL	.F.	.T.	
2 MF 2	1	0	0.00	0	1085	0	1085	ELECTRIC BB	.F.	.F.	
2 MF 7	1	0	0.00	0	1529	150	1679	ELECTRIC BB	.F.	.F.	
2 MF 15	1	273	1.00	0	1325	0	2038	ELEC/FRN/BB	.F.	.F.	
2 MF 34	1	168	1.00	0	807	168	975	ELECTRIC BB	.F.	.F.	

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
2 MF 40	2	1007	0.87	6	306	1007	2320	HEAT PUMP	.F.	.F.	
2 NO 243	0	0	0.00	0	0	0	0		.F.	.F.	
2 NO 246	1	0	0.00	0	1250	1250	1250	WOODSTOVE	.F.	.F.	
2 NO 257	2	1100	1.00	6	0	0	1100	ELECTRIC	.F.	.F.	
2 MF 70	2	1012	0.90	7	552	1012	2576	ELECTRIC BB	.F.	.F.	
1 NO 76	1	336	1.00	6	513	0	849	GAS	.T.	.T.	
1 NO 194	2	1200	1.00	5	0	0	1800	OIL	.T.	.T.	
1 NO 207	1	750	1.00	8	0	0	1500	GAS	.T.	.T.	
1 NO 223	2	850	1.00	5	0	0	850	OIL	.T.	.T.	
1 NO 225	2	1200	1.00	6	0	0	2500	OIL	.T.	.T.	
1 NO 228	2	570	1.00	4	0	570	2300	GAS	.T.	.T.	
1 NO 230	1	0	0.00	0	0	1100	1100	ELECTRIC	.F.	.F.	
1 NO 330	1	0	0.00	0	0	0	969	GAS	.T.	.T.	
1 NO 180	0	0	0.00	0	0	0	0		.F.	.F.	
1 NO 198	2	750	1.00	7	0	0	1500	OIL	.T.	.T.	
1 NO 229	2	1000	1.00	4	0	500	2500	GAS	.T.	.T.	
1 NO 263	2	700	1.00	5	0	700	1900	GAS	.T.	.T.	
1 NO 217	2	0	0.00	0	1010	0	1640	GAS	.T.	.T.	
1 NO 214	2	600	1.00	4	600	0	1800	GAS	.T.	.T.	
1 NO 322	1	0	0.00	0	0	0	1000	OIL	.T.	.T.	
1 NO 331	2	0	0.00	0	1500	0	1900	OIL	.T.	.T.	
1 NO 333	1	0	0.00	0	1350	0	1350	GAS	.T.	.T.	
1 NO 338	2	800	1.00	7	1000	0	2600	GAS	.T.	.T.	
1 NO 212	1	768	1.00	6	0	768	1536	GAS PROPANE	.F.	.F.	
1 NO 179	0	0	0.00	0	0	0	1100	ELECTRIC	.F.	.F.	MULTI-FAMILY
1 NO 335	2	1000	1.00	4	0	0	2300	GAS	.T.	.T.	
1 NO 208	1	800	1.00	7	0	800	1600	WOOD	.F.	.T.	
1 NO 210	2	0	0.00	0	800	400	1600	HEATPUMP	.T.	.T.	
1 NO 218	2	0	0.00	0	1497	0	2800	GAS	.T.	.T.	
2 NO 172	2	576	1.00	8	864	0	1494	ELECTRIC	.F.	.F.	
1 SS 21	2	0	0.00	0	800	240	1560	ELECTRIC	.F.	.F.	
1 SS 61	1	0	0.00	0	944	0	944	ELECTRIC	.F.	.F.	
1 SS 64	1	0	0.00	0	1044	0	1044	ELECTRIC BB	.F.	.F.	
1 SS 24	1	0	0.00	0	941	0	941	ELECTRIC	.F.	.F.	
1 SS 33	1	0	0.00	0	1020	0	1020	ELECTRIC	.F.	.F.	
1 SS 50	1	0	0.00	0	1557	0	1557	ELECTRIC	.F.	.F.	
1 SS 57	2	0	0.00	0	1113	880	2713	ELECTRIC	.F.	.F.	
1 SS 270	1	0	0.00	0	1559	0	1559	ELECTRIC	.F.	.F.	
1 SS 56	1	0	0.00	0	1011	0	1011	ELECTRIC	.F.	.F.	
1 SS 17	1	0	0.00	0	1062	0	1062	ELECTRIC BB	.F.	.F.	
1 NW 332	1	1200	1.00	10	0	1200	1200	ELECTRIC	.T.	.T.	
1 NW 173	2	80	1.00	4	0	1000	2000	ELECT. CABLE	.F.	.F.	
1 NW 175	2	221	1.00	6	780	0	1500	GAS	.T.	.T.	
1 NW 262	1	0	0.00	0	0	1300	1300	ELECTRIC	.F.	.F.	
2 NW 234	0	855	1.00	4	0	0	855	GAS	.F.	.T.	
2 NW 247	2	998	0.50	8	0	0	0	ELECTRIC BB	.F.	.F.	

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
2 NW 233	2	0	0.00	0	0	0	800	ELECTRIC BB	.F.	.F.	MASONRY/MULTI-FAMILY
2 NW 235	3	700	1.00	4	500	0	1200	ELECTRIC FA	.F.	.F.	
2 NW 236	3	860	1.00	5	0	0	2860	OIL/WOOD	.T.	.T.	
2 NW 237	1	0	0.00	2	1200	0	1200	HEATPUMP	.T.	.T.	
2 NW 238	1	0	0.00	0	1000	0	1000	HEAT PUMP/EL	.T.	.T.	
2 NW 239	2	800	1.00	5	150	0	1400	GAS	.T.	.T.	
2 NW 240	2	1550	1.00	6	0	0	3100	WOOD	.F.	.F.	
2 NW 241	2	850	1.00	8	600	850	2300	ELECTRIC FA	.T.	.T.	
2 NW 242	2	1240	1.00	8	340	340	1580		.F.	.F.	
2 NW 244	1	0	0.00	0	0	2000	1800	GAS	.T.	.T.	
2 NW 245	1	144	1.00	12	3	0	1200	ELECTRIC	.F.	.F.	
2 NW 248	1	0	0.00	0	400	0	802	ELECTRIC	.T.	.T.	
2 NW 249	2	850	0.50	0	404	0	1750	OIL	.T.	.T.	
2 NW 250	0	0	0.00	0	0	0	0		.F.	.F.	
2 NW 251	1	900	1.00	4	0	0	960	OIL	.T.	.T.	
2 NW 252	1	1050	1.00	6	0	0	1050	OIL	.T.	.T.	
2 NW 253	2	650	1.00	7	1200	0	2100	GAS	.T.	.T.	
2 NW 254	1	870	1.00	8	1100	0	2840	ELECTRIC	.T.	.T.	
2 NW 255	1	0	0.00	1	1500	0	1500	ELECTRIC	.T.	.T.	
2 NW 256	2	400	1.00	6	0	1000	1000	WOOD	.F.	.T.	
2 NW 258	1	750	1.00	6	0	0	950	ELECTRIC BB	.F.	.F.	
2 NW 259	2	725	1.00	6	775	600	2895	GAS	.F.	.T.	
2 NW 260	2	1152	1.00	4	0	0	2352	WOODSTOVE	.F.	.F.	
2 NW 261	2	1600	1.00	7	0	0	3300	GAS	.F.	.T.	
2 NW 284	0	0	0.00	0	0	0	0		.F.	.F.	
1 LC 119	2	0	0.00	0	1064	0	1500	ELECTRIC BB	.F.	.F.	
1 LC 28	2	608	0.20	0	72	0	1280	HEAT PUMP	.F.	.F.	BRICK/STUCCO
1 LC 38	1	0	0.00	0	1440	0	1440	ELECTRIC BB	.F.	.F.	
1 LC 114	1	0	0.00	0	782	0	782	ELECTRIC BB	.F.	.F.	
1 LC 123	2	961	0.60	0	88	0	0	ELECTRIC BB	.F.	.F.	
1 LC 126	2	180	0.90	0	688	0	1872	HEAT PUMP	.F.	.F.	
1 LC 162	2	0	0.00	0	0	1930	1930	ELECTRIC BB	.F.	.F.	
1 LC 32	0	0	0.00	0	0	0	0		.F.	.F.	
1 LC 89	2	464	0.10	6	1272	0	2411	ELECT/WOOD	.F.	.F.	
1 LC 41	1	1353	0.25	5	0	1353	2706	HEAT PUMP	.F.	.F.	
1 LC 39	2	840	0.38	3	0	840	2370	ELEC.FURNACE	.F.	.F.	
1 LC 43	2	900	1.00	0	616	0	2416	ELEC.FURNACE	.F.	.F.	
1 LC 51	2	1008	0.50	4	360	1008	2736	ELECTRIC BB	.F.	.F.	
1 LC 65	2	784	0.50	8	392	784	2352	HEAT PUMP	.F.	.F.	
1 LC 143	2	512	0.30	0	420	0	1476	ELECTRIC FRN	.F.	.F.	LOGHOME
1 LC 161	2	612	0.90	7	1120	0	1740	ELECTRIC BB	.F.	.F.	
1 LC 20	2	570	0.50	0	676	570	2364	ELECTRIC BB	.F.	.F.	
1 LC 58	2	988	0.10	2	388	0	1376	ELEC.FURNACE	.F.	.F.	
1 LC 142	1	0	0.00	0	1569	0	1569	ELECTRIC BB	.F.	.F.	
1 LC 19	1	1337	0.50	0	0	0	1337	ELECTRIC BB	.F.	.F.	
1 LC 42	2	576	0.25	4	0	1296	1872	ELECTRIC BB	.F.	.F.	

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
1 NW 290	2	0	0.00	0	1350	0	2150	WOOD/ELECT.	.F.	.F.	
1 NW 281	1	0	0.00	3	1300	0	1300	ELECTRIC	.F.	.F.	
1 NW 264	0	0	0.00	0	0	0	0		.F.	.F.	
1 NW 285	2	900	1.00	8	0	0	1700	GAS	.T.	.T.	
1 NW 291	1	1035	1.00	8	0	705	1740	HOT WATER	.F.	.F.	
1 NW 292	1	0	0.00	2	1650	0	1650	ELECTRIC	.T.	.T.	
1 NW 293	0	0	0.00	0	0	0	0		.F.	.F.	
1 NW 296	2	850	1.00	10	800	750	2160	GAS	.T.	.T.	
1 NW 320	3	0	0.00	0	300	300	2500	ELECTRIC	.T.	.T.	
1 NW 339	1	0	0.00	0	1100	200	1300	ELECTRIC	.F.	.F.	
1 NW 283	2	990	1.00	8	72	2450	2278	OIL/ELECTRIC	.T.	.T.	
1 NW 298	1	1420	1.00	8	0	0	1420	OIL	.T.	.T.	
2 CC 5	1	1300	1.00	5	0	0	2347		.F.	.F.	DEHUMIDIFIER
2 CC 8	2	0	0.00	0	999	0	1873	ELECTRIC	.F.	.F.	
2 CC 10	1	1300	0.63	3	0	0	2200	ELECTRIC	.F.	.F.	
2 CC 23	1	506	0.50	6	0	0	1541	ELECT HP/FA	.F.	.F.	
2 CC 27	0	0	0.00	0	0	0	0		.F.	.F.	
2 CC 29	0	0	0.00	0	0	0	0		.F.	.F.	
2 CC 30	1	0	0.00	3	0	800	1600	ELECTRIC BB	.F.	.F.	P.C.WALL 3'8" BSMT
2 CC 31	1	1200	1.00	3	0	0	2400	ELECTRIC FA	.F.	.F.	
2 CC 37	1	1040	1.00	7	0	0	2080	ELECTRIC	.F.	.F.	
2 CC 67	0	0	0.00	0	0	0	0		.F.	.F.	
2 CC 71	1	1196	1.00	3	0	0	2392	ELECTRIC	.F.	.F.	WD FAN,2 FLR VENTS
2 CC 73	1	1100	1.00	3	0	0	2200	ELECTRIC	.F.	.F.	
2 CC 75	2	540	0.38	5	623	0	1694	HEATPUMP	.F.	.F.	
2 CC 147	1	1441	0.50	15	0	0	2882	ELECTRIC	.F.	.F.	BRICK/MASONRY
2 CC 148	1	864	1.00	3	0	0	1728	ELECTRIC	.F.	.F.	
2 CC 170	1	720	0.71	5	0	672	2448	HEAT PUMP	.T.	.T.	
2 CC 266	2	784	0.50	4	392	0	2000	ELECTRIC	.F.	.F.	
2 CC 267	1	1200	0.51	4	0	0	1860	ELECTRIC	.F.	.F.	
2 CC 268	1	0	0.00	0	1200	0	1200	ELECTRIC	.F.	.F.	
2 CC 271	1	1230	0.50	6	795	619	3854	HEAT PUMP	.F.	.F.	
2 CC 272	1	910	1.00	7	837	0	2657	ELECTRIC	.F.	.F.	
2 CC 314	1	1100	1.00	2	0	0	2200	ELECTRIC	.F.	.F.	
1 NW 309	2	1420	1.00	5	0	0	1920	GAS	.T.	.T.	
1 NW 308	2	0	0.00	3	1225	0	2450	GAS	.T.	.T.	
1 NW 278	0	0	0.00	0	0	0	0		.F.	.F.	
1 NW 279	1	1250	1.00	6	0	0	1250	GAS	.T.	.T.	
1 NW 302	2	800	1.00	6	0	0	1550	GAS	.T.	.T.	
1 NW 304	1	950	1.00	8	90	0	950	GAS	.T.	.T.	EARTH FLOOR IN BSMT
1 NW 306	0	0	0.00	0	0	0	0		.F.	.F.	
1 NW 307	2	915	1.00	6	0	0	0	GAS	.T.	.T.	
1 NW 378	0	0	0.00	0	0	0	0		.F.	.F.	
1 NW 300	2	0	0.00	0	1900	0	2800	GAS	.T.	.T.	
1 NW 305	2	0	0.00	0	1500	300	2000	GAS	.T.	.T.	
1 NW 334	2	0	0.00	8	0	1760	1420	GAS	.T.	.T.	

RADON 3-MONTH/12-MONTH FIELD STUDY

CONSTRUCTION

NO	FLOORS	BSMT AREA (SQ.FT.)	PART BELOW GRADE	DEPTH (FT.)	CRAWL AREA (SQ.FT.)	SLAB AREA (SQ.FT.)	TOTAL AREA (SQ.FT.)	HEATING	DUCTED ?	FORCED AIR ?	COMMENTS
2 NW 312	0	0	0.00	0	0	0	0		.F.	.F.	
2 IS 55	0	0	0.00	0	0	0	0		.F.	.F.	
2 IS 66	2	504	0.00	0	0	0	2000	ELEC HP/WOOD	.F.	.F.	
2 IS 74	0	0	0.00	0	0	0	0		.F.	.F.	
2 NW 289	2	1025	1.00	0	0	0	2050	GAS	.F.	.T.	
2 IS 324	0	0	0.00	0	0	0	0		.F.	.F.	
2 VV 11	2	926	0.90	6	0	0	1850	ELECTRIC BB	.F.	.F.	
2 VV 16	2	1159	0.90	7	0	0	2318	ELECTRIC FA	.F.	.F.	
2 VV 26	1	200	1.00	8	616	0	816	BASEBOARD	.F.	.F.	
2 VV 44	2	1087	0.30	4	0	0	2174	ELECTRIC FA	.F.	.F.	
2 VV 48	2	1088	0.90	7	0	0	2176	ELECTRIC FA	.F.	.F.	
2 VV 52	2	1000	0.40	4	0	0	2000	ELECTRIC BB	.F.	.F.	
2 VV 59	2	1311	0.50	7	0	0	2622	ELECTRIC FA	.F.	.F.	
2 VV 68	2	906	0.40	3	0	0	1812	ELECTRIC BB	.F.	.F.	
2 NW 287	1	1438	1.00	7	0	460	1734	ELECTRIC	.T.	.T.	
1 NW 303	2	1500	1.00	4	0	1500	3700	GAS	.T.	.T.	
1 NW 294	2	0	0.00	0	1200	0	1500	ELECTRIC BB	.F.	.F.	
2 IS 116	2	900	1.00	0	0	0	2400	ELEC FURNACE	.F.	.F.	FAN IN FLOOR REGISTR
2 IS 315	1	1200	1.00	0	0	0	2400	ELECT. FA	.F.	.F.	
2 IS 317	0	0	0.00	0	0	0	0		.F.	.F.	
2 IS 382	2	1015	0.75	20	0	0	2030	ELECTRIC	.F.	.F.	
2 IS 117	2	1052	0.50	0	0	0	2104	ELECTRIC	.F.	.F.	
1 NW 282	2	1700	1.00	6	0	0	3400	OIL	.T.	.T.	
1 NW 311	1	800	1.00	8	1100	0	1900	GAS	.T.	.T.	
2 IS 163	2	0	0.00	0	946	0	1630	ELECTRIC	.F.	.F.	INSULATION '84-'85
2 IS 109	0	0	0.00	0	0	0	0		.F.	.F.	
2 NW 319	1	0	0.00	0	672	800	2144	WOOD STOVE	.F.	.F.	
2 NW 280	2	886	1.00	7	0	0	1032	WOOD	.T.	.T.	
2 IS 164	1	0	0.00	0	0	1184	1184	ELECTRIC BB	.F.	.F.	
2 NW 286	2	800	1.00	6	0	0	0	GAS	.T.	.T.	

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
3 IF 1	81	.T.	81	100	0	98	0.70		
3 IF 4	0	.F.	0	0	0	0	0.00		
3 IF 141	0	.F.	0	0	0	0	0.00		
3 IF 156	0	.F.	0	0	0	0	0.00		
3 IF 326	0	.F.	0	0	0	0	0.00		
3 IF 329	0	.F.	0	0	0	0	0.00		
3 IF 25	37	.F.	37	0	100	37	1.10		
3 IF 46	7	.T.	0	100	0	21	0.95		
3 IF 47	86	.F.	86	100	0	100	0.00		
3 IF 53	0	.F.	0	0	0	0	0.00		
3 IF 54	0	.F.	0	0	0	0	0.00		
3 IF 60	7	.T.	7	100	0	47	0.00		2 AAHX: LOSSNAY VL1500V-C
3 IF 72	0	.F.	0	0	0	0	0.00		
3 IF 137	0	.F.	0	0	0	0	0.00		
3 IF 138	0	.F.	0	0	0	0	0.00		
3 IF 139	0	.F.	0	0	0	0	0.00		
3 IF 140	0	.F.	0	0	0	0	0.00		
3 IF 146	0	.F.	0	0	0	0	0.00		
3 IF 150	0	.F.	0	0	0	0	0.00		
3 IF 151	0	.F.	0	0	0	0	0.00		
3 IF 157	100	.F.	100	100	0	100	0.00		AAHX
3 IF 321	0	.F.	0	0	0	0	0.00		
3 IF 325	0	.F.	0	0	0	0	0.00		
3 IF 327	0	.F.	0	0	0	0	0.00		
3 IF 328	0	.F.	0	0	0	0	0.00		
3 NI 176	0	.F.	0	0	0	0	0.00		
3 NI 178	0	.F.	0	0	0	0	0.00		
3 KH 93	100	.F.	100	100	0	100	3.43		
3 KH 9	0	.F.	0	100	0	100	17.54		
3 KH 6	0	.F.	0	0	100	0	3.90		
3 KH 13	43	.F.	43	100	0	43	0.30		
3 KH 14	0	.F.	0	0	0	0	0.00		
3 KH 45	100	.F.	100	100	100	100	4.84		
3 KH 62	51	.F.	51	100	0	51	12.14		
3 KH 63	0	.F.	0	0	0	0	7.84		
3 KH 98	0	.F.	0	100	0	0	18.18		
3 KH 129	13	.F.	13	0	0	13	12.91		MITSUBISHI AAHX
3 KH 130	44	.T.	44	100	0	44	26.58		
3 KH 87	8	.F.	8	100	0	8	35.08		FILLED ALL CRACKS IN BASEMENT FLOOR
3 KH 104	39	.T.	39	100	0	39	0.00		
3 KH 69	11	.F.	11	0	0	11	28.13		
3 KH 49	96	.F.	96	100	0	96	1.80		
3 KH 111	0	.F.	0	50	0	100	45.81		NUTONE AE70 AAHX
3 KH 128	13	.T.	13	0	0	13	66.62		STAR "NOVA" AAHX
3 KH 118	8	.F.	8	0	0	8	22.60		

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
3 XH 149	100	.F.	100	100	0	100	4.30		
3 XH 133	100	.T.	100	100	0	100	0.00		
3 XH 145	100	.F.	100	100	0	100	2.22		
3 XH 323	100	.T.	100	100	0	100	0.00		
3 XH 132	100	.F.	100	100	0	100	0.00		
3 XH 134	0	.T.	0	100	0	100	11.74		
3 XH 135	100	.T.	100	100	0	100	8.50		
3 XH 144	100	.F.	100	100	0	100	4.13		
3 XH 158	0	.F.	0	0	0	0	0.00		
3 XH 159	0	.F.	0	0	0	0	0.00	SLIDING DOOR	
3 XH 160	100	.T.	100	50	0	100	0.00		
3 XH 265	90	.T.	90	100	0	100	2.16		
3 XH 336	0	.F.	0	0	0	0	0.00		
3 XH 136	0	.T.	0	100	0	100	0.00		
3 RC 127	0	.F.	0	0	0	0	0.00		
3 RC 86	0	.F.	0	0	0	0	26.74		
3 RC 106	0	.T.	0	0	0	0	0.00		
3 RC 108	0	.T.	0	0	0	0	0.00		
3 RC 125	0	.T.	0	0	0	0	0.00		
3 RC 100	0	.T.	0	0	0	0	0.00		
3 RC 88	0	.F.	0	0	0	0	9.79		
3 ME 90	0	.F.	0	0	0	0	0.00		
3 RC 102	0	.F.	0	0	0	0	0.00		
3 ME 105	31	.F.	31	0	0	0	2.95		
3 ME 122	0	.F.	0	0	0	0	0.00		
3 ME 277	15	.F.	15	0	0	0	16.47		
3 ME 276	23	.F.	23	0	0	0	0.00		
3 ME 83	0	.F.	0	0	0	0	0.00		
3 ME 91	0	.F.	0	0	0	0	0.00		
3 ME 112	0	.F.	0	0	0	0	0.00		
3 FK 124	0	.F.	0	0	0	0	0.00		
3 FK 95	0	.F.	0	0	0	0	0.00		
3 FK 97	0	.F.	0	0	0	0	0.00		
3 FK 103	0	.F.	0	0	0	0	0.00		
3 FK 12	0	.F.	0	0	0	0	0.00		
3 FK 35	0	.F.	0	0	0	0	0.00		
3 FK 110	0	.F.	0	0	0	0	0.00		
3 GC 84	0	.F.	0	0	0	0	0.00		
3 GC 99	0	.F.	0	0	0	0	0.00		
3 GC 101	100	.F.	100	100	60	100	1.40		NONE
3 GC 113	0	.F.	0	0	0	0	0.00		
3 GC 120	0	.F.	0	0	0	0	0.00		
3 LE 96	0	.F.	0	0	0	0	0.00		
3 LE 94	0	.F.	0	0	0	0	0.00		
3 LE 121	0	.F.	0	0	0	0	0.00		
3 LE 92	0	.F.	0	0	0	0	0.00		

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
1 NO 77	0	.F.	0	0	0	0	0.00		
1 NO 79	0	.F.	0	0	0	0	0.00		
1 NO 81	0	.F.	0	0	0	0	2.50		
1 NO 169	0	.F.	0	0	0	0	0.00		
1 NO 171	0	.F.	0	0	0	0	0.00		
1 NO 177	0	.F.	0	0	0	0	15.20		WALLED OFF CRAWL SP. & ISOLATE BSMT.
1 NO 183	0	.F.	0	0	0	0	0.00		
1 NO 185	0	.F.	0	0	0	0	0.00		
1 NO 186	0	.F.	0	0	0	0	0.00		
1 NO 187	0	.F.	0	0	0	0	0.00		
1 NO 188	0	.F.	0	0	0	0	0.00		
1 NO 189	0	.F.	0	0	0	0	0.00		
1 NO 190	0	.F.	0	0	0	0	0.00		
1 NO 191	0	.F.	0	0	0	0	0.00		
1 NO 193	0	.F.	0	0	0	0	0.00		
1 NO 195	0	.F.	0	0	0	0	0.00		
1 NO 196	0	.F.	0	0	0	0	0.00		
1 NO 197	0	.F.	0	0	0	0	0.00		
1 NO 199	0	.F.	0	0	0	0	0.00		
1 NO 200	0	.F.	0	0	0	0	0.00		
1 NO 202	0	.F.	0	0	0	0	0.00		
1 NO 203	0	.F.	0	0	0	0	0.00		
1 NO 204	0	.F.	0	0	0	0	0.00		
1 NO 206	0	.F.	0	0	0	0	0.00		
1 NO 215	0	.F.	0	0	0	0	0.00		
1 NO 231	0	.F.	0	0	0	0	0.00		
1 NO 377	0	.F.	0	0	1	0	0.00		
1 NO 80	0	.F.	0	0	0	0	0.90		
1 NO 82	0	.F.	0	0	0	0	0.00		
1 NO 181	0	.F.	0	0	0	0	0.00		
1 NO 182	0	.F.	0	0	0	0	0.00		
1 NO 184	0	.F.	0	0	0	0	0.00		
1 NO 213	0	.F.	0	0	0	0	0.00		
1 NO 216	0	.F.	0	0	0	0	0.00		
1 NO 224	0	.F.	0	0	0	0	0.00		
1 NO 318	0	.F.	0	0	0	0	4.81		
1 NO 227	0	.F.	0	0	0	0	0.00		
1 NO 226	0	.F.	0	0	0	0	0.00		
1 CL 152	0	.F.	0	50	0	0	0.00	ADDED PATIO, SLIDING DR, WOODSTOVE	
1 CL 153	0	.F.	0	0	100	0	0.00		
1 CL 154	100	.T.	100	0	0	100	0.00		
1 CL 155	0	.F.	71	0	0	0	0.00		
1 NO 209	0	.F.	0	0	0	0	0.00		
2 MF 2	100	.F.	100	100	100	100	8.70		

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
2 MF 7	100	.T.	100	100	0	100	2.22		
2 MF 15	94	.F.	94	100	0	100	6.93		
2 MF 34	96	.F.	0	100	0	100	2.81		
2 MF 40	53	.F.	53	0	0	0	4.85		
2 NO 243	0	.F.	0	0	0	0	0.00		
2 NO 246	0	.F.	0	0	0	0	0.00		
2 NO 257	0	.F.	0	0	0	0	0.00		
2 MF 70	10	.F.	0	47	0	100	0.95		
1 NO 76	0	.F.	0	0	0	0	0.00		
1 NO 194	0	.F.	0	0	0	0	0.00		
1 NO 207	0	.F.	0	0	0	0	3.10		
1 NO 223	0	.F.	0	0	0	0	0.00		
1 NO 225	0	.F.	0	0	0	0	0.00		
1 NO 228	0	.F.	0	0	0	0	0.00		
1 NO 230	0	.F.	0	0	0	0	0.00		
1 NO 330	0	.F.	0	0	0	0	0.00		
1 NO 180	0	.F.	0	0	0	0	0.00		
1 NO 198	0	.F.	0	0	0	0	0.00		
1 NO 229	0	.F.	0	0	0	0	0.00		
1 NO 263	0	.F.	0	0	0	0	0.00		
1 NO 217	0	.F.	0	0	0	0	0.00		
1 NO 214	0	.F.	0	0	0	0	0.00		
1 NO 322	0	.F.	0	0	0	0	0.00		
1 NO 331	0	.F.	0	0	0	0	0.00		
1 NO 333	0	.F.	0	0	0	0	0.00		
1 NO 338	0	.F.	0	0	0	0	0.00		
1 NO 212	0	.F.	0	0	0	0	0.00		
1 NO 179	0	.F.	0	0	0	0	0.00		
1 NO 335	0	.F.	0	0	0	0	0.00		
1 NO 208	0	.F.	0	0	0	0	0.00		
1 NO 210	0	.F.	0	0	0	0	0.00		
1 NO 218	0	.F.	0	0	0	0	0.00		
2 NO 172	0	.F.	0	0	0	0	0.00		
1 SS 21	42	.F.	42	0	16	0	1.28		
1 SS 61	60	.T.	100	100	0	100	1.55		
1 SS 64	86	.F.	100	100	0	0	1.04		
1 SS 24	90	.T.	90	0	100	100	1.05		
1 SS 33	100	.F.	100	100	0	100	0.37		
1 SS 50	6	.F.	6	100	87	0	0.60		
1 SS 57	73	.T.	100	0	0	100	1.08		
1 SS 270	5	.F.	5	45	0	0	1.26		
1 SS 56	100	.T.	100	100	0	100	0.58		
1 SS 17	92	.F.	92	100	0	100	1.10		
1 NW 332	0	.F.	0	0	0	0	0.00		
1 NW 173	0	.F.	0	0	0	0	1.00		
1 NW 175	0	.F.	0	0	0	0	0.00		

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
1 NW 262	0	.F.	0	0	0	0	0.00		
2 NW 234	0	.F.	0	0	0	0	0.00		
2 NW 247	0	.F.	0	0	0	0	0.00		
2 NW 233	0	.F.	0	0	0	0	0.00		
2 NW 235	0	.F.	0	0	0	0	0.00		
2 NW 236	0	.F.	0	0	0	0	0.00		
2 NW 237	0	.F.	0	0	0	0	0.00		
2 NW 238	0	.F.	0	0	0	0	0.00		
2 NW 239	0	.F.	0	0	0	0	0.00		
2 NW 240	0	.F.	0	0	0	0	0.00		
2 NW 241	0	.F.	0	0	0	0	0.00		
2 NW 242	0	.F.	0	0	0	0	0.00		
2 NW 244	0	.F.	0	0	0	0	0.00		
2 NW 245	0	.F.	0	0	0	0	0.00		
2 NW 248	0	.F.	0	0	0	0	0.00		
2 NW 249	0	.F.	0	0	0	0	0.00		
2 NW 250	0	.F.	0	0	0	0	0.00		
2 NW 251	0	.F.	0	0	0	0	0.00		
2 NW 252	0	.F.	0	0	0	0	0.00		
2 NW 253	0	.F.	0	0	0	0	0.00		
2 NW 254	0	.F.	0	0	0	0	0.00		
2 NW 255	0	.F.	0	0	0	0	0.00		
2 NW 256	0	.F.	0	0	0	0	0.00		
2 NW 258	0	.F.	0	0	0	0	0.00		
2 NW 259	0	.F.	0	0	0	0	0.00		
2 NW 260	0	.F.	0	0	0	0	0.00		
2 NW 261	0	.F.	0	0	0	0	0.00		
2 NW 284	0	.F.	0	0	0	0	0.00		
1 LC 119	100	.T.	100	100	0	100	1.25		
1 LC 28	100	.T.	100	100	0	100	0.00		
1 LC 38	58	.F.	58	100	0	100	1.82		
1 LC 114	100	.F.	100	33	0	0	0.36		
1 LC 123	100	.F.	100	100	0	100	0.93		
1 LC 126	100	.F.	100	100	0	100	1.39		
1 LC 162	100	.F.	100	100	0	100	6.44		NONE
1 LC 32	0	.F.	0	0	0	0	0.00		
1 LC 89	0	.T.	0	100	0	100	1.57		
1 LC 41	0	.T.	0	100	0	100	2.24		
1 LC 39	0	.T.	0	100	0	100	1.76		
1 LC 43	0	.F.	0	100	0	100	1.02		
1 LC 51	0	.T.	100	0	0	0	1.88		
1 LC 65	0	.T.	0	100	0	100	3.50		
1 LC 143	100	.F.	100	100	0	100	1.78		
1 LC 161	0	.F.	20	100	0	100	1.50		
1 LC 20	100	.T.	100	33	0	100	1.75		
1 LC 58	0	.F.	100	100	0	100	1.72		

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
1 LC 142	100	.T.	100	100	0	100	1.16		
1 LC 19	0	.T.	0	100	0	100	1.10		
1 LC 42	100	.T.	100	50	0	0	1.57		
1 NW 290	0	.F.	0	0	0	0	0.00		
1 NW 281	0	.F.	0	0	0	0	0.00		
1 NW 264	0	.F.	0	0	0	0	0.00		
1 NW 285	0	.F.	0	0	0	0	0.00		
1 NW 291	0	.F.	0	0	0	0	0.00		
1 NW 292	0	.F.	0	0	0	0	0.00		
1 NW 293	0	.F.	0	0	0	0	0.00		
1 NW 296	0	.F.	0	0	0	0	0.00		
1 NW 320	0	.F.	0	0	0	0	0.00		
1 NW 339	0	.F.	0	0	0	0	0.00		
1 NW 283	0	.F.	0	0	0	0	0.00		
1 NW 298	0	.F.	0	0	0	0	0.00		
2 CC 5	100	.F.	100	0	0	0	0.00		
2 CC 8	5	.F.	5	0	0	0	0.00		
2 CC 10	100	.F.	100	100	0	0	0.00		
2 CC 23	0	.F.	0	0	0	0	0.00	SEALED FDN.CRACKS,BSMT.WALL &FLR.INS.	
2 CC 27	0	.F.	0	0	0	0	0.00		
2 CC 29	0	.F.	0	0	0	0	0.00		
2 CC 30	100	.T.	100	50	0	0	0.00		
2 CC 31	97	.F.	97	0	0	0	0.00		
2 CC 37	75	.F.	75	0	0	0	0.00		
2 CC 67	0	.F.	0	0	0	0	0.00		
2 CC 71	100	.F.	100	0	0	0	0.00		
2 CC 73	34	.F.	34	0	0	0	0.00		
2 CC 75	0	.F.	0	0	0	0	0.00		
2 CC 147	68	.F.	68	0	0	0	0.00		
2 CC 148	0	.F.	0	0	0	0	0.00		
2 CC 170	0	.F.	0	0	0	0	0.00		
2 CC 266	0	.F.	0	0	0	0	0.00		
2 CC 267	100	.T.	100	0	0	0	0.00		
2 CC 268	100	.F.	100	0	0	100	0.00		
2 CC 271	0	.F.	0	0	0	0	0.00		
2 CC 272	0	.F.	0	0	0	0	0.00		
2 CC 314	0	.F.	0	0	0	0	0.00		
1 NW 309	0	.F.	0	0	0	0	0.00		
1 NW 308	0	.F.	0	0	0	0	0.00		
1 NW 278	0	.F.	0	0	0	0	0.00		
1 NW 279	0	.F.	0	0	0	0	0.00		
1 NW 302	0	.F.	0	0	0	0	0.00		
1 NW 304	0	.F.	0	0	0	0	0.00		
1 NW 306	0	.F.	0	0	0	0	0.00		

RADON 3-MONTH/12-MONTH FIELD STUDY
WEATHERIZATION

NO	WINDOWS %	DOORS INCL. ?	WINDOWS W/S %	DOORS W/S %	WALL B/I %	CAULK %	RADON LEVEL BEFORE (PCI/L)	CONSTRUCTION CHANGES SINCE	RADON MITIGATION
1 NW 307	0	.F.	0	0	0	0	0.00		
1 NW 378	0	.F.	0	0	0	0	0.00		
1 NW 300	0	.F.	0	0	0	0	0.00		
1 NW 305	0	.F.	0	0	0	0	0.00		
1 NW 334	0	.F.	0	0	0	0	0.00		
2 NW 312	0	.F.	0	0	0	0	0.00		
2 IS 55	0	.F.	0	0	0	0	0.00		
2 IS 66	0	.F.	0	0	0	0	8.20		
2 IS 74	0	.F.	0	0	0	0	0.00		
2 NW 289	0	.F.	0	0	0	0	0.00		
2 IS 324	0	.F.	0	0	0	0	0.00		
2 VV 11	100	.F.	100	100	100	75	54.07		SUB-SLAB VENTILATION FAN
2 VV 16	0	.F.	0	0	0	0	0.00		
2 VV 26	100	.F.	100	100	100	100	9.64		
2 VV 44	0	.F.	0	0	0	0	6.87		
2 VV 48	0	.F.	0	0	0	0	0.00		
2 VV 52	90	.T.	90	0	0	0	4.50		
2 VV 59	0	.F.	0	0	0	0	0.00		
2 VV 68	0	.T.	0	0	0	0	14.62		
2 NW 287	0	.F.	0	0	0	0	0.00		
1 NW 303	0	.F.	0	0	0	0	0.00		
1 NW 294	0	.F.	0	0	0	0	0.00		
2 IS 116	3	.F.	3	0	0	0	4.91		
2 IS 315	0	.F.	0	0	0	0	33.80		
2 IS 317	0	.F.	0	0	0	0	0.00		
2 IS 382	5	.F.	0	0	0	0	6.84		
2 IS 117	90	.F.	90	100	0	0	6.15		
1 NW 282	0	.F.	0	0	0	0	0.00		
1 NW 311	0	.F.	0	0	0	0	0.00		
2 IS 163	78	.F.	15	0	15	100	5.01		
2 IS 109	0	.F.	0	0	0	0	0.00		
2 NW 319	0	.F.	0	0	0	0	0.00		
2 NW 280	0	.F.	0	0	0	0	0.00		
2 IS 164	0	.F.	0	0	0	0	1.15		
2 NW 286	0	.F.	0	0	0	0	0.00		

RADON 3-MONTH/12-MONTH FIELD STUDY

HOURS SPENT IN THE HOME

NO			WD								WE							
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
3	IF	1	14	22	0	0	0	0	0	0	20	22	0	0	0	0	0	0
3	IF	4	12	22	16	16	0	0	0	0	20	21	21	21	0	0	0	0
3	IF	141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	IF	156	18	18	18	0	0	0	0	0	18	18	18	0	0	0	0	0
3	IF	326	10	21	14	0	0	0	0	0	14	21	22	0	0	0	0	0
3	IF	329	14	22	22	0	0	0	0	0	22	22	22	0	0	0	0	0
3	IF	25	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	IF	46	15	18	0	0	0	0	0	0	15	15	0	0	0	0	0	0
3	IF	47	24	21	18	18	18	24	14	0	22	22	22	22	22	22	22	0
3	IF	53	12	18	16	16	18	0	0	0	12	12	12	12	12	0	0	0
3	IF	54	15	18	18	0	0	0	0	0	18	20	20	0	0	0	0	0
3	IF	60	18	18	0	0	0	0	0	0	18	18	0	0	0	0	0	0
3	IF	72	0	24	15	15	0	0	0	0	23	23	23	23	0	0	0	0
3	IF	137	8	16	10	0	0	0	0	0	16	22	20	0	0	0	0	0
3	IF	138	12	9	14	0	0	0	0	0	12	12	10	0	0	0	0	0
3	IF	139	14	14	0	0	0	0	0	0	20	20	0	0	0	0	0	0
3	IF	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	IF	146	14	19	14	15	0	0	0	0	18	18	16	18	0	0	0	0
3	IF	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	IF	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	IF	157	16	16	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	IF	321	18	18	0	0	0	0	0	0	18	18	0	0	0	0	0	0
3	IF	325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	IF	327	12	10	0	0	0	0	0	0	14	10	0	0	0	0	0	0
3	IF	328	14	20	20	20	20	0	0	0	21	21	21	21	21	0	0	0
3	NI	176	12	14	0	0	0	0	0	0	18	18	0	0	0	0	0	0
3	NI	178	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
3	KH	93	12	12	12	0	0	0	0	0	18	18	18	0	0	0	0	0
3	KH	9	14	22	16	12	17	0	0	0	22	22	16	15	24	0	0	0
3	KH	6	14	22	22	0	0	0	0	0	20	22	22	0	0	0	0	0
3	KH	13	20	20	12	12	12	12	12	0	24	24	24	24	24	20	20	0
3	KH	14	18	21	0	0	0	0	0	0	18	21	0	0	0	0	0	0
3	KH	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	KH	62	14	18	18	18	0	0	0	0	20	20	20	20	0	0	0	0
3	KH	63	14	16	16	16	0	0	0	0	18	16	16	16	0	0	0	0
3	KH	98	14	14	14	0	0	0	0	0	20	20	20	0	0	0	0	0
3	KH	129	15	20	14	18	0	0	0	0	0	0	0	0	0	0	0	0
3	KH	130	15	15	17	17	0	0	0	0	20	20	20	20	0	0	0	0
3	KH	87	14	24	16	0	0	0	0	0	24	24	24	0	0	0	0	0
3	KH	104	14	12	15	16	0	0	0	0	20	20	20	20	0	0	0	0
3	KH	69	18	15	16	18	18	0	0	0	18	18	14	18	18	0	0	0
3	KH	49	13	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0
3	KH	111	14	13	0	0	0	0	0	0	20	20	0	0	0	0	0	0

3	KH	128	14	14	14	14	14	0	0	0	16	16	16	16	16	0	0	0
3	KH	118	18	24	0	0	0	0	0	0	18	24	0	0	0	0	0	0
3	XH	149	16	20	12	10	0	0	0	0	16	20	12	10	0	0	0	0
3	XH	133	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	XH	145	14	16	0	0	0	0	0	0	18	20	0	0	0	0	0	0
3	XH	323	13	22	16	16	16	21	0	0	22	22	22	22	22	22	0	0
3	XH	132	13	20	14	14	14	14	14	14	20	22	22	22	22	22	22	22
3	XH	134	14	14	15	15	0	0	0	0	16	20	20	20	0	0	0	0
3	XH	135	14	20	16	16	0	0	0	0	18	20	20	18	0	0	0	0
3	XH	144	15	17	0	0	0	0	0	0	20	20	0	0	0	0	0	0
3	XH	158	16	16	16	16	16	0	0	0	24	24	24	24	24	0	0	0
3	XH	159	16	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	XH	160	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	XH	265	14	20	16	0	0	0	0	0	19	20	20	0	0	0	0	0
3	XH	336	14	16	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	XH	136	12	18	18	0	0	0	0	0	16	19	19	0	0	0	0	0
3	RC	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	RC	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	RC	106	9	12	18	0	0	0	0	0	10	18	9	0	0	0	0	0
3	RC	108	23	12	0	0	0	0	0	0	23	18	0	0	0	0	0	0
3	RC	125	14	20	0	0	0	0	0	0	14	20	0	0	0	0	0	0
3	RC	100	16	16	16	20	0	0	0	0	20	20	20	20	0	0	0	0
3	RC	88	11	14	15	15	0	0	0	0	16	20	16	16	0	0	0	0
3	ME	90	20	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0
3	RC	102	23	23	0	0	0	0	0	0	20	20	0	0	0	0	0	0
3	ME	105	12	20	20	20	0	0	0	0	14	20	20	20	0	0	0	0
3	ME	122	12	20	15	18	0	0	0	0	12	20	12	15	0	0	0	0
3	ME	277	12	14	14	14	0	0	0	0	16	20	20	20	0	0	0	0
3	ME	276	13	16	16	20	0	0	0	0	24	24	24	24	0	0	0	0
3	ME	83	20	12	14	0	0	0	0	0	20	20	20	0	0	0	0	0
3	ME	91	14	22	0	0	0	0	0	0	20	20	0	0	0	0	0	0
3	ME	112	12	12	14	14	14	14	14	0	10	20	16	16	20	20	20	0
3	FK	124	16	20	0	0	0	0	0	0	16	16	0	0	0	0	0	0
3	FK	95	14	13	0	0	0	0	0	0	14	20	0	0	0	0	0	0
3	FK	97	24	16	24	0	0	0	0	0	24	24	24	0	0	0	0	0
3	FK	103	16	24	16	16	24	24	0	0	19	24	16	16	24	24	0	0
3	FK	12	12	20	16	16	20	20	0	0	16	16	16	16	16	16	0	0
3	FK	35	23	23	0	0	0	0	0	0	23	23	0	0	0	0	0	0
3	FK	110	15	13	0	0	0	0	0	0	20	20	0	0	0	0	0	0
3	GC	84	14	20	0	0	0	0	0	0	16	16	0	0	0	0	0	0
3	GC	99	12	15	12	12	12	0	0	0	18	18	18	18	18	0	0	0
3	GC	101	16	16	16	0	0	0	0	0	20	20	20	0	0	0	0	0
3	GC	113	9	14	0	0	0	0	0	0	18	18	0	0	0	0	0	0
3	GC	120	19	16	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	LE	96	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
3	LE	94	18	20	14	22	22	0	0	0	22	22	20	22	22	0	0	0
3	LE	121	18	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
3	LE	92	12	24	0	0	0	0	0	0	12	24	0	0	0	0	0	0
1	NO	77	13	20	20	20	0	0	0	0	15	15	15	15	0	0	0	0
1	NO	79	16	22	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	NO	81	12	24	24	24	0	0	0	0	16	16	16	16	0	0	0	0
1	NO	169	11	16	0	0	0	0	0	0	16	16	0	0	0	0	0	0
1	NO	171	14	14	0	0	0	0	0	0	24	24	0	0	0	0	0	0
1	NO	177	14	20	15	15	17	0	0	0	22	22	20	20	19	0	0	0

1	NO	183	13	18	15	15	0	0	0	0	20	20	20	20	0	0	0	0
1	NO	185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NO	186	14	13	0	0	0	0	0	0	18	18	0	0	0	0	0	0
1	NO	187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NO	188	16	16	16	0	0	0	0	0	20	20	20	0	0	0	0	0
1	NO	189	20	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0
1	NO	190	15	15	15	15	15	0	0	0	24	24	24	24	24	0	0	0
1	NO	191	15	15	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	NO	193	15	14	16	0	0	0	0	0	20	20	20	0	0	0	0	0
1	NO	195	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
1	NO	196	18	12	0	0	0	0	0	0	16	16	0	0	0	0	0	0
1	NO	197	14	14	14	0	0	0	0	0	18	18	20	0	0	0	0	0
1	NO	199	15	12	17	0	0	0	0	0	20	18	18	0	0	0	0	0
1	NO	200	16	13	0	0	0	0	0	0	17	17	0	0	0	0	0	0
1	NO	202	16	14	20	12	0	0	0	0	16	14	16	12	0	0	0	0
1	NO	203	12	24	22	23	0	0	0	0	24	24	24	24	0	0	0	0
1	NO	204	21	19	21	14	0	0	0	0	20	20	20	20	0	0	0	0
1	NO	206	14	15	15	12	17	0	0	0	18	18	10	14	20	0	0	0
1	NO	215	0	16	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	NO	231	10	10	0	0	0	0	0	0	14	14	0	0	0	0	0	0
1	NO	377	12	12	12	12	0	0	0	0	15	15	15	15	0	0	0	0
1	NO	80	12	17	16	16	0	0	0	0	18	15	18	18	0	0	0	0
1	NO	82	14	14	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	NO	181	12	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0
1	NO	182	10	24	16	0	0	0	0	0	16	24	16	0	0	0	0	0
1	NO	184	13	13	0	0	0	0	0	0	16	16	0	0	0	0	0	0
1	NO	213	13	19	19	19	19	0	0	0	20	20	20	20	20	0	0	0
1	NO	216	13	15	17	21	0	0	0	0	20	20	20	20	0	0	0	0
1	NO	224	14	15	0	0	0	0	0	0	15	15	0	0	0	0	0	0
1	NO	318	14	14	0	0	0	0	0	0	18	18	0	0	0	0	0	0
1	NO	227	12	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0
1	NO	226	12	12	14	14	0	0	0	0	18	18	20	20	0	0	0	0
1	CL	152	14	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
1	CL	153	10	14	14	0	0	0	0	0	18	18	18	0	0	0	0	0
1	CL	154	10	14	14	14	0	0	0	0	18	18	18	18	0	0	0	0
1	CL	155	18	18	0	0	0	0	0	0	18	18	0	0	0	0	0	0
1	NO	209	12	12	12	0	0	0	0	0	20	16	16	0	0	0	0	0
2	MF	2	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	MF	7	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	MF	15	16	16	0	0	0	0	0	0	18	18	0	0	0	0	0	0
2	MF	34	14	24	14	0	0	0	0	0	24	24	24	0	0	0	0	0
2	MF	40	19	16	20	15	0	0	0	0	23	20	22	20	0	0	0	0
2	NO	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	NO	246	12	18	0	0	0	0	0	0	18	18	0	0	0	0	0	0
2	NO	257	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	MF	70	14	20	0	0	0	0	0	0	18	18	0	0	0	0	0	0
1	NO	76	20	10	12	0	0	0	0	0	20	10	10	0	0	0	0	0
1	NO	194	15	15	15	0	0	0	0	0	20	20	20	0	0	0	0	0
1	NO	207	14	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0
1	NO	223	12	12	0	0	0	0	0	0	18	18	0	0	0	0	0	0
1	NO	225	13	14	12	0	0	0	0	0	15	19	18	0	0	0	0	0
1	NO	228	11	11	12	0	0	0	0	0	18	18	18	0	0	0	0	0
1	NO	230	13	11	0	0	0	0	0	0	15	15	0	0	0	0	0	0
1	NO	330	12	12	0	0	0	0	0	0	15	15	0	0	0	0	0	0

1	NO	180	14	19	17	0	0	0	0	0	14	20	20	0	0	0	0	0
1	NO	198	10	16	10	16	18	0	0	0	18	20	20	20	20	0	0	0
1	NO	229	13	21	15	16	0	0	0	0	22	22	22	22	0	0	0	0
1	NO	263	13	13	13	13	13	13	13	0	20	20	24	24	24	24	20	0
1	NO	217	12	20	20	20	20	20	0	0	18	18	18	18	18	18	0	0
1	NO	214	13	13	18	18	0	0	0	0	20	20	16	16	0	0	0	0
1	NO	322	10	16	10	0	0	0	0	0	12	12	12	0	0	0	0	0
1	NO	331	14	21	19	0	0	0	0	0	20	20	20	0	0	0	0	0
1	NO	333	13	18	18	24	0	0	0	0	18	9	9	24	0	0	0	0
1	NO	338	13	13	0	0	0	0	0	0	18	18	0	0	0	0	0	0
1	NO	212	12	14	0	0	0	0	0	0	40	35	0	0	0	0	0	0
1	NO	179	12	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
1	NO	335	14	20	18	18	0	0	0	0	40	40	40	40	0	0	0	0
1	NO	208	14	13	14	0	0	0	0	0	20	20	18	0	0	0	0	0
1	NO	210	10	11	8	0	0	0	0	0	8	8	8	0	0	0	0	0
1	NO	218	12	15	20	15	0	0	0	0	18	18	18	18	0	0	0	0
2	NO	172	10	19	10	0	0	0	0	0	10	19	10	0	0	0	0	0
1	SS	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	SS	61	24	22	15	12	22	0	0	0	20	20	20	20	20	0	0	0
1	SS	64	13	24	24	24	0	0	0	0	20	24	24	24	0	0	0	0
1	SS	24	20	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
1	SS	33	8	10	0	0	0	0	0	0	15	15	0	0	0	0	0	0
1	SS	50	20	20	20	0	0	0	0	0	24	24	24	0	0	0	0	0
1	SS	57	16	16	16	0	0	0	0	0	20	20	10	0	0	0	0	0
1	SS	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	SS	56	14	20	16	18	0	0	0	0	18	18	18	18	0	0	0	0
1	SS	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	332	16	12	12	0	0	0	0	0	15	10	12	0	0	0	0	0
1	NW	173	12	12	13	13	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	175	14	14	12	0	0	0	0	0	20	20	20	0	0	0	0	0
1	NW	262	13	13	12	12	0	0	0	0	16	16	18	18	0	0	0	0
2	NW	234	14	14	0	0	0	0	0	0	16	16	0	0	0	0	0	0
2	NW	247	13	13	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	NW	233	13	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0
2	NW	235	14	16	16	16	0	0	0	0	18	18	18	18	0	0	0	0
2	NW	236	24	16	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	NW	237	15	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0
2	NW	238	12	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0
2	NW	239	13	12	0	0	0	0	0	0	13	13	0	0	0	0	0	0
2	NW	240	14	0	0	0	0	0	0	0	18	15	0	0	0	0	0	0
2	NW	241	12	16	14	14	0	0	0	0	16	16	16	16	0	0	0	0
2	NW	242	16	15	0	0	0	0	0	0	20	20	0	0	0	0	0	0
2	NW	244	13	12	13	0	0	0	0	0	20	20	20	0	0	0	0	0
2	NW	245	16	16	16	0	0	0	0	0	20	20	20	0	0	0	0	0
2	NW	248	12	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0
2	NW	249	24	10	16	16	8	0	0	0	24	12	24	24	24	0	0	0
2	NW	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	NW	251	16	16	8	16	0	0	0	0	22	22	24	22	0	0	0	0
2	NW	252	12	20	0	0	0	0	0	0	22	22	0	0	0	0	0	0
2	NW	253	12	12	14	14	0	0	0	0	12	12	16	16	0	0	0	0
2	NW	254	12	12	12	12	0	0	0	0	16	16	16	16	0	0	0	0
2	NW	255	14	14	0	0	0	0	0	0	16	16	0	0	0	0	0	0
2	NW	256	24	22	17	24	12	0	0	0	24	24	24	24	14	0	0	0
2	NW	258	13	13	0	0	0	0	0	0	20	20	0	0	0	0	0	0

2	NW	259	19	13	20	0	0	0	0	0	18	18	20	0	0	0	0	0
2	NW	260	13	14	15	0	0	0	0	0	18	18	18	0	0	0	0	0
2	NW	261	12	18	12	12	12	0	0	0	20	20	18	18	18	0	0	0
2	NW	284	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	38	22	22	0	0	0	0	0	0	22	22	0	0	0	0	0	0
1	LC	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	123	14	24	24	0	0	0	0	0	24	24	24	0	0	0	0	0
1	LC	126	14	12	0	0	0	0	0	0	20	14	0	0	0	0	0	0
1	LC	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	89	22	18	0	0	0	0	0	0	22	22	0	0	0	0	0	0
1	LC	41	13	20	16	16	0	0	0	0	15	18	18	16	0	0	0	0
1	LC	39	16	16	14	15	0	0	0	0	20	20	20	20	0	0	0	0
1	LC	43	14	14	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	LC	51	14	14	14	14	0	0	0	0	20	20	14	20	0	0	0	0
1	LC	65	13	18	16	0	0	0	0	0	20	20	20	0	0	0	0	0
1	LC	143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	161	16	16	0	0	0	0	0	0	16	16	0	0	0	0	0	0
1	LC	20	14	24	17	17	17	0	0	0	24	24	24	24	24	0	0	0
1	LC	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	LC	142	12	12	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	LC	19	13	20	17	17	17	0	0	0	24	24	24	24	24	0	0	0
1	LC	42	14	18	0	0	0	0	0	0	24	24	0	0	0	0	0	0
1	NW	290	9	9	16	16	0	0	0	0	16	16	14	15	0	0	0	0
1	NW	281	6	4	0	0	0	0	0	0	17	12	0	0	0	0	0	0
1	NW	264	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	285	14	14	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	NW	291	14	14	14	13	0	0	0	0	19	19	18	16	0	0	0	0
1	NW	292	12	15	16	16	15	0	0	0	18	18	16	17	18	0	0	0
1	NW	293	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	296	11	11	12	0	0	0	0	0	20	20	20	0	0	0	0	0
1	NW	320	13	20	20	20	20	0	0	0	16	16	16	16	16	0	0	0
1	NW	339	17	15	15	0	0	0	0	0	18	18	18	0	0	0	0	0
1	NW	283	20	24	18	0	0	0	0	0	24	24	24	0	0	0	0	0
1	NW	298	0	0	0	0	0	0	0	0	24	24	24	0	0	0	0	0
2	CC	5	15	15	17	0	0	0	0	0	19	21	20	0	0	0	0	0
2	CC	8	16	16	16	16	0	0	0	0	24	24	24	24	0	0	0	0
2	CC	10	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	CC	23	13	16	16	16	0	0	0	0	20	20	20	20	0	0	0	0
2	CC	27	14	18	0	0	0	0	0	0	21	22	0	0	0	0	0	0
2	CC	29	24	15	0	0	0	0	0	0	22	20	0	0	0	0	0	0
2	CC	30	14	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
2	CC	31	14	16	16	0	0	0	0	0	20	20	15	0	0	0	0	0
2	CC	37	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	CC	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	CC	71	16	14	16	0	0	0	0	0	20	20	20	0	0	0	0	0
2	CC	73	15	20	16	0	0	0	0	0	16	24	16	0	0	0	0	0
2	CC	75	16	19	13	15	0	0	0	0	20	20	20	20	0	0	0	0
2	CC	147	20	20	0	0	0	0	0	0	20	20	0	0	0	0	0	0
2	CC	148	16	14	14	0	0	0	0	0	20	15	12	0	0	0	0	0
2	CC	170	12	15	24	0	0	0	0	0	24	24	24	0	0	0	0	0
2	CC	266	14	14	0	0	0	0	0	0	20	20	0	0	0	0	0	0

2	CC	267	14	14	14	0	0	0	0	0	24	24	24	0	0	0	0	0
2	CC	268	10	24	0	0	0	0	0	0	20	24	0	0	0	0	0	0
2	CC	271	24	18	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	CC	272	14	17	13	13	0	0	0	0	20	20	0	0	0	0	0	0
2	CC	314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	309	13	10	10	0	0	0	0	0	18	18	18	0	0	0	0	0
1	NW	308	12	20	15	15	0	0	0	0	18	16	18	18	0	0	0	0
1	NW	278	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	279	10	10	0	0	0	0	0	0	16	16	0	0	0	0	0	0
1	NW	302	13	15	0	0	0	0	0	0	16	16	0	0	0	0	0	0
1	NW	304	14	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
1	NW	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	307	14	18	0	0	0	0	0	0	20	20	0	0	0	0	0	0
1	NW	378	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NW	300	13	12	0	0	0	0	0	0	21	19	0	0	0	0	0	0
1	NW	305	0	8	0	0	0	0	0	0	22	22	12	0	0	0	0	0
1	NW	334	14	14	12	12	0	0	0	0	17	17	12	12	0	0	0	0
2	NW	312	15	15	16	0	0	0	0	0	0	0	0	0	0	0	0	0
2	IS	55	14	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0
2	IS	66	15	15	15	15	0	0	0	0	20	20	19	19	0	0	0	0
2	IS	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	NW	289	12	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0
2	IS	324	12	14	15	15	20	0	0	0	18	18	18	18	18	0	0	0
2	VV	11	12	15	15	15	0	0	0	0	10	15	15	15	0	0	0	0
2	VV	16	14	14	0	0	0	0	0	0	20	20	0	0	0	0	0	0
2	VV	26	16	12	3	0	0	0	0	0	16	21	3	0	0	0	0	0
2	VV	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	VV	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	VV	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	VV	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	VV	68	14	20	14	0	0	0	0	0	16	18	20	0	0	0	0	0
2	NW	287	12	23	12	13	0	0	0	0	18	23	13	14	0	0	0	0
1	NW	303	16	16	16	15	14	0	0	0	24	24	24	24	24	0	0	0
1	NW	294	11	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
2	IS	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	IS	315	21	21	0	0	0	0	0	0	24	22	0	0	0	0	0	0
2	IS	317	13	19	0	0	0	0	0	0	22	22	0	0	0	0	0	0
2	IS	382	12	13	0	0	0	0	0	0	19	19	0	0	0	0	0	0
2	IS	117	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
1	NW	282	12	22	8	10	18	0	0	0	20	20	10	10	20	0	0	0
1	NW	311	13	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0
2	IS	163	24	24	0	0	0	0	0	0	24	24	0	0	0	0	0	0
2	IS	109	22	0	0	0	0	0	0	0	23	0	0	0	0	0	0	0
2	NW	319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	NW	280	15	20	0	0	0	0	0	0	14	15	0	0	0	0	0	0
2	IS	164	10	12	12	12	12	0	0	0	12	15	15	15	15	0	0	0
2	NW	286	12	18	18	18	18	0	0	0	18	18	18	18	18	0	0	0