Attachment S

Final Status Survey Report #20 Documentation

(UNDER SEPARATE COVER)

24 M2

FINAL

COLUMBUS CLOSURE PROJECT CHARACTERIZATION AND FINAL STATUS SURVEY REPORT FOR THE WJN WELL HOUSE BUILDING

Revision 1
June 16, 2006

Prepared by

ECC & E2 Closure Services
1425 State Route 142 East
West Jefferson, OH 43162

Contract Number: DE-AC24-04OH20171

FINAL Characterization and Final Status Report for the WJN Well House

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Contract Number: DE-AC24-04OH20171

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1.0 Introduction

This report contains the final status surveys (FSS) for the West Jefferson North (WJN) Building WJN Well House (WJN Well House) located at the Columbus Closure Project (CCP), 1425 Plain City/Georgesville Road State Route 142 East, West Jefferson, OH 43162. Final status surveys were conducted according to the guidance presented in the *Manual for Conducting Surveys in Support of License Termination*, NUREG/CR-5849 (NUREG/CR-5849) (ORAU, 1992) and the *Radiological Characterization and Final Status Plan for Battelle Columbus Laboratories Decommissioning Project, West Jefferson Site*, DD-97-02 (Final Status Plan) (Battelle, 2000b). The final status surveys were conducted in July of 2005.

The intent of this final status survey report is to provide a complete record of the radiological status of the WJN Well House. Information and data is provided to enable an independent re-creation and evaluation at some future date of both the survey activities and its reported results. Information in this report is also available in referenced technical basis documents, final status survey plans and procedures, the *Battelle Memorial Institute Columbus Operations, Decommissioning Plan*, DD-93-19 (BMI Decommissioning Plan), and reporting and quality assurance procedures.

To the extent practicable, this final status survey report is presented with minimal information incorporated by reference. This final status survey report has been generated following the annotated outline presented in Chapter 9 of NUREG-5849 (ORAU, 1992).

1.1 Background

On April 16, 1943, BMI, acting through what is now its Battelle Columbus Operations (BCO), entered into Contract No. W-7405-ENG-92 with the Manhattan Engineering District (MED) to perform atomic energy research and development (R&D) activities. BCO performed nuclear materials research and development at privately-owned facilities for the MED and its successor agencies – the Atomic Energy Commission (AEC), the Energy Research and Development Agency (ERDA), and the Department of Energy (DOE). Research and development continued until 1988 (Battelle, 2003).

The BCO facilities at the King Avenue Site, Columbus, Ohio, and the West Jefferson North (WJN) and South (WJS) Sites, West Jefferson, Ohio, became partially radiologically contaminated as a result of the R&D activities. Decontamination of the King Avenue and WJS Sites has been completed and activities continue at the WJN site. The DOE, as the successor to the AEC and the Government's earlier work, is the agreed party with predominant liability and responsibility for decontamination and decommissioning (D&D) of the BCO facilities (Battelle, 2003). The Assistant Secretary for Nuclear Energy of the DOE accepted the decontamination and decommissioning (D&D) of the WJ site into the DOE's Surplus Facilities Management Program as a major project (DOE, 1986). The DOE is the agency funding and managing the cleanup of the WJN site (Battelle, 2003). However, the site is not a DOE-owned facility.

BMI holds U.S. Nuclear Regulatory Commission (NRC) license number SNM-7. BMI has continually operated and conducted D&D activities in full compliance with this NRC license. The BMI Decommissioning Plan for the WJN site does not serve as a declaration to terminate SNM-7, but establishes the criteria for performing D&D activities. The end goal of the BMI Decommissioning Plan is to reach unrestricted use conditions for the site (Battelle. 2003).

In 2002. the DOE contracted ECC&E2 Closure Services. LLC (Closure Services) to complete the safe removal of the DOE radioactive materials and contamination from the WJN site. Removal of radioactive material will be to levels allowing future use of the site without radiological restrictions as described in the BMI Decommissioning Plan. Closure Services has conducted characterization and final status surveys of the WJN Well House to demonstrate that the area is available for unrestricted release.

2.0 Site Description

Created in 1984, the Battelle Columbus Decommissioning Project (BCLDP) was a remediation project that included nine buildings at the King Avenue site and five at the WJN site. The CCP is the successor of the BCLDP. Under the CCP, Closure Services has demolished all of the buildings that were slated for demolition at the WJN site. The WJN Well House remains and is not slated for demolition.

Three former research facilities, Building JN-1, Building JN-2, and Building JN-3, and Building JN-6 have been demolished. Remediation is in process or has been completed for several outfalls, the filter beds, and monitoring wells. The WJN Well House is located to the east of the former Building JN-1. **Figure 1** shows the WJN site and the approximate location of the WJN Well House.

2.1 Area Description

BMI constructed the WJN Well House in 1955. The building has a single floor above ground and a basement, and is constructed of cement block with a brick face. The first floor and the basement have concrete floors. The WJN Well House contains a pump and water softener for supporting the site potable water supply. The building is not occupied and serves solely to support the site water supply. The Historical Site Assessment record for adjacent areas to Building JN-1 does not indicate the potential for contamination within the WJN Well House. Potential residual contamination was identified in sanitary utility lines located adjacent to the structure (BMI, 2000a). The building will remain in use as part of the potable water supply for the West Jefferson Facility and is to be released for unrestricted use (DOE, 2003).

Two classifications of areas are used in NUREG-5849 and are termed **affected** or **unaffected.** These classifications are defined as (NRC, 1992):

> **Affected Areas:** Areas that have potential radioactive contamination (based on plant operating history) or known radioactive contamination (based on past or preliminary radiological surveillance). This would normally include areas where radioactive materials were used and stored, where records indicate spills or other unusual occurrences that could have resulted in spread of contamination, and where radioactive materials were buried. Areas immediately surrounding or adjacent to locations where radioactive materials were used, stored, or buried are included in this classification because of the potential for inadvertent spread of contamination.
>
> **Unaffected Areas:** All areas not classified as affected. These areas are not expected to contain residual radioactivity, based on knowledge of site history and previous information.

The WJN Well House is considered affected due to the location adjacent to Building JN-1.

3.0 Decommissioning Activities

3.1 Decommissioning Objective

The WJN Well House is considered to be an affected, baseline area. The objective of the final status survey performed in the WJN Well House was to demonstrate that the structure is available for unrestricted release. The CCP has developed quantitative values for demonstrating compliance to the decommissioning objectives that have been incorporated into the BMI Decommissioning Plan and are presented in this report. **Table 1** presents the surface release criteria as detailed in DD-93-02, Rev. 0, "Surface Release Criteria Technical Basis Document," (Battelle, 1993A). **Table 2** presents the volumetric release criteria as presented in DD-93-03, Rev. 0, "Volumetric Release Criteria Technical Basis Document for Battelle Columbus Laboratory Decommissioning Project" (Battelle, 1993B).

4.0 Final Status Survey Procedures

The CS Characterization Team conducted the final status survey of the WJN Well House to the Final Status Plan (Battelle, 2000b).

4.1 Sampling Parameters

The Final Status Plan requires that grid systems be established for structural affected areas (Battelle, 2000b). The WJN Well House characterization and final status survey grid system comprised of one square meter (1m x 1m) grids inside and outside the structure. **Figures 2 thru 15** detail the WJN Well House grids and the alpha numeric identifier for each grid.

Direct and indirect surveys were performed within each grid as required by the Final Status Plan, §5.1.3 (Battelle, 2000b). Direct surveys involve a scanning technique performed by moving a detector at a consistent speed and distance above a surface for the purpose of detecting elevated levels of radiation. Direct surveys are scanning surveys. Static measurements involve holding the same detector over a surface for a pre-determined period of time, typically for one-minute. Indirect surveys involve obtaining physical smear samples of the surface under consideration.

The Characterization Team scanned 100 percent of the floor and walls up to two meters high. Scanning surveys included alpha and beta measurements of all accessible surfaces. Static one-minute readings were performed in a grid if scan survey readings indicated a net activity above the Decision Level Value (DLV). Section 4.2 of this report discusses the DLV in further detail.

A large population statistical survey was conducted for the floors and the wall surfaces within the WJN Well House as required by §5.3.3 of the Final Status Plan (Battelle, 2000b). The statistical survey consisted of a static alpha + beta integrated measurement, a static alpha-only integrated measurement, and a smear sample. The data was collected for the purpose of a population statistical test to determine compliance to the surface contamination release limits. Population surveys are those grouped surface activity measurements that are performed at randomly and systematically selected locations. Surface activity measurements are performed for a 1-minute, static count, using a large area (180 cm^2) gas proportional detector. This method provides detection efficiencies well below the guideline level.

The WJN Well House was grouped into "units". Each room of the interior of the building was divided into two units, the walls being one unit, and the floor the other. From each unit, 30 grids were selected for the population statistical survey. Population statistical surveys consisted of obtaining a static alpha + beta integrated measurement from each of the thirty grids from the floor and the walls of the structure.

Samples were taken from the roofing material of the building. Sample results from the roofing material were compared to the volumetric release criteria listed in **Table 2**.

4.2 Background/Baseline Levels Identified

The Characterization Team performed a background survey in support of the characterization and final status survey for the WJN Well House. The background survey was conducted within JN-6 for alpha + beta and alpha integrated measurements for each building material type. Additionally, the final status survey performed for JN-6 supported the unrestricted release of the facility (Closure Services, 2004). The results from the JN-6 release are used as the background values for various material types, including those found in the WJN Well House. Building material types selected for the background survey included:

- Concrete block wall,
- Concrete forms & Concrete floor,
- LONAM (steel, window frames, building components), and
- Brick

Background surveys were performed in the same manner and with the same instrumentation used during the characterization and final status survey of the WJN Well House. **Tables 3 thru 14** list the results of the background survey.

A decision level value (DLV) was calculated to permit the field identification of surfaces requiring additional radiological measurements. Decision level values were calculated using the following equation (Battelle, 2000b).

$$DLV = \bar{x}_{bkg} + MDA$$

where:

$\bar{x}_{bkg}$ = mean background value (cpm)
MDA = minimum detectable activity (cpm).

MDA values were calculated using the following equation:

$$MDA = 3 + 4.65(\sigma_{bkg})$$

where:

σ_{bkg} = standard deviation of background value.

4.3 Major Contaminants Identified

Existing monitoring data and historical information available for the WJN Well House indicates that no radiological contamination events occurred within the building. Residual radioactive contamination found in the backyard of Building JN-1 and adjacent underground utilities consisted largely of fission and activation products. The potential radioactive substances identified in these included Cesium-137 (Cs-137), Cobalt-60 (Co-60), Carbon-14 (C-14), Strontium-90 (Sr-90), Plutonium-238 (Pu-238), Pu-239, and other individual

radionuclides. Cs-137, Co-60, and Sr-90 are the prominent isotopes present. The more restrictive surface contamination limits associated with Sr-90 were applied to the characterization and final status survey for WJN Well House scans as well as the transuranic limits for alpha static surveys.

4.3.1 Guidelines Established

Table 1 presents the surface contamination guidelines utilized by the CCP and applied for WJN Well House. These criteria are provided by DOE Order 5400.5 "Radiation Protection of the Public and Environment," which reference Regulatory Guide 1.86. DOE Order 5400.5 does not define the release levels for nuclides such as transuranics, Ra-226 and Th-230, therefore the CCP adopted the guidance of Regulatory Guide 1.86.

As previously stated, the more restrictive surface contamination limits associated with Sr-90 were applied to the characterization and final status survey for total fixed plus removable contamination for alpha + beta measurements.

Exposure rates were compared to the limit of 5 μR/hr "greater than or equal to" the mean background limit listed in DD-97-02, Rev. 0. The calculated mean background exposure rate at the 95 percent confidence interval is used for the CCP.

Table 2 presents the guidelines for residual radioactivity concentrations for soil and solid volumes as applied to the WJN Well House. Criteria for residual radioactivity concentrations in soil are defined in a number of references. DOE Order 5400.5, Section IV.a.2 provides generic guidelines for residual concentrations of Radium-226 (Ra-226), Ra-228, Thorium-230 (Th-230), and Th-232. NRC Guidance provided to the CCP contains soil radioactivity concentration guidelines for Co-60, Sr-90, Cs-137, Ra-226, Ra-228, natural, enriched and depleted uranium. **Table 2** values have been generated primarily from various reference technical documents and from soil guidelines generated using computer pathway analyses.

5.0 Equipment and Procedures

5.1 Equipment

Direct reading gas proportional survey instruments sensitive to alpha and beta radiation were used to monitor facility surfaces for residual radioactive materials. Ludlum Model 43-20 gas proportional detectors (180 square centimeters (cm^2) detection areas) with Eberline ESP-2 meters were used to scan all building surfaces. The 180 cm^2 detector was used for all static measurements for the determination of residual radioactivity levels. P-10 gas was supplied via a continuous feed to the detectors. Thin, flat plate thorium-230 and technicium-99 (Tc-99) sources traceable to the National Institute of Standards and Technology (NIST) per requirements of ANSI-N323a, "Radiation Protection Instrumentation Test and Calibration" were used to calibrate the gas proportional instruments for alpha and beta detection, respectively (ANSI, 1997). The Tc-99 source was used according to Section 4.2.2 of ANSI-N323A. Section 4.2.2 states "the detector shall be calibrated with an energy that is less than or similar to beta energies in the field." (ANSI, 1997) The average beta energy of the Tc-99 is 85 KeV, with the average energies of Co-60, Cs-137, and Sr-90 being 95, 156, and 196 KeV, respectively. These energies are similar to those encountered during the survey.

Other instrumentation also used in the support of the final status survey includes:

- A Ludlum Model 19 Exposure Rate Meter to perform gamma radiation measurements.
- A VMS based Canberra Procount™ data acquisition system in conjunction with high purity germanium detectors for gamma spectroscopy of soil samples.
- A Tennelec Model LB5100 Simultaneous Alpha and Beta Gas Proportional Counter to count smear samples.

5.2 Minimum Detectable Activities

5.2.1 Structure Surface Scanning and Static Measurements

Minimum detectable activities (MDAs) are determined utilizing the data collected for each surface material. The following equation is used to calculate the MDA:

$$MDA = \frac{3 + (4.65 * \sigma_{bkg})}{Eff * T * G}$$

where:

σ_{bkg}	=	standard deviation of background value = $\sqrt{counts_{bkg}}$
Eff	=	efficiency of detector
T	=	time in minutes

$$G = \text{geometry} = \frac{\text{active probe area in cm}^2}{100}$$

The MDA for large, wide area sources was calculated assuming the radioactive source remained under the detector approximately one minute, allowing the MDA for wide-area source scan surveys to approach the MDA reported for a static survey. The beta MDA for a wide-area beta source was calculated at 260 disintegrations per minute per 100 square centimeters (dpm/100 cm^2). The MDA for scans involving point sources were calculated by evaluating the time a point source remained under the detection area, given a worst-case brick background. A beta MDA of 1600 dpm/100 cm^2 was calculated for a point source configuration during a scan survey. The calculated MDAs for alpha scans for wide-area and point sources are 18.5 and 281 dpm/100 cm^2. **Attachment A** details the method for calculating the MDA.

Scanning measurements were conducted according to SC-OP-004, Rev. 0, Section 5.5, Direct Survey (Scanning). Scanning surveys were performed over the entire surface of the affected grid at a distance of $\leq$0.5 cm and a rate not to exceed 5 cm/sec.

5.3 Procedures

The Characterization Team was formally trained and qualified to applicable procedures prior to the initiation of the characterization and final status surveys. Documentation of training is maintained by CCP Project Records.

The following plans and procedures were utilized for the surveys:

DD-93-19, Rev. 5	Decommissioning Plan, Battelle Memorial Institute Columbus Operations
DD-97-02, Rev. 0	Radiological Characterization and Final Status Plan for BCLDP West Jefferson Site
SC-OP-004, Rev. 0	Radioactive Contamination Monitoring Requirements for Facility Surface Characterization
SC-OP-007, Rev. 0	Baseline Reference Values for Facility Radiological Characterization Surveys
SC-OP-010, Rev. 0	Establishing a Surface Reference Grid for Walls, Floors, and Ceilings for a Detailed Characterization Survey

6.0 Survey Findings

6.1 Exposure Rate Surveys

The calculated mean background exposure rate and the 95 percent confidence intervals used for the WJN site is 8 ± 2 μR/hr. Individual exposure rates were compared to the mean background rate of 8 ± 2 μR/hr to demonstrate compliance to the 5 μR /hr above background release criterion (i.e. exposure rate surveys must be less than or equal to 13 μR/hr to be compliant). The average contact exposure rate measurement was 12 μR/hr; the minimum contact exposure rate measurement was 11 μR/hr; and the maximum contact exposure rate measurement was 13 μR/hr. The exposure rate measurements are presented in **Tables 16 thru 20**.

6.2 Roof Material Sampling

Solid samples were collected of the roofing material of the WJN Well House. Roofing material samples consisted of gravel, tar, sand, and dust typically found on a flat-roofed building. Analysis of the samples indicates that Cs-137 concentrations are at or below background levels. Additionally, the reported results were significantly below the release criteria listed in **Table 2. Table 15** presents the results of the samples collected of the roofing material.

6.3 Scanning and Fixed Measurements

Final status surveys for total (fixed and removable) radiological contamination were less than the release criteria listed in **Table 1**. All scanning measurements for alpha/beta and static measurements for alpha/beta and alpha only were below the limits listed in **Table 1**.

Tables 16 thru 18 present the scan survey results of the interior of the first floor, the basement, and the building exterior, respectively. **Tables 19 and 20 present** the static measurements of the interior of the first floor and the basement, and the building exterior, respectively. Numerical values in the tables represent residual activities and were computed as follows:

$$\frac{dpm}{100cm^2} = \frac{C_g - C_b}{(T)(Eff)(\frac{180}{100})}$$

Where:

C_g = Gross counts (counts/180 cm^2)
C_b = Mean value of background counts (counts/180 cm^2)
T = count time (min) [one minute count time is standard]
Eff = average instrument efficiency

Count rates for both wide area (greater than the probe area of 180 cm^2) and point (less than the probe area of 180 cm^2) sources were normalized to 100 cm^2 through this equation. Utilizing the equation confirms that all wide-area sources met the 1,000 dpm/100 cm^2 release criteria. Point sources, if identified, were also subject to the normalizing equation. Therefore, activity for point sources was limited to 1800 dpm/100 cm^2, which is well below the 3,000 dpm/100 cm^2 release criteria for "hot spots."

Measurements obtained from the interior and of the exterior of the building did not exceed the decision level value (DLV). Further data collection activities of the building included (a) a static alpha-plus-beta measurement, (b) a static alpha-only measurement, and (c) a smear sample.
The following summarizes the alpha + beta scanning and integrated measurement surveys obtained for WJN Well House. A total of 246 survey grids were scanned, static measurements and smears were collected in 88 survey grids. The results of these surveys are summarized below.

Location	**Total Alpha + Beta Activity in dpm/100cm^2**		
	Average	**Minimum**	**Maximum**
Scanning Survey First Floor	-234	-608	6
Scanning Survey Basement	-254	-581	0
Scanning Survey Exterior	9	-378	276
Static Survey Exterior	11	-157	255
Static Survey Interior	-22	-295	197

7.0 Conclusions

The characterization and final status survey results demonstrate that the radiological endpoint criteria objectives of the NRC-approved Decommissioning Plan have been met for the areas addressed by this effort. (Battelle, 2003) The scanning and the integrated measurements for alpha + beta, smear survey results, and static alpha measurements obtained from the WJN Well House are reported as concentrations less than those listed in **Table 1.** Reported analytical results for media samples obtained from the roofing material of the WJN Well House are below the residual radioactivity concentrations for soil and solid volumes as presented in **Table 2**.

The final status survey performed on the WJN Well House area, statistically demonstrates that the area is free from residual radioactive contamination making it suitable for unrestricted release.

8.0 References

American National Standards Institute (ANSI), 1997. ANSI-N323a, "Radiation Protection Instrumentation Test and Calibration."

Battelle, 2003. "Decommissioning Plan for the Battelle Memorial Institute Columbus Operations," DD-93-19.

Battelle, 2000a, "Historical Information for External Areas at the West Jeff North Site and Adjacent Filter Beds: Letter to J. Poliziani from G. Kirsch. August 20, 2000.

Battelle, 2000b. "Radiological Characterization and Final Status Survey Plan for Battelle Columbus Laboratory Decommissioning Project West Jefferson Site," DD-97-02.

Battelle, 1993A. "Surface Release Criteria Technical Basis Document." DD-93-02.

Battelle, 1993B. "Volumetric Release Criteria Technical Basis Document for Battelle Columbus Laboratories Decommissioning Project," DD-93-03.

U.S. Department of Energy (DOE), 1990. Finding of No Significant Impact, Decontamination and Decommissioning of the Battelle Columbus Laboratories in Columbus and West Jefferson, Ohio.

U.S. Department of Energy (DOE), 1986. May 29, 1986 memorandum, Voight to Vaughan, approved by Vaughan, June 10, 1986.

U.S. Nuclear Regulatory Commission (NRC). 1998. "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions" NUREG-1507.

Oak Ridge Associated Universities (ORAU), 1992. "Manual for Conducting Radiological Surveys in Support of License Termination. Draft Report for Comment" NUREG/CR-5849. ORAU-92/C57, prepared for the Nuclear Regulatory Commission by the Environmental Survey and Assessment Program, Energy/Environmental Systems Division. ORAU. 1992.

Figures

Figure 1
Site Map

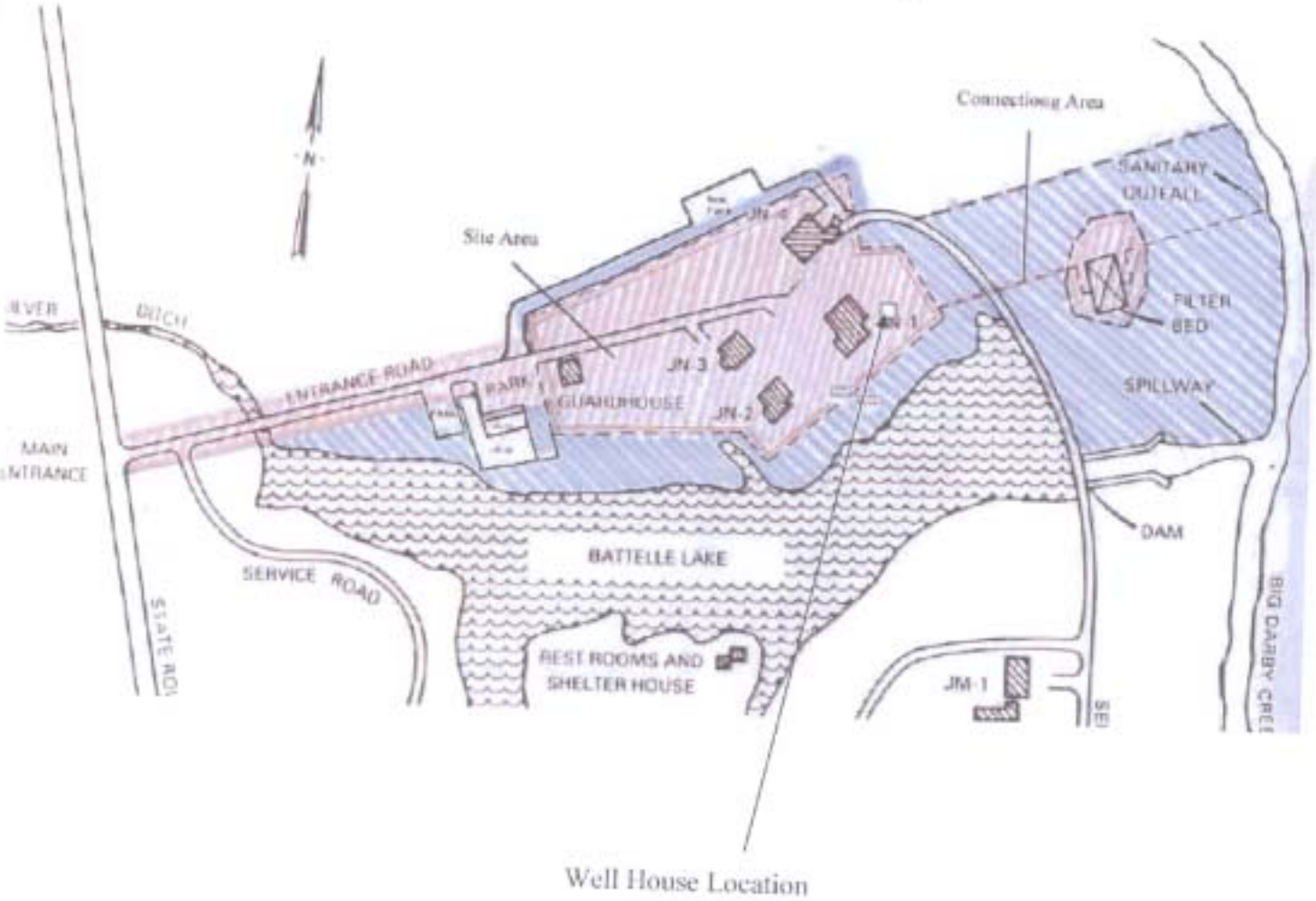


Figure 2
WJN Well House Level 1 Floor Grid Map

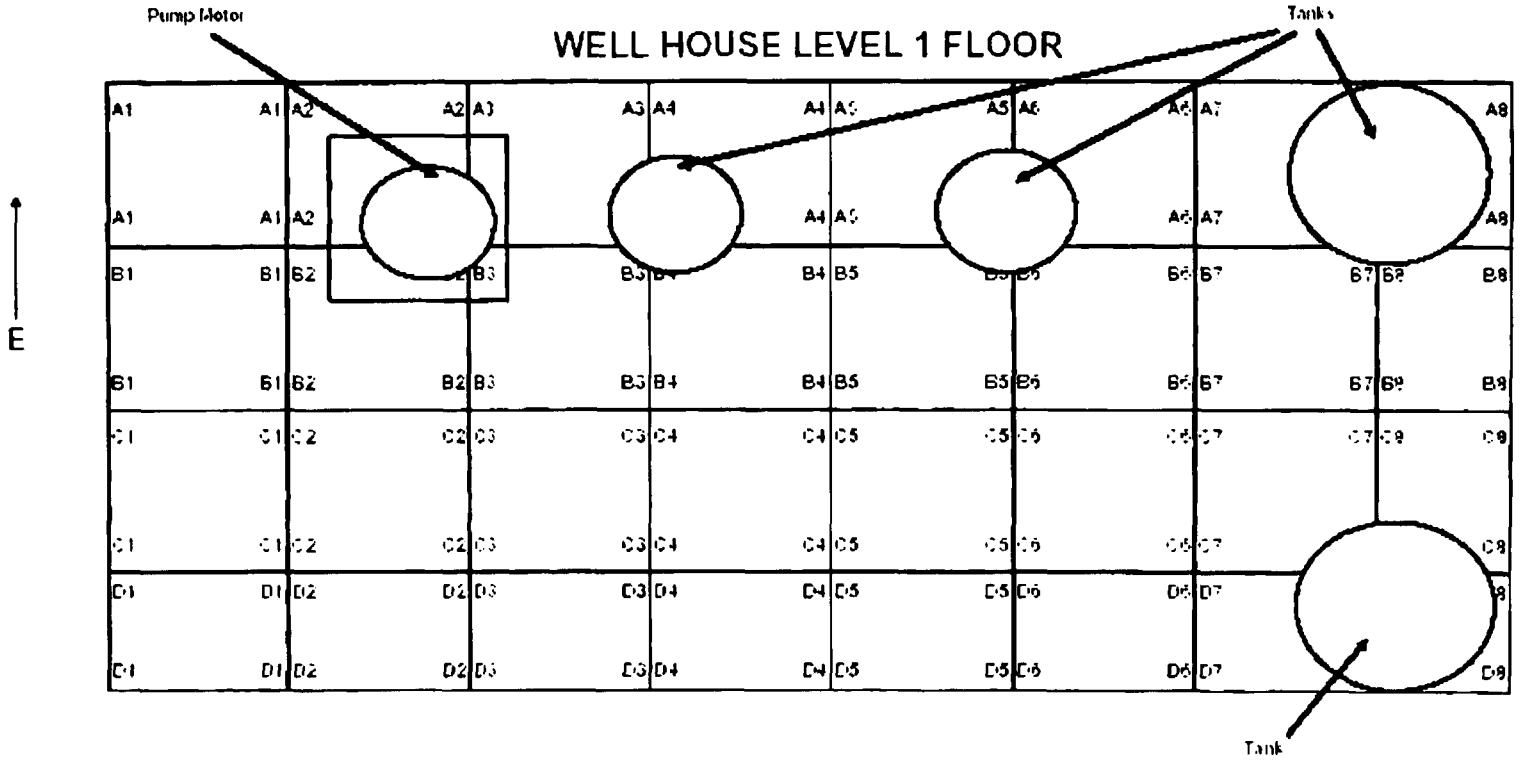


Figure 3
WJN Well House Level 1 North Wall Grid Map

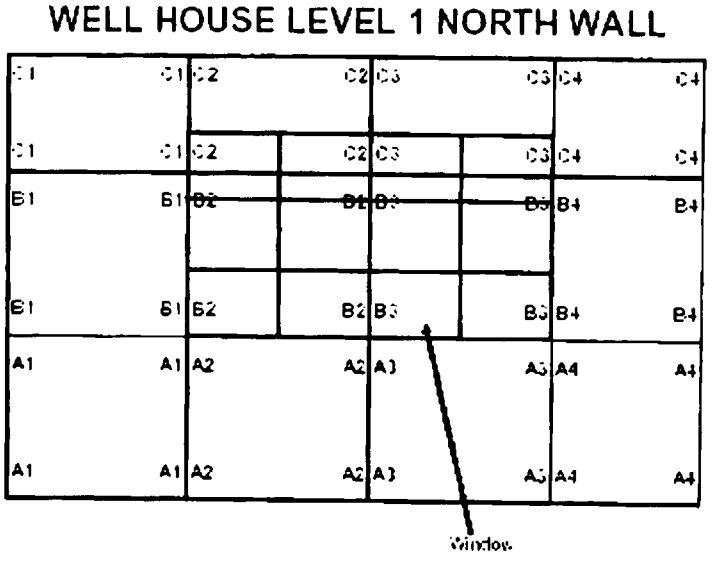


Figure 4
WJN Well House Level 1 East Wall Grid Map

WELL HOUSE LEVEL 1 EAST WALL

C1	C1	C2	C2	C3	C3	C4	C4	C5	C5	C6	C6	C7	C7	C8	C8
C1	C1	C2	C2	C3	C3	C4	C4	C5	C5	C6	C6	C7	C7	C8	C8
B1	B1	B2	B2	B3	B3	B4	B4	B5	B5	B6	B6	B7	B7	B8	B8
B1	B1	B2	B2	B3	B3	B4	B4	B5	B5	B6	B6	B7	B7	B8	B8
A1	A1	A2	A2	A3	A3	A4	A4	A5	A5	A6	A6	A7	A7	A8	A8
A1	A1	A2	A2	A3	A3	A4	A4	A5	A5	A6	A6	A7	A7	A8	A8

Figure 5
WJN Well House Level 1 South Wall Grid Map

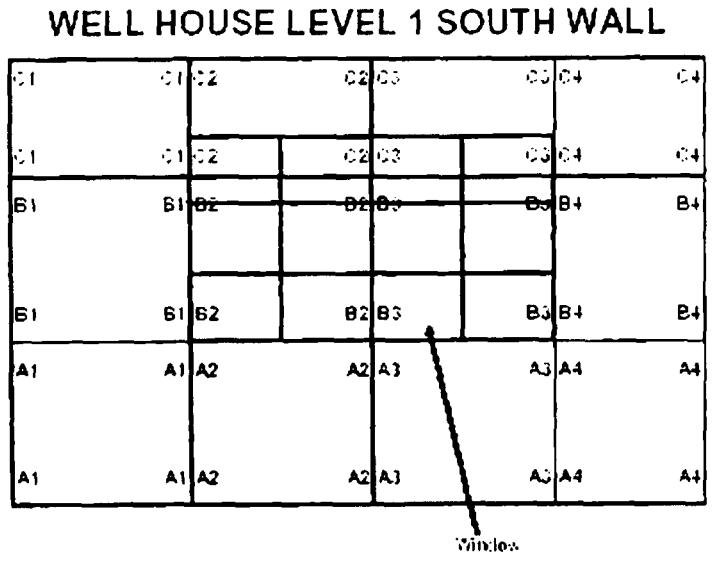


Figure 6
WJN Well House Level 1 West Wall Grid Map

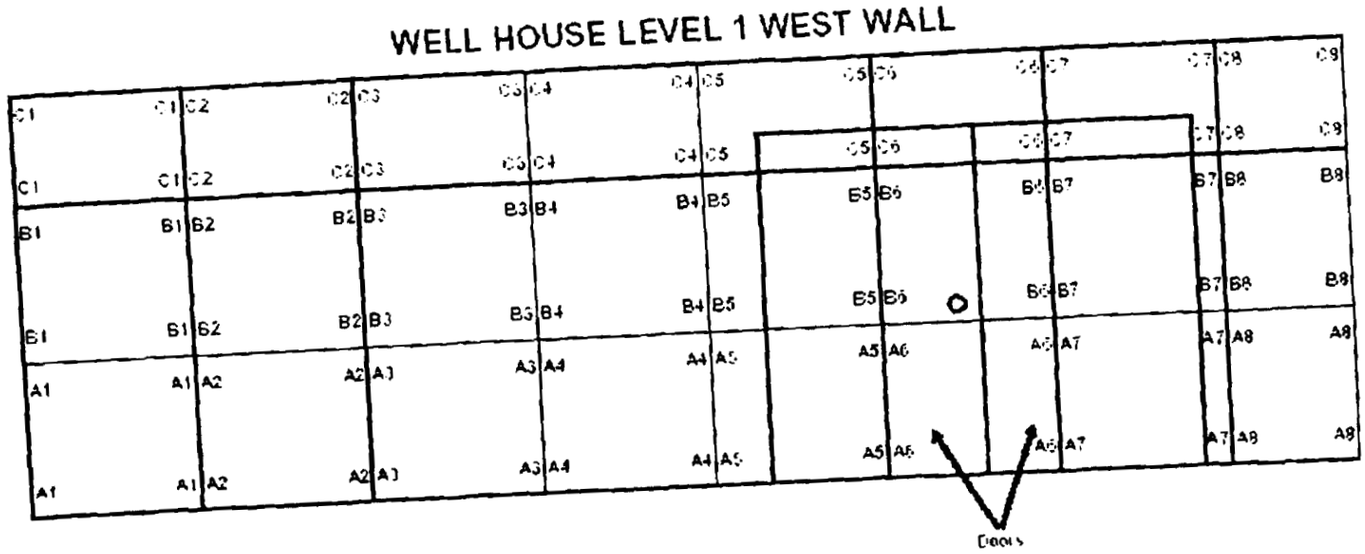


Figure 7
WJN Well House Basement Floor Grid Map

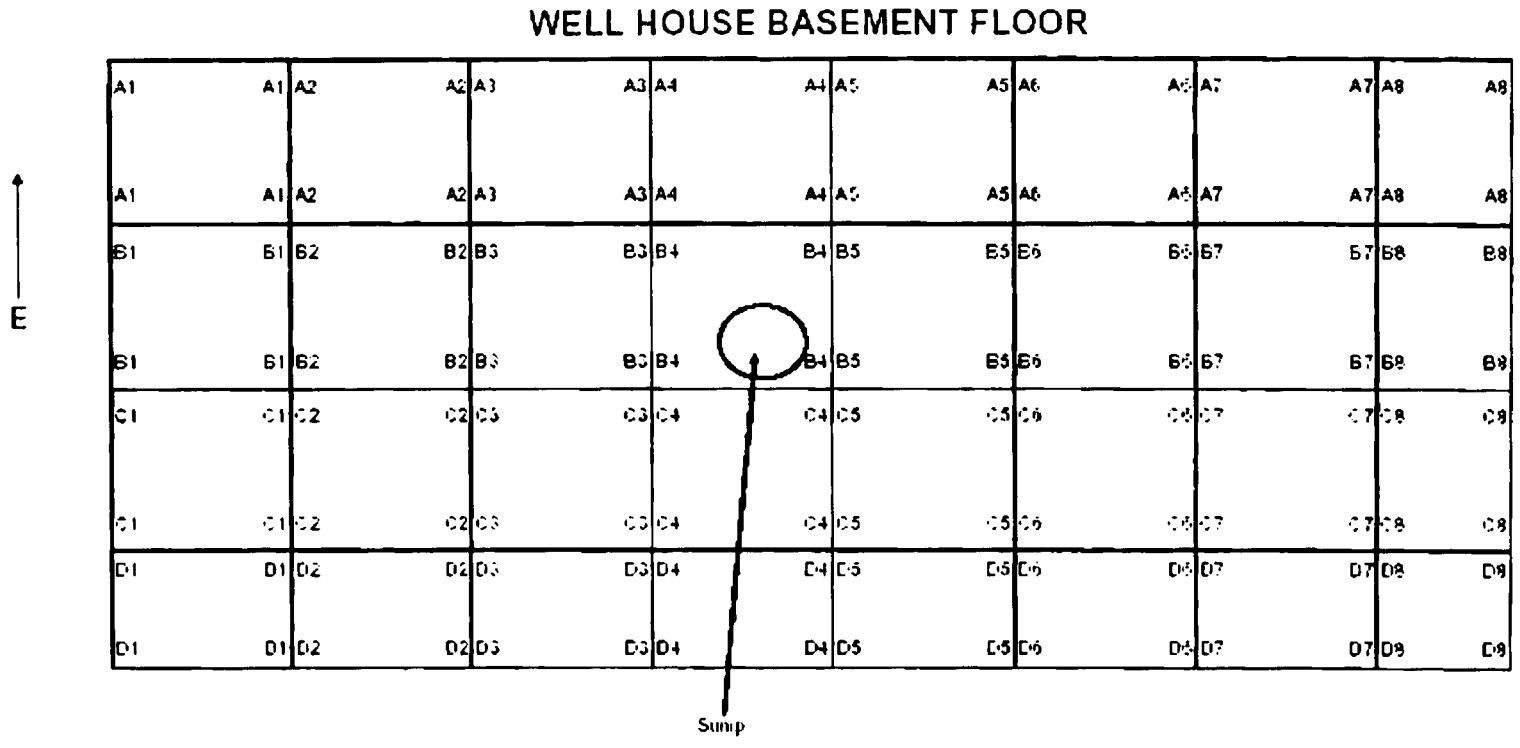


Figure 8
WJN Well House Basement North Wall Grid Map

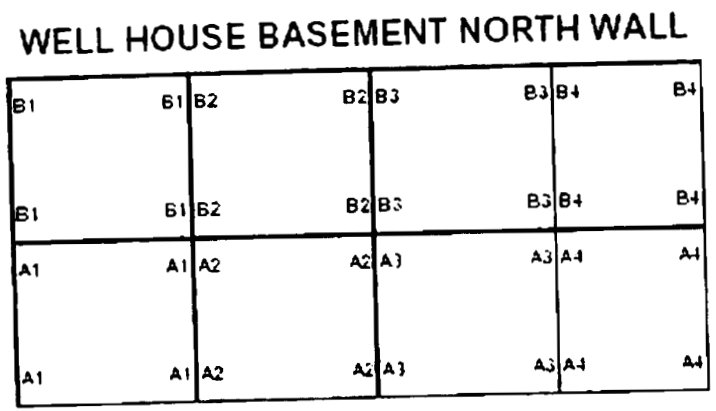


Figure 9
WJN Well House Basement East Wall Grid Map

WELL HOUSE BASEMENT EAST WALL

B1	B1	B2	B2	B3	B3	B4	B4	B5	B5	B6	B6	B7	B7	B8	B8
B1	B1	B2	B2	B3	B3	B4	B4	B5	B5	B6	B6	B7	B7	B8	B8
A1	A1	A2	A2	A3	A3	A4	A4	A5	A5	A6	A6	A7	A7	A8	A8
A1	A1	A2	A2	A3	A3	A4	A4	A5	A5	A6	A6	A7	A7	A8	A8

Figure 10
WJN Well House Basement South Wall Grid Map

WELL HOUSE BASEMENT SOUTH WALL

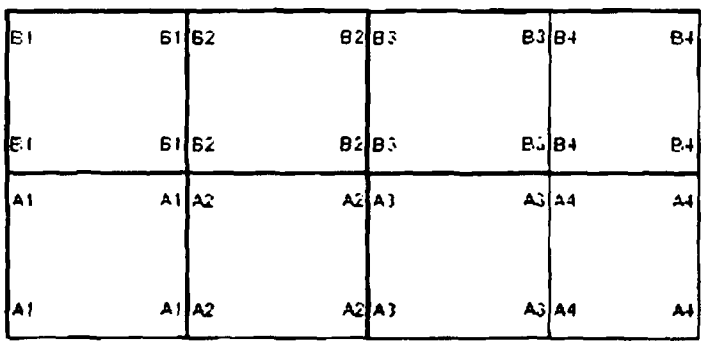


Figure 11
WJN Well House Basement West Wall Grid Map

WELL HOUSE BASEMENT WEST WALL

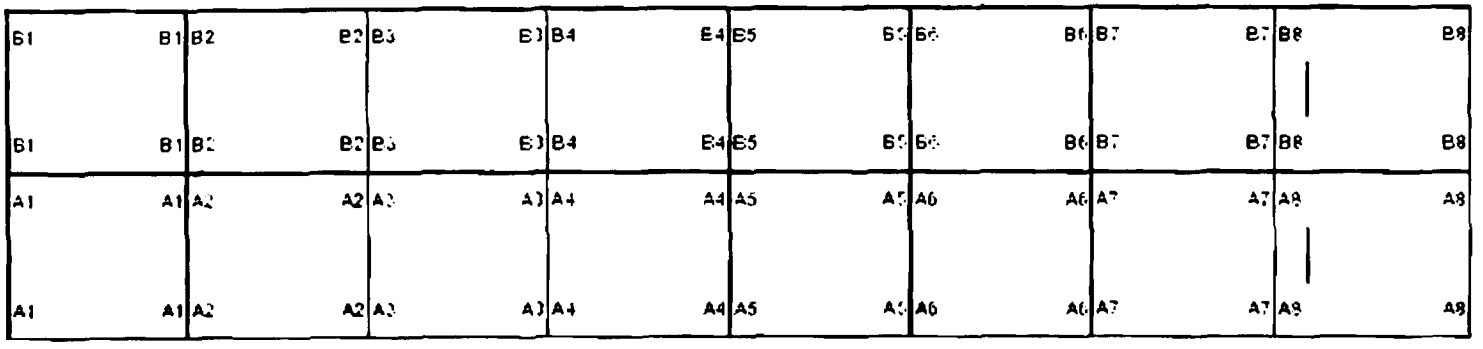


Figure 12
WJN Well House Exterior North Wall Grid Map

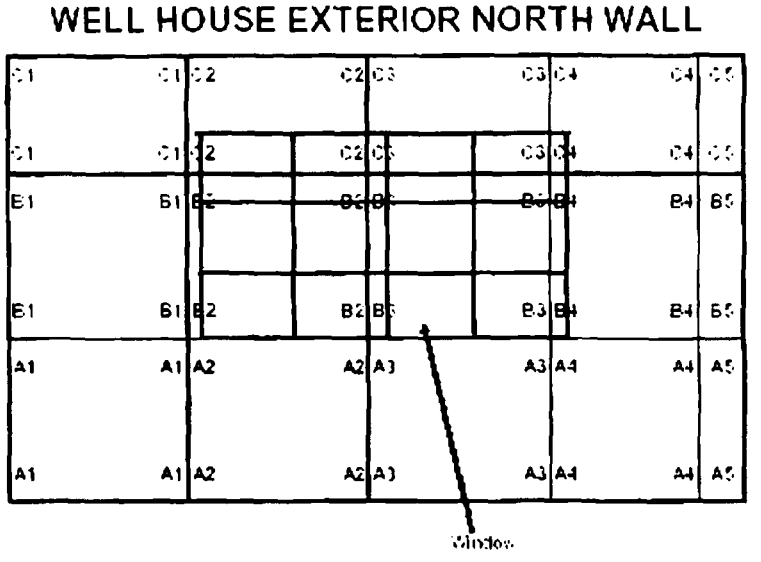


Figure 13
WJN Well House Exterior South Wall Grid Map

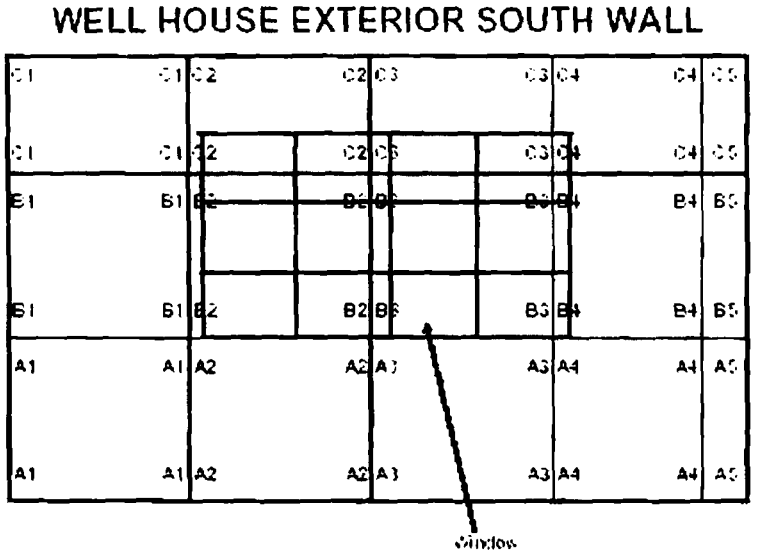


Figure 14
WJN Well House Exterior East Wall Grid Map

WELL HOUSE EXTERIOR EAST WALL

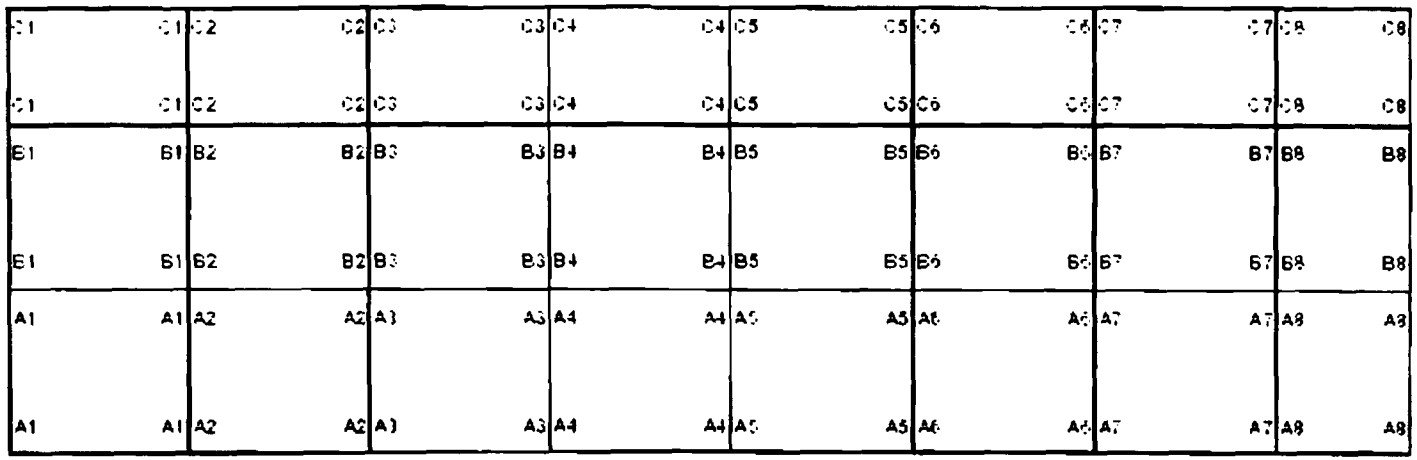
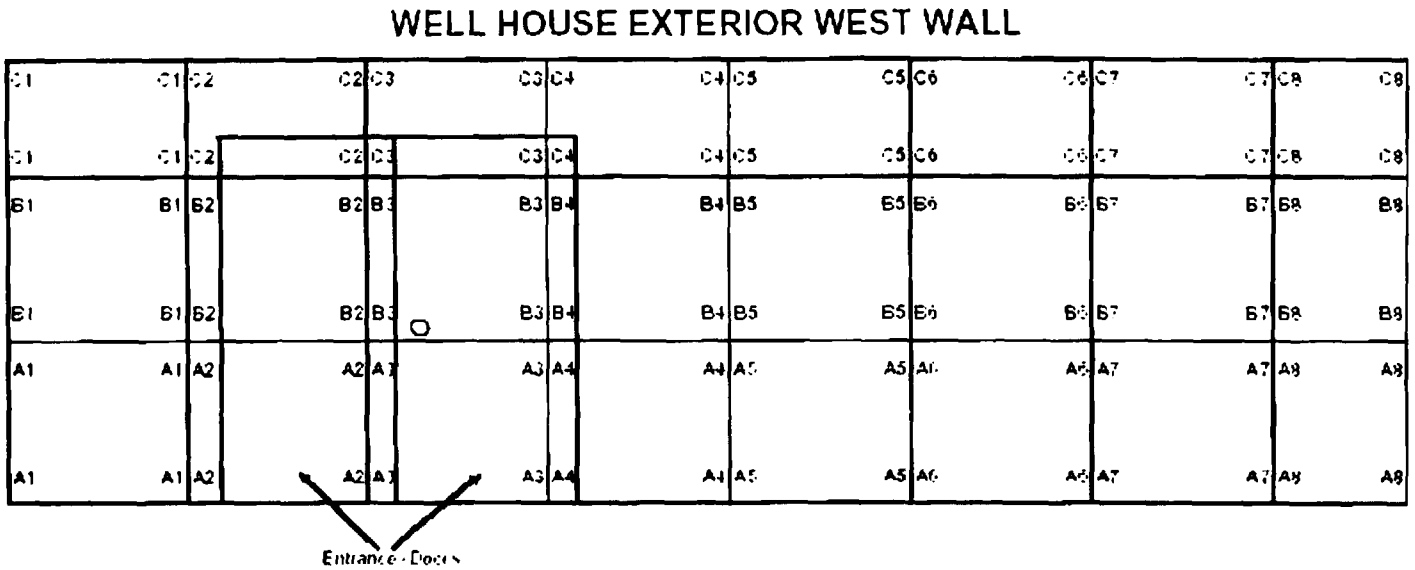


Figure 15
WJN Well House Exterior West Wall Grid Map



Tables

Table 1
Surface Contamination Guidelines for BCLDP

Radionuclides [2]	Allowable Total Residual Surface Contamination (dpm/100 cm²)[1]		
	Average [3,4]	Maximum [4,3]	Removable [4,6]
Transuranics, I-125, I-129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231	Reserved (100)*	Reserved (300)*	Reserved (20)*
Th-Natural, Sr-90, I-126, I-131, I-133, . Ra-223, Ra-224, U-232, Th-232	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay product, alpha emitters	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others notes above. [7]	5,000	15,000	1,000

(1) As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

(2) Where surface contamination by both alpha-and beta-gamma-emitting radionuclides exists, the limits established for alpha-and beta-gamma-emitting radionuclides should apply independently.

(3) Measurements of average contamination should not be averaged over an area of more than 1m². For objects of less surface area, the average should be derived for each such object.

(4) The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr and 1.0 mrad/hr., respectively, at 1 cm.

(5) The maximum contamination level applies to an area of not more than 100 cm².

(6) The amount of removable material per 100 cm² of surface area should be determined by wiping and area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm² is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

(7) This category of radionuclides includes mixed fission products, including the Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

* Regulatory Guide 1.86

Table 2
BCLDP Guidelines for Volumetric Residual Radioactivity Concentrations For Soil and Solid Volumes

Radionuclide[a]	King Avenue Concentration (pCi/g)[b]	West Jefferson Concentration (pCi/g)[b]
Natural Uranium	10[1]	na[c]
Enriched Uranium	30[1]	30[1]
Depleted Uranium	35[1]	35[1]
Ac-227	19	19
Am-241	na[c]	30
Am-243	na	30
Ce-144	na	2.100
Cm-243	na	0.79
Cm-244	na	1.0
Co-60	8[2]	8[2]
Cs-134	na	33
Cs-137	15[2]	15[2]
C-14	940	940
Eu-152	na	36
Eu-154	na	32
Eu-155	na	1.800
Fe-55	na	2.7E+07
H-3[d]	41,000	38.000
I-129	na	13
Mn-54	na	61
Ni-59	na	1.3E+07
Ni-63	na	4.9E+06
Np-237	na	0.58
Pa-231	18	18
Pb-210	140	Na
Pu-238	na	25
Pu-239	na	25
Pu-240	na	25
Pu-241	na	25
Pu-242	na	25
Ra-226 (0-15 cm of soil)	5[2,3]	Na
Ra-226 (>15 cm of soil)	15[2,3]	Na
Ra-228	5[2,3]	Na

Radionuclide[a]	King Avenue Concentration (pCi/g)[b]	West Jefferson Concentration (pCi/g)[b]
Ru-106	na	180
Sb-125	na	1,100
Sm-151	na	6,700
Sr-90	5[2]	5[2]
Th-228	29	na
Th-230	5[3]	na
Th-232	5[3]	na

Table 2 Notes and References

Notes:

a. Activity concentrations above natural background concentrations. Where more than one radionuclide is present, the sum of the ratios of the individual radionuclide concentrations to their respective concentration limits shall not exceed 1.

b. Concentrations for which no specific reference is cited have been derived from RESRAD calculations and are the more restrictive values calculated for soil deposition at a depth of 5 meters.

c. Indicates that this radionuclide is not expected to be found at the indicated site.

d. Difference in tritium activity concentrations are due to the difference in depths of the water tables at two sites. The water table depth at King Avenue is deeper than that at West Jefferson.

References:

1. Options 1 and 2 of the Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations" (46 FR 52061, October 23, 1981).

2. NRC Memorandum, "Acceptable Cleanup Criteria and Practices for Decontamination and Decommissioning (License No. SNM-7)" dated April 17, 1992, to Harley L. Toy, License Coordinator and Manager, Nuclear Sciences, Battelle Memorial Institute from J.W.N. Hickey, Chief, Fuel Cycle Safety Branch, Division of Industrial and Medical Nuclear Safety, Office of Nuclear Material Safety and Safeguards.

3. DOE Order 5400.5, "Radiation Protection of the Public and the Environment".

4. NRC Policy and Guidance Directive FC83-23, "Termination of Byproduct, Source, and Special Nuclear Material Licenses".

TABLE 3

Building	JN-6	Room:	Various	Surface Material	Concrete Block
Meter ID.	94051	Probe ID:	160074	Probe Area	180
Survey Date:	5/5/2004	Chauvenet's Criterion	2.73	Survey Type:	Scan DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A2	N.Wall 1	322	0.203
A3	N.Wall 1	381	1.812
A4	N.Wall 1	338	0.639
A5	N.Wall 1	393	2.140
B1	N.Wall 1	342	0.748
B5	N.Wall 1	277	1.025
A1	E.Wall 1	272	1.161
A2	E.Wall 1	339	0.567
A3	E.Wall 1	359	1.212
A4	E.Wall 1	295	0.534
A1	W.Wall 1	281	0.916
A2	W.Wall 1	314	0.016
A3	W.Wall 1	271	1.189
B1	W.Wall 1	264	1.380
A1	Stairwell	344	0.803
B1	Stairwell	340	0.694
A1	Mens Rm.	336	0.585
B1	Mens Rm.	285	0.807
C1	Mens Rm.	279	0.970
A2	N.Wall 2	362	1.294
A3	N.Wall 2	371	1.540
A4	N.Wall 2	334	0.530
A5	N.Wall 2	374	1.621
A6	N.Wall 2	281	0.916
B1	N.Wall 2	345	0.830
B2	N.Wall 2	315	0.012
B4	N.Wall 2	301	0.370
B5	N.Wall 2	308	0.179
B6	N.Wall 2	362	1.294
A1	E.Wall 2	317	0.066
A2	E.Wall 2	288	0.725
A3	E.Wall 2	294	0.561
A4	E.Wall 2	298	0.452
A5	E.Wall 2	287	0.752
A6	E.Wall 2	357	1.158
B1	E.Wall 2	282	0.889
B2	E.Wall 2	303	0.316
B4	E.Wall 2	283	0.861
B5	E.Wall 2	301	0.370
B6	E.Wall 2	253	1.680
A2	S.Wall 2	289	0.698
A3	S.Wall 2	295	0.534
A4	S.Wall 2	335	0.557
A5	S.Wall 2	297	0.479
B2	S.Wall 2	311	0.097
B4	S.Wall 2	314	0.016
B5	S.Wall 2	293	0.588
A1	W.Wall 2	348	0.912
A2	W.Wall 2	354	1.076
A3	W.Wall 2	362	1.294
A4	W.Wall 2	322	0.203
A5	W.Wall 2	304	0.288
A6	W.Wall 2	323	0.230
A7	W.Wall 2	315	0.012
B1	W.Wall 2	355	1.103
B2	W.Wall 2	386	1.949
B3	W.Wall 2	321	0.175
B4	W.Wall 2	328	0.366
B6	W.Wall 2	411	2.631
B7	W.Wall 2	293	0.588

Mean	315
Std Dev	37
Data Points	79

MDA	82
DLV	397

Mean + 2 Sigma	388
Mean + 3 Sigma	425

Survey BKG 286 cpm

TABLE 3

Building	JN-6	Room:	Various	Surface Material	Concrete Block
Meter ID:	94051	Probe ID:	160074	Probe Area	180
Survey Date:	5/5/2004	Chauvenet's Criterion	2.73	Survey Type:	Scan DLV Beta

Grid ID	Other ID	cpm	Comparison CC
C5	N.Wall 2	332	0.476
C4	E.Wall 2	363	1.321
C3	S.Wall 2	376	1.676
A1	E. Wall U	266	1.325
A2	E. Wall U	302	0.343
B1	E. Wall U	262	1.434
B2	E. Wall U	277	1.025
A1	S.Wall U	315	0.012
A2	S.Wall U	282	0.889
A3	S.Wall U	309	0.152
A4	S.Wall U	263	1.407
A5	S.Wall U	293	0.588
B1	S.Wall U	322	0.203
B2	S.Wall U	311	0.097
B3	S.Wall U	266	1.325
B4	S.Wall U	300	0.398
B5	S.Wall U	312	0.070
A1	W.Wall U	251	1.734
B2	W.Wall U	245	1.898

TABLE 4

Building	JN-6	Room:	Various	Surface Material	Concrete Floor
Meter ID:	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.488	Survey Type:	Scan DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	Stairwell	413	0.419
A1	Utility	345	1.073
A2	Utility	557	0.964
A3	Utility	587	1.253
A4	Utility	371	0.823
A5	Utility	548	0.878
B1	Utility	522	0.628
B2	Utility	439	0.170
B3	Utility	514	0.551
B4	Utility	510	0.513
B5	Utility	512	0.532
A1	Stairwell	587	1.253
A1	Utility	605	1.426
A2	Utility	584	1.224
A3	Utility	565	1.041
A4	Utility	543	0.830
A5	Utility	401	0.535
B1	Utility	674	2.089
B2	Utility	584	1.224
B3	Utility	551	0.907
B4	Utility	550	0.897
B5	Utility	521	0.618
A1	Stairwell	562	1.012
A2	Utility	444	0.121
A3	Utility	409	0.458
A4	Utility	404	0.506
A5	Utility	382	0.717
B1	Utility	354	0.986
B2	Utility	366	0.871
A2	Utility	328	1.236
A3	Utility	312	1.390
A4	Utility	347	1.054
A5	Utility	334	1.178
B2	Utility	356	0.967
B3	Utility	346	1.063
B5	Utility	358	0.948
A2	Utility	359	0.938
A3	Utility	345	1.073
A4	Utility	320	1.313

Mean	457
Std Dev	104
Data Points	39

MDA	88
DLV	545

Mean + 2 Sigma	665
Mean + 3 Sigma	769

Survey BKG 332 cpm

TABLE 5

Building	JN-6	Room:	Various	Surface Material	LoNaM
Meter ID:	94051	Probe ID.	160074	Probe Area	180
Survey Date:	5/5/2004	Chauvenet's Criterion	2.806	Survey Type:	Scan DLV Beta

Grid ID	Other ID	cpm	Comparison CC
B1	N.Wall 1	311	0.495
B2	N.Wall 1	313	0.543
B3	N.Wall 1	326	0.854
B4	N.Wall 1	315	0.591
B5	N.Wall 1	271	0.464
A1	E.Wall 1	369	1.885
B1	E.Wall 1	338	1.142
B2	E.Wall 1	325	0.830
B3	E.Wall 1	312	0.519
B4	E.Wall 1	304	0.327
A1	S.Wall 1	294	0.087
A2	S.Wall 1	271	0.464
A3	S.Wall 1	326	0.854
A4	S.Wall 1	282	0.200
A5	S.Wall 1	313	0.543
B1	S.Wall 1	302	0.279
B2	S.Wall 1	295	0.111
B3	S.Wall 1	273	0.416
B4	S.Wall 1	283	0.176
B5	S.Wall 1	243	1.135
A3	W.Wall 1	281	0.224
A4	W.Wall 1	371	1.933
B1	W.Wall 1	305	0.351
B2	W.Wall 1	277	0.320
B3	W.Wall 1	235	1.326
B4	W.Wall 1	255	0.847
A1	NW Stair	267	0.560
A2	NW Stair	254	0.871
A3	NW Stair	261	0.703
A4	NW Stair	256	0.823
A5	NW Stair	258	0.775
B1	NW Stair	227	1.518
B2	NW Stair	248	1.015
B3	NW Stair	261	0.703
B4	NW Stair	267	0.560
B5	NW Stair	241	1.183
A1	SW Stair	281	0.224
A2	SW Stair	243	1.135
A3	SW Stair	263	0.655
A4	SW Stair	251	0.943
A5	SW Stair	249	0.991
B1	SW Stair	277	0.320
B2	SW Stair	288	0.056
B3	SW Stair	318	0.663
B4	SW Stair	309	0.447
B5	SW Stair	284	0.152
A1	Floor 1	389	2.364
A2	Floor 1	366	1.813
A3	Floor 1	374	2.005
A4	Floor 1	398	2.580
A5	Floor 1	383	2.220
B1	Floor 1	366	1.813
B2	Floor 1	325	0.830
B3	Floor 1	341	1.214
B4	Floor 1	315	0.591
B5	Floor 1	396	2.532
C1	Floor 1	272	0.440
C2	Floor 1	292	0.040
C3	Floor 1	298	0.183
C4	Floor 1	277	0.320

Mean	290
Std Dev	42
Data Points	100

MDA	80
DLV	370

Mean • 2 Sigma	374
Mean + 3 Sigma	416

Survey BKG 275 cpm

TABLE 5

Building	JN-6	Room:	Various	Surface Material	LoNaM
Meter ID:	94051	Probe ID:	160074	Probe Area	180
Survey Date:	5/5/2004	Chauvenet's Criterion	2.808	Survey Type:	Scan DLV Beta

Grid ID	Other ID	cpm	Comparison CC
C5	Floor 1	293	0.064
D1	Floor 1	278	0.296
D2	Floor 1	253	0.895
D3	Floor 1	313	0.543
D4	Floor 1	290	0.008
D5	Floor 1	271	0.464
A1	Floor 2	324	0.806
A2	Floor 2	307	0.399
A3	Floor 2	253	0.895
A4	Floor 2	247	1.039
A5	Floor 2	372	1.957
A6	Floor 2	307	0.399
A7	Floor 2	296	0.135
B1	Floor 2	347	1.358
B2	Floor 2	259	0.751
B3	Floor 2	238	1.255
B4	Floor 2	361	1.693
B5	Floor 2	243	1.135
B6	Floor 2	241	1.183
B7	Floor 2	311	0.495
C1	Floor 2	252	0.919
C2	Floor 2	272	0.440
C3	Floor 2	278	0.296
C4	Floor 2	327	0.878
C5	Floor 2	251	0.943
C6	Floor 2	287	0.080
C7	Floor 2	243	1.135
D1	Floor 2	301	0.255
D2	Floor 2	291	0.016
D3	Floor 2	233	1.374
D4	Floor 2	288	0.056
D5	Floor 2	259	0.751
D6	Floor 2	306	0.375
D7	Floor 2	253	0.895
E1	Floor 2	257	0.799
E2	Floor 2	265	0.608
E3	Floor 2	223	1.614
E4	Floor 2	236	1.303
E5	Floor 2	243	1.135
E6	Floor 2	281	0.224

TABLE 6

Building	JN-6	Room:	Exterior Surface	Surface Material	Brick
Meter ID:	89750	Probe ID:	89011	Probe Area	180
Survey Date:	5/10/2004	Chauvenet's Criterion	2.626	Survey Type:	Scan DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	North Wall	505	1.283
A2	North Wall	557	0.752
A3	North Wall	610	0.210
A4	North Wall	759	1.311
A5	North Wall	541	0.915
A6	North Wall	520	1.129
A1	East Wall	601	0.302
A2	East Wall	649	0.188
A3	East Wall	502	1.313
A4	East Wall	720	0.913
A5	East Wall	611	0.200
B1	East Wall	558	0.741
B2	East Wall	519	1.140
B3	East Wall	538	0.946
C2	East Wall	616	0.149
A1	South Wall	545	0.874
A2	South Wall	508	1.252
A3	South Wall	511	1.221
A4	South Wall	489	1.446
A5	South Wall	494	1.395
A6	South Wall	518	1.150
B1	South Wall	602	0.292
B4	South Wall	467	1.671
A3	West Wall	459	1.752
A4	West Wall	558	0.741
A5	West Wall	463	1.711
A6	West Wall	567	0.649
A7	West Wall	498	1.354
B6	West Wall	710	0.811
B7	West Wall	613	0.180
A1	North Wall	702	0.729
A2	North Wall	699	0.698
A3	North Wall	774	1.464
A4	North Wall	761	1.331
A5	North Wall	788	1.607
A6	North Wall	692	0.627
A1	East Wall	657	0.270
A2	East Wall	745	1.168
A3	East Wall	732	1.035
A4	East Wall	644	0.137
A5	East Wall	721	0.923
A6	East Wall	698	0.688
A7	East Wall	666	0.361
B1	West Wall	784	1.566
B2	West Wall	738	1.097
B3	West Wall	673	0.433
B4	West Wall	621	0.098
B7	West Wall	600	0.312
A1	West Wall	758	1.301
A2	West Wall	683	0.535
A3	West Wall	735	1.066
A4	West Wall	674	0.443
A5	West Wall	613	0.180
A6	West Wall	705	0.760
A7	West Wall	771	1.434
B5	West Wall	721	0.923
B6	West Wall	697	0.678
B7	West Wall	715	0.862

Mean	631
Std Dev	98
Data Points	58

MDA	81
DLV	712

Mean + 2 Sigma	826
Mean + 3 Sigma	924

Survey BKG 278 cpm

TABLE 7

Building	JN-6	Room:	Various	Surface Material	Concrete Block
Meter ID:	89750	Probe ID:	89011	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.496	Survey Type:	POP DLV Alpha

Grid ID	Other ID	cpm	Comparison CC
A1	N.Wall 1	2	0.455
A2	N.Wall 1	3	1.321
A3	N.Wall 1	1	0.411
A4	N.Wall 1	2	0.455
A5	N.Wall 1	2	0.455
A2	E.Wall 1	0	1.278
A3	E.Wall 1	2	0.455
A4	E.Wall 1	4	2.187
A1	W.Wall 1	1	0.411
A2	W.Wall 1	2	0.455
A3	W.Wall 1	1	0.411
A1	N.Wall 2	1	0.411
A2	N.Wall 2	1	0.411
A3	N.Wall 2	0	1.278
A4	N.Wall 2	3	1.321
A5	N.Wall 2	1	0.411
A1	E.Wall 2	0	1.278
A2	E.Wall 2	0	1.278
A3	E.Wall 2	2	0.455
A4	E.Wall 2	0	1.278
A5	E.Wall 2	2	0.455
A6	E.Wall 2	1	0.411
A3	S.Wall 2	3	1.321
A4	S.Wall 2	1	0.411
A5	S.Wall 2	0	1.278
A1	W.Wall 2	0	1.278
A2	W.Wall 2	0	1.278
A3	W.Wall 2	0	1.278
A4	W.Wall 2	1	0.411
A5	W.Wall 2	0	1.278
A1	N.Wall 1	1	0.411
A2	N.Wall 1	2	0.455
A3	N.Wall 1	2	0.455
A4	N.Wall 1	2	0.455
A5	N.Wall 1	3	1.321
A2	E.Wall 1	3	1.321
A3	E.Wall 1	3	1.321
A4	E.Wall 1	3	1.321
A1	W.Wall 1	3	1.321
A2	W.Wall 1	1	0.411

Mean	1
Std Dev	1
Data Points	40
MDA	8
DLV	9
Mean + 2 Sigma	4
Mean + 3 Sigma	5

Survey BKG 1 cpm

TABLE 8

Building	JN-6	Room:	Various	Surface Material	Concrete Floor
Meter ID.	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.488	Survey Type	POP DLV Alpha

Grid ID	Other ID	cpm	Comparison CC
A1	Stairwell	2	0.649
A1	Utility	3	0.016
A2	Utility	3	0.016
A4	Utility	1	1.281
A5	Utility	1	1.281
B1	Utility	2	0.649
B2	Utility	6	1.881
B3	Utility	2	0.649
B4	Utility	2	0.649
B5	Utility	5	1.249
A1	Stairwell	1	1.281
A1	Utility	6	1.881
A2	Utility	4	0.616
A3	Utility	3	0.016
A4	Utility	2	0.649
A5	Utility	5	1.249
B1	Utility	5	1.249
B2	Utility	2	0.649
B3	Utility	4	0.616
B4	Utility	0	1.914
B5	Utility	1	1.281
A1	Stairwell	2	0.649
A2	Utility	3	0.016
A3	Utility	3	0.016
A4	Utility	2	0.649
A5	Utility	5	1.249
B1	Utility	2	0.649
B2	Utility	3	0.016
B3	Utility	6	1.881
B4	Utility	3	0.016
B5	Utility	3	0.016
A1	Stairwell	4	0.616
A1	Utility	6	1.881
A2	Utility	4	0.616
A3	Utility	2	0.649
A4	Utility	4	0.616
A5	Utility	2	0.649
B1	Utility	2	0.649
B2	Utility	2	0.649

Mean	3
Std Dev	2
Data Points	39

MDA	8
DLV	11

Mean + 2 Sigma	6
Mean + 3 Sigma	8

Survey BKG 1 cpm

TABLE 9

Building	JN-6	Room:	Various	Surface Material	LoNaM
Meter ID:	89750	Probe ID	89011	Probe Area	180
Survey Date:	5/11/2004	Chauvenet's Criterion	2.674	Survey Type:	POP DLV Alpha

Grid ID	Other ID	cpm	Comparison CC
A1	Floor 2	0	1.179
A2	Floor 2	0	1.179
A3	Floor 2	1	0.504
A4	Floor 2	2	0.171
A5	Floor 2	1	0.504
A6	Floor 2	0	1.179
A7	Floor 2	0	1.179
B1	Floor 2	3	0.847
B2	Floor 2	3	0.847
B4	Floor 2	0	1.179
B5	Floor 2	0	1.179
B6	Floor 2	3	0.847
B7	Floor 2	1	0.504
C1	Floor 2	0	1.179
C6	Floor 2	0	1.179
C7	Floor 2	0	1.179
D1	Floor 2	0	1.179
D2	Floor 2	0	1.179
D4	Floor 2	4	1.522
D5	Floor 2	3	0.847
D6	Floor 2	3	0.847
D7	Floor 2	4	1.522
E1	Floor 2	2	0.171
E2	Floor 2	4	1.522
E4	Floor 2	3	0.847
E5	Floor 2	4	1.522
E6	Floor 2	2	0.171
A1	Ceiling 2	1	0.504
A2	Ceiling 2	1	0.504
A3	Ceiling 2	2	0.171
A4	Ceiling 2	1	0.504
A5	Ceiling 2	5	2.198
A6	Ceiling 2	1	0.504
A7	Ceiling 2	5	2.198
B1	Ceiling 2	4	1.522
B2	Ceiling 2	2	0.171
B4	Ceiling 2	1	0.504
B5	Ceiling 2	4	1.522
B6	Ceiling 2	1	0.504
B7	Ceiling 2	4	1.522
C1	Ceiling 2	1	0.504
C2	Ceiling 2	2	0.171
C4	Ceiling 2	2	0.171
C5	Ceiling 2	0	1.179
C6	Ceiling 2	3	0.847
C7	Ceiling 2	1	0.504
D1	Ceiling 2	3	0.847
D2	Ceiling 2	0	1.179
D4	Ceiling 2	0	1.179
D5	Ceiling 2	2	0.171
D6	Ceiling 2	2	0.171
D7	Ceiling 2	2	0.171
E1	Ceiling 2	1	0.504
E2	Ceiling 2	1	0.504
E3	Ceiling 2	3	0.847
E4	Ceiling 2	1	0.504
E5	Ceiling 2	1	0.504
A1	S.Wall 1	2	0.171
A2	S.Wall 1	0	1.179
A3	S.Wall 1	0	1.179

Mean	2
Std Dev	1
Data Points	67

MDA	8
DLV	10

Mean + 2 Sigma	5
Mean + 3 Sigma	6

Survey BKG 1 cpm

TABLE 9

Building	JN-6	Room:	Various	Surface Material	LoNaM
Meter ID:	89750	Probe ID:	89011	Probe Area	180
Survey Date:	5/11/2004	Chauvenet's Criterion	2.674	Survey Type:	POP DLV Alpha

Grid ID	Other ID	cpm	Comparison CC
A4	S.Wall 1	1	0.504
A5	S.Wall 1	1	0.504
B1	S.Wall 1	1	0.504
B2	S.Wall 1	5	2.198
B3	S.Wall 1	3	0.847
B4	S.Wall 1	3	0.847
B5	S.Wall 1	1	0.504

Table 10

Building	JN-6	Room:	Exterior Walls	Surface Material	Brick
Meter ID:	89750	Probe ID:	89011	Probe Area	180
Survey Date:	7/8/2004	Chauvenet's Criterion	2.496	Survey Type:	Scan DLV Alpha

Grid ID	Other ID	cpm	Comparison CC
A1	South Wall	21	0.241
A2	South Wall	30	1.183
A3	South Wall	21	0.241
A4	South Wall	16	1.032
A5	South Wall	17	0.874
A6	South Wall	19	0.558
B1	South Wall	14	1.349
B2	South Wall	21	0.241
B3	South Wall	25	0.392
B4	South Wall	32	1.499
B5	South Wall	23	0.075
B6	South Wall	25	0.392
A1	East Wall	18	0.716
A2	East Wall	16	1.032
A3	East Wall	33	1.657
A4	East Wall	26	0.550
A5	East Wall	17	0.874
A6	East Wall	22	0.083
A7	East Wall	29	1.024
B1	East Wall	26	0.550
B2	East Wall	21	0.241
B3	East Wall	38	2.448
B4	East Wall	22	0.083
B7	East Wall	17	0.874
A1	North Wall	16	1.032
A2	North Wall	20	0.399
A3	North Wall	18	0.716
A4	North Wall	24	0.233
A5	North Wall	23	0.075
A6	North Wall	14	1.349
A1	West Wall	25	0.392
A2	West Wall	13	1.507
A3	West Wall	21	0.241
A4	West Wall	18	0.716
A5	West Wall	25	0.392
A6	West Wall	13	1.507
A7	West Wall	26	0.550
B5	West Wall	27	0.708
B6	West Wall	32	1.499
B7	West Wall	37	2.290

Mean	23
Std Dev	6
Data Points	40

MDA	20
DLV	43

Mean + 2 Sigma	35
Mean + 3 Sigma	41

Survey BKG 14 cpm

TABLE 11

Building	JN-6	Room:	Various	Surface Material	Concrete Block
Meter ID:	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.496	Survey Type:	POP DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	N.Wall 1	237	0.225
A2	N.Wall 1	224	0.818
A3	N.Wall 1	237	0.225
A4	N.Wall 1	221	0.955
A5	N.Wall 1	246	0.186
A2	E.Wall 1	242	0.003
A3	E.Wall 1	211	1.412
A4	E.Wall 1	204	1.731
A1	W.Wall 1	241	0.042
A2	W.Wall 1	248	0.277
A3	W.Wall 1	231	0.499
A1	N.Wall 2	244	0.095
A2	N.Wall 2	307	2.970
A3	N.Wall 2	273	1.418
A4	N.Wall 2	244	0.095
A5	N.Wall 2	228	0.636
A1	E.Wall 2	248	0.277
A2	E.Wall 2	241	0.042
A3	E.Wall 2	246	0.186
A4	E.Wall 2	224	0.818
A5	E.Wall 2	244	0.095
A6	E.Wall 2	240	0.088
A3	S.Wall 2	217	1.138
A4	S.Wall 2	242	0.003
A5	S.Wall 2	220	1.001
A1	W.Wall 2	211	1.412
A2	W.Wall 2	225	0.773
A3	W.Wall 2	256	0.642
A4	W.Wall 2	251	0.414
A5	W.Wall 2	215	1.229
A1	N.Wall 1	301	2.696
A2	N.Wall 1	262	0.916
A3	N.Wall 1	232	0.453
A4	N.Wall 1	268	1.190
A5	N.Wall 1	226	0.727
A2	E.Wall 1	250	0.369
A3	E.Wall 1	248	0.277
A4	E.Wall 1	244	0.095
A1	W.Wall 1	274	1.464
A2	W.Wall 1	254	0.551

Mean	242
Std Dev	22
Data Points	40

MDA	88
DLV	330

Mean + 2 Sigma	286
Mean + 3 Sigma	308

Survey BKG 332 cpm

TABLE 12

Building	JN-6	Room:	Utility	Surface Material	Concrete
Meter ID:	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/8/2004	Chauvenet's Criterion	2.496	Survey Type.	POP DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	Floor	361	0.595
A2	Floor	426	0.616
A3	Floor	498	1.958
A4	Floor	374	0.353
A5	Floor	426	0.616
B1	Floor	302	1.695
B2	Floor	396	0.057
B3	Floor	375	0.335
B4	Floor	411	0.336
B5	Floor	400	0.131
A1	Floor	496	1.920
A2	Floor	483	1.678
A3	Floor	385	0.148
A4	Floor	409	0.299
A5	Floor	422	0.541
B1	Floor	325	1.266
B2	Floor	388	0.092
B3	Floor	343	0.931
B4	Floor	368	0.465
B5	Floor	372	0.390
A1	Floor	462	1.287
A2	Floor	488	1.771
A3	Floor	379	0.260
A4	Floor	486	1.734
A5	Floor	417	0.448
B1	Floor	342	0.950
B2	Floor	302	1.695
B3	Floor	379	0.260
B4	Floor	334	1.099
B5	Floor	408	0.280
A1	Floor	472	1.473
A2	Floor	398	0.094
A3	Floor	344	0.912
A4	Floor	362	0.577
A5	Floor	429	0.672
B1	Floor	383	0.185
B2	Floor	317	1.415
B3	Floor	335	1.080
B4	Floor	374	0.353
B5	Floor	347	0.856

Mean	393
Std Dev	54
Data Points	40

MDA	80
DLV	473

Mean + 2 Sigma	500
Mean + 3 Sigma	554

Survey BKG 277 cpm

TABLE 13

Building	JN-6	Room	Various	Surface Material	LoNaM
Meter ID:	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.69	Survey Type:	POP DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	Floor 2	285	1.053
A2	Floor 2	266	0.468
A3	Floor 2	293	1.299
A4	Floor 2	276	0.776
A5	Floor 2	277	0.807
A6	Floor 2	268	0.529
A7	Floor 2	270	0.591
B1	Floor 2	293	1.299
B2	Floor 2	267	0.499
B4	Floor 2	250	0.025
B5	Floor 2	263	0.375
B6	Floor 2	303	1.607
B7	Floor 2	236	0.456
C1	Floor 2	238	0.395
C2	Floor 2	233	0.549
C4	Floor 2	250	0.025
C5	Floor 2	274	0.714
C6	Floor 2	256	0.160
C7	Floor 2	231	0.610
D1	Floor 2	232	0.580
D2	Floor 2	226	0.764
D4	Floor 2	204	1.442
D5	Floor 2	232	0.580
D6	Floor 2	206	1.380
D7	Floor 2	229	0.672
E1	Floor 2	216	1.072
E2	Floor 2	260	0.283
E4	Floor 2	296	1.392
E5	Floor 2	305	1.669
E6	Floor 2	287	1.115
A1	Ceiling 2	292	1.269
A2	Ceiling 2	298	1.453
A3	Ceiling 2	262	0.345
A4	Ceiling 2	254	0.098
A5	Ceiling 2	289	1.176
A6	Ceiling 2	271	0.622
A7	Ceiling 2	320	2.131
B1	Ceiling 2	294	1.330
B2	Ceiling 2	257	0.191
B4	Ceiling 2	269	0.560
B5	Ceiling 2	256	0.160
B6	Ceiling 2	239	0.364
B7	Ceiling 2	261	0.314
C1	Ceiling 2	256	0.160
C2	Ceiling 2	290	1.207
C4	Ceiling 2	255	0.129
C5	Ceiling 2	256	0.160
C6	Ceiling 2	218	1.011
C7	Ceiling 2	241	0.302
D1	Ceiling 2	212	1.196
D2	Ceiling 2	222	0.888
D4	Ceiling 2	220	0.949
D5	Ceiling 2	232	0.580
D6	Ceiling 2	219	0.980
D7	Ceiling 2	331	2.470
E1	Ceiling 2	220	0.949
E2	Ceiling 2	205	1.411
E3	Ceiling 2	194	1.750
E4	Ceiling 2	216	1.072
E5	Ceiling 2	229	0.672

Mean	251
Std Dev	32
Data Points	70

MDA	88
DLV	339

Mean + 2 Sigma	316
Mean + 3 Sigma	348

Survey BKG 332 cpm

TABLE 13

Building	JN-6	Room:	Various	Surface Material	LoNaM
Meter ID:	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.69	Survey Type:	POP DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	S.Wal 1	215	1.103
A2	S.Wal 1	265	0.437
A3	S.Wal 1	203	1.473
A4	S.Wal 1	257	0.191
A5	S.Wal 1	236	0.456
B1	S.Wal 1	217	1.042
B2	S.Wal 1	210	1.257
B3	S.Wal 1	235	0.487
B4	S.Wal 1	240	0.333
B5	S.Wal 1	179	2.212

TABLE 14

Building	JN-6	Room:	Various	Surface Material	Brick
Meter ID:	92374	Probe ID:	149047	Probe Area	180
Survey Date:	7/7/2004	Chauvenet's Criterion	2.496	Survey Type:	POP DLV Beta

Grid ID	Other ID	cpm	Comparison CC
A1	North Wall	431	1.341
A2	North Wall	505	0.125
A3	North Wall	490	0.172
A4	North Wall	505	0.125
A5	North Wall	573	1.472
A6	North Wall	564	1.294
A1	East Wall	505	0.125
A2	East Wall	455	0.866
A3	East Wall	501	0.046
A4	East Wall	532	0.660
A5	East Wall	489	0.192
A6	East Wall	496	0.053
B1	East Wall	537	0.759
A1	South Wall	462	0.727
A2	South Wall	446	1.044
A3	South Wall	494	0.093
A4	South Wall	465	0.668
A5	South Wall	521	0.442
A6	South Wall	530	0.620
A2	West Wall	474	0.489
A3	West Wall	506	0.145
A4	West Wall	505	0.125
A5	West Wall	443	1.104
A6	West Wall	439	1.183
A7	West Wall	514	0.303
B5	West Wall	444	1.084
B6	West Wall	441	1.143
B7	West Wall	437	1.222
B1	South Wall	451	0.945
B2	South Wall	407	1.817
A1	North Wall	554	1.096
A2	North Wall	382	2.312
A3	North Wall	543	0.878
A4	North Wall	555	1.115
A5	North Wall	581	1.631
A1	East Wall	566	1.333
A2	East Wall	532	0.660
A3	East Wall	560	1.215
A4	East Wall	570	1.413
A5	East Wall	543	0.878

Mean	499
Std Dev	50
Data Points	40

MDA	88
DLV	587

Mean + 2 Sigma	600
Mean + 3 Sigma	650

Survey BKG 332 cpm

Table 15
Analytical Results of Roofing Materials

Sample ID	Collection Date	Cs-137 Content (pCi/g)
RL05-2737-2937	7/22/2005	2.28E-02
RL05-2738-2938	7/22/2005	2.14E-02

Table 16

SCAN SURVEY RESULTS FOR FIRST FLOOR OF WJN WELL HOUSE

Area/Building: Well House
Room: First Floor
Date: 7/21/2005

			Results in CPM							Results in	Results in CPM							Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Scan Measurements		Instrument		DPM/100cm²	Alpha BKG			Scan Measurements		Instrument		DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
B2	N.Wall	C	545	351	457	352	-105	0.264	1.8	-220.96	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	-1.1	N/A	N/A
B3	N.Wall	C	545	351	457	386	-71	0.264	1.8	-149.41	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B4	N.Wall	C	545	351	457	380	-77	0.264	1.8	-162.04	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A1	E.Wall	C	545	351	457	370	-87	0.264	1.8	-183.08	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A2	E.Wall	C	545	351	457	360	-97	0.264	1.8	-204.12	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B1	E.Wall	C	545	351	457	373	-84	0.264	1.8	-176.77	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B2	E.Wall	C	545	351	457	331	-126	0.264	1.8	-265.15	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B3	E.Wall	C	545	351	457	382	-75	0.264	1.8	-157.83	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B2	S.Wall	C	545	351	457	299	-158	0.264	1.8	-332.49	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B3	S.Wall	C	545	351	457	261	-196	0.264	1.8	-412.46	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	8.81	N/A	N/A
C2	S.Wall	C	545	351	457	380	-77	0.264	1.8	-162.04	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C3	S.Wall	C	545	351	457	360	-97	0.264	1.8	-204.12	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A5	W.Wall	C	545	351	457	387	-70	0.264	1.8	-147.31	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A6	W.Wall	C	545	351	457	364	-93	0.264	1.8	-195.71	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A7	W.Wall	C	545	351	457	347	-110	0.264	1.8	-231.48	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B5	W.Wall	C	545	351	457	432	-26	0.264	1.8	-52.61	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B6	W.Wall	C	545	351	457	347	-110	0.264	1.8	-231.48	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B7	W.Wall	C	545	351	457	370	-87	0.264	1.8	-183.08	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	5.51	N/A	N/A
A1	Floor	C	545	351	457	303	-154	0.264	1.8	-324.07	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	1.1	N/A	N/A
A2	Floor	C	545	351	457	296	-161	0.264	1.8	-338.80	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A3	Floor	C	545	351	457	206	-251	0.264	1.8	-528.20	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A4	Floor	C	545	351	457	338	-119	0.264	1.8	-250.42	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A5	Floor	C	545	351	457	418	-39	0.264	1.8	-82.07	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A6	Floor	C	545	351	457	294	-163	0.264	1.8	-343.01	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B1	Floor	C	545	351	457	257	-200	0.264	1.8	-420.88	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B2	Floor	C	545	351	457	360	-97	0.264	1.8	-204.12	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B3	Floor	C	545	351	457	290	-167	0.264	1.8	-351.43	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B4	Floor	C	545	351	457	383	-74	0.264	1.8	-155.72	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	2.2	N/A	N/A
B5	Floor	C	545	351	457	253	-204	0.264	1.8	-429.29	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B6	Floor	C	545	351	457	330	-127	0.264	1.8	-267.26	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C1	Floor	C	545	351	457	306	-151	0.264	1.8	-317.76	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C2	Floor	C	545	351	457	372	-85	0.264	1.8	-178.87	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C3	Floor	C	545	351	457	319	-138	0.264	1.8	-290.40	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C4	Floor	C	545	351	457	251	-206	0.264	1.8	-433.50	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C5	Floor	C	545	351	457	344	-113	0.264	1.8	-237.79	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C6	Floor	C	545	351	457	240	-217	0.264	1.8	-456.65	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D1	Floor	C	545	351	457	345	-112	0.264	1.8	-235.69	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D2	Floor	C	545	351	457	442	-15	0.264	1.8	-31.57	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	4.4	N/A	N/A
D3	Floor	C	545	351	457	350	-107	0.264	1.8	-225.17	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D4	Floor	C	545	351	457	245	-212	0.264	1.8	-446.13	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D5	Floor	C	545	351	457	289	-168	0.264	1.8	-353.54	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D6	Floor	C	545	351	457	168	-289	0.264	1.8	-608.16	35	0	16	N/A	N/A	0.228	1.8	N/A	1.37	0	N/A	N/A
A6	Floor	L	370	196	290	240	-50	0.264	1.8	-105.22	25	0	17	N/A	N/A	0.228	1.8	N/A	-0.48	3.3	N/A	N/A
A7	Floor	L	370	196	290	293	3	0.264	1.8	6.31	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B6	Floor	L	370	196	290	187	-103	0.264	1.8	-216.75	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
B7	Floor	L	370	196	290	283	-7	0.264	1.8	-14.73	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A

Table 16

SCAN SURVEY RESULTS FOR FIRST FLOOR OF WJN WELL HOUSE

Area/Building: Well House
Room: First Floor
Date: 7/21/2005

Grid	Surface Medium	Material Type	Results in CPM: Alpha + Beta BKG DLV	Alpha + Beta BKG Ambient	Alpha + Beta BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Results in CPM: Alpha BKG DLV	Alpha BKG Ambient	Alpha BKG Mean	Scan Measurements Gross Counts	Scan Measurements Net Counts	Instrument EFF	Instrument CF	Results in DPM/100cm² Activity	Smear Results in DPM/100cm² Alpha	Smear Results in DPM/100cm² Beta	Results in µR/hr Gamma Contact	Results in µR/hr Gamma 1 Meter
B6	Floor	L	370	196	290	279	-11	0.264	1.8	-23.15	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C6	Floor	L	370	196	290	201	-89	0.264	1.8	-187.29	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C7	Floor	L	370	196	290	241	-49	0.264	1.8	-103.11	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C8	Floor	L	370	196	290	207	-83	0.264	1.8	-174.66	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D6	Floor	L	370	196	290	274	-16	0.264	1.8	-33.67	25	0	17	N/A	N/A	0.228	1.8	N/A	-0.48	3.3	N/A	N/A
D7	Floor	L	370	196	290	199	-91	0.264	1.8	-191.50	25	0	17	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
C2	Ceiling	C	545	261	457	337	-120	0.264	1.8	-252.53	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
D5	Ceiling	C	545	261	457	332	-125	0.264	1.8	-263.05	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A
A7	Ceiling	C	545	261	457	370	-87	0.264	1.8	-183.08	35	0	16	N/A	N/A	0.228	1.8	N/A	-0.48	3.3	N/A	N/A
C8	Ceiling	C	545	261	457	366	-91	0.264	1.8	-191.50	35	0	16	N/A	N/A	0.228	1.8	N/A	N/A	N/A	N/A	N/A

Table 17

SCAN SURVEY RESULTS FOR BASEMENT OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Basement
Date: 7/21/2005

			Results in CPM							Results in	Results in CPM							Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Scan Measurements		Instrument		DPM/100cm²	Alpha BKG			Scan Measurements		Instrument		DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
A1	N.Wall	B	712	347	631	362	-269	0.279	1.8	-535.64	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.33	-3.26	N/A	N/A
A2	N.Wall	B	712	347	631	473	-158	0.279	1.8	-314.62	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	N.Wall	B	712	347	631	479	-152	0.279	1.8	-302.67	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	N.Wall	B	712	347	631	491	-140	0.279	1.8	-278.77	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	N.Wall	B	712	347	631	447	-184	0.279	1.8	-366.39	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	N.Wall	B	712	347	631	554	-77	0.279	1.8	-153.33	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	E.Wall	B	712	347	631	426	-205	0.279	1.8	-408.20	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	E.Wall	B	712	347	631	397	-234	0.279	1.8	-465.95	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	E.Wall	B	712	347	631	457	-174	0.279	1.8	-346.48	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	E.Wall	B	712	347	631	554	-77	0.279	1.8	-153.33	43	0	23	N/A	N/A	0.234	1.8	N/A	3.38	4.45	N/A	N/A
A5	E.Wall	B	712	347	631	444	-187	0.279	1.8	-372.36	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A6	E.Wall	B	712	347	631	376	-255	0.279	1.8	-507.77	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A7	E.Wall	B	712	347	631	387	-244	0.279	1.8	-485.86	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A8	E.Wall	B	712	347	631	411	-220	0.279	1.8	-438.07	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	E.Wall	B	712	347	631	481	-150	0.279	1.8	-298.69	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	E.Wall	B	712	347	631	430	-201	0.279	1.8	-400.24	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	E.Wall	B	712	347	631	487	-144	0.279	1.8	-286.74	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	E.Wall	B	712	347	631	428	-203	0.279	1.8	-404.22	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B5	E.Wall	B	712	347	631	473	-158	0.279	1.8	-314.62	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B6	E.Wall	B	712	347	631	521	-110	0.279	1.8	-219.04	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.33	2.24	N/A	N/A
B7	E.Wall	B	712	347	631	421	-210	0.279	1.8	-418.16	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	E.Wall	B	712	347	631	379	-252	0.279	1.8	-501.79	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	S.Wall	B	712	347	631	457	-174	0.279	1.8	-346.48	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	S.Wall	B	712	347	631	339	-292	0.279	1.8	-581.44	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	S.Wall	B	712	347	631	401	-230	0.279	1.8	-457.98	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	S.Wall	B	712	347	631	413	-218	0.279	1.8	-434.09	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	S.Wall	B	712	347	631	431	-200	0.279	1.8	-398.25	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	S.Wall	B	712	347	631	437	-194	0.279	1.8	-386.30	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	S.Wall	B	712	347	631	542	-89	0.279	1.8	-177.22	43	0	23	N/A	N/A	0.234	1.8	N/A	1.62	5.55	N/A	N/A
A1	W.Wall	B	712	347	631	446	-186	0.279	1.8	-370.37	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	W.Wall	B	712	347	631	456	-176	0.279	1.8	-350.46	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	W.Wall	B	712	347	631	440	-191	0.279	1.8	-380.33	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	W.Wall	B	712	347	631	354	-277	0.279	1.8	-551.67	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A5	W.Wall	B	712	347	631	560	-71	0.279	1.8	-141.38	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A6	W.Wall	B	712	347	631	420	-211	0.279	1.8	-420.16	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	W.Wall	B	712	347	631	548	-83	0.279	1.8	-165.27	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	W.Wall	B	712	347	631	431	-200	0.279	1.8	-398.25	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	W.Wall	B	712	347	631	613	-18	0.279	1.8	-35.84	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	W.Wall	B	712	347	631	600	-31	0.279	1.8	-61.73	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B5	W.Wall	B	712	347	631	623	-8	0.279	1.8	-15.93	43	0	23	N/A	N/A	0.234	1.8	N/A	1.62	0.04	N/A	N/A
B7	W.Wall	B	712	347	631	499	-132	0.279	1.8	-262.84	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	W.Wall	B	712	347	631	490	-141	0.279	1.8	-280.76	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C7	W.Wall	B	712	347	631	401	-230	0.279	1.8	-457.98	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.33	3.36	N/A	N/A
A1	N.Wall	C	546	316	457	358	-99	0.279	1.8	-197.13	35	0	16	N/A	N/A	0.234	1.8	N/A	-0.33	-1.05	N/A	N/A
A2	N.Wall	C	546	316	457	392	-65	0.279	1.8	-129.43	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	N.Wall	C	546	316	457	456	-1	0.279	1.8	-1.99	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A

Table 17

SCAN SURVEY RESULTS FOR BASEMENT OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Basement
Date: 7/21/2005

			Results in CPM							Results in	Results in CPM							Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Scan Measurements		Instrument		DPM/100cm²	Alpha BKG			Scan Measurements		Instrument		DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
B2	N.Wall	C	545	316	457	376	-81	0.279	1.8	-161.29	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	E.Wall	C	545	316	457	372	-85	0.279	1.8	-169.26	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	E.Wall	C	545	316	457	375	-82	0.279	1.8	-163.28	35	0	16	N/A	N/A	0.234	1.8	N/A	-0.33	2.24	N/A	N/A
A3	E.Wall	C	545	316	457	386	-71	0.279	1.8	-141.38	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	E.Wall	C	545	316	457	337	-120	0.279	1.8	-238.95	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A5	E.Wall	C	545	316	457	383	-74	0.279	1.8	-147.35	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A6	E.Wall	C	545	316	457	362	-95	0.279	1.8	-189.17	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A7	E.Wall	C	545	316	457	393	-64	0.279	1.8	-127.44	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A8	E.Wall	C	545	316	457	331	-126	0.279	1.8	-250.90	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	E.Wall	C	545	316	457	373	-84	0.279	1.8	-167.26	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	E.Wall	C	545	316	457	374	-83	0.279	1.8	-165.27	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	E.Wall	C	545	316	457	426	-31	0.279	1.8	-61.73	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	E.Wall	C	545	316	457	382	-75	0.279	1.8	-149.34	35	0	16	N/A	N/A	0.234	1.8	N/A	1.52	1.14	N/A	N/A
B5	E.Wall	C	545	316	457	376	-81	0.279	1.8	-161.29	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B6	E.Wall	C	545	316	457	439	-18	0.279	1.8	-35.84	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B7	E.Wall	C	545	316	457	402	-55	0.279	1.8	-109.52	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	E.Wall	C	545	316	457	383	-74	0.279	1.8	-147.35	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	S.Wall	C	545	316	457	392	-65	0.279	1.8	-129.43	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	S.Wall	C	545	316	457	381	-76	0.279	1.8	-151.33	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	S.Wall	C	545	316	457	337	-120	0.279	1.8	-238.95	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	S.Wall	C	545	316	457	413	-44	0.279	1.8	-87.61	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	S.Wall	C	545	316	457	457	0	0.279	1.8	0.00	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	S.Wall	C	545	316	457	331	-126	0.279	1.8	-250.90	35	0	16	N/A	N/A	0.234	1.8	N/A	1.52	1.14	N/A	N/A
B3	S.Wall	C	545	316	457	454	-3	0.279	1.8	-5.97	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	S.Wall	C	545	316	457	323	-134	0.279	1.8	-266.83	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	W.Wall	C	545	316	457	421	-36	0.279	1.8	-71.68	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	W.Wall	C	545	316	457	350	-107	0.279	1.8	-213.06	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	W.Wall	C	545	316	457	403	-54	0.279	1.8	-107.53	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	W.Wall	C	545	316	457	414	-43	0.279	1.8	-85.62	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A5	W.Wall	C	545	316	457	370	-87	0.279	1.8	-173.24	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A6	W.Wall	C	545	316	457	438	-19	0.279	1.8	-37.83	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A7	W.Wall	C	545	316	457	400	-57	0.279	1.8	-113.60	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A8	W.Wall	C	545	316	457	329	-128	0.279	1.8	-254.88	35	0	16	N/A	N/A	0.234	1.8	N/A	-0.33	-2.16	N/A	N/A
B1	W.Wall	C	545	316	457	396	-61	0.279	1.8	-121.47	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	W.Wall	C	545	316	457	429	-28	0.279	1.8	-55.75	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	W.Wall	C	545	316	457	436	-21	0.279	1.8	-41.82	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	W.Wall	C	545	316	457	387	-70	0.279	1.8	-139.39	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B5	W.Wall	C	545	316	457	395	-62	0.279	1.8	-123.46	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B6	W.Wall	C	545	316	457	386	-71	0.279	1.8	-141.38	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B7	W.Wall	C	545	316	457	330	-127	0.279	1.8	-252.89	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	W.Wall	C	545	316	457	387	-70	0.279	1.8	-139.39	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	Floor	C	545	316	457	246	-211	0.279	1.8	-420.16	35	0	16	N/A	N/A	0.234	1.8	N/A	-0.33	0.04	N/A	N/A
A2	Floor	C	545	316	457	223	-234	0.279	1.8	-465.95	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	Floor	C	545	316	457	283	-174	0.279	1.8	-346.48	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	Floor	C	545	316	457	278	-179	0.279	1.8	-356.43	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A5	Floor	C	545	316	457	260	-197	0.279	1.8	-392.27	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A

Table 17

SCAN SURVEY RESULTS FOR BASEMENT OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Basement
Date: 7/21/2005

			Results in CPM							Results in	Results in CPM							Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Scan Measurements		Instrument		DPM/100cm²	Alpha BKG			Scan Measurements		Instrument		DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
A6	Floor	C	545	316	457	270	-187	0.279	1.8	-372.36	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A7	Floor	C	545	316	457	203	-254	0.279	1.8	-505.77	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A8	Floor	C	545	316	457	228	-232	0.279	1.8	-461.97	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	Floor	C	545	316	457	247	-210	0.279	1.8	-418.16	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	Floor	C	545	316	457	278	-179	0.279	1.8	-356.43	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	Floor	C	545	316	457	290	-167	0.279	1.8	-332.54	35	0	16	N/A	N/A	0.234	1.8	N/A	3.38	-1.05	N/A	N/A
B4	Floor	C	545	316	457	272	-186	0.279	1.8	-368.38	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B5	Floor	C	545	316	457	229	-228	0.279	1.8	-454.00	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B6	Floor	C	545	316	457	288	-169	0.279	1.8	-336.52	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B7	Floor	C	545	316	457	212	-245	0.279	1.8	-487.85	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	Floor	C	545	316	457	218	-239	0.279	1.8	-475.91	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C1	Floor	C	545	316	457	226	-231	0.279	1.8	-459.98	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C2	Floor	C	545	316	457	202	-255	0.279	1.8	-507.77	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C3	Floor	C	545	316	457	182	-275	0.279	1.8	-547.59	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C4	Floor	C	545	316	457	279	-178	0.279	1.8	-354.44	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C5	Floor	C	545	316	457	266	-191	0.279	1.8	-380.33	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C6	Floor	C	545	316	457	235	-222	0.279	1.8	-442.05	35	0	16	N/A	N/A	0.234	1.8	N/A	3.38	3.35	N/A	N/A
C7	Floor	C	545	316	457	209	-248	0.279	1.8	-493.83	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C8	Floor	C	545	316	457	273	-184	0.279	1.8	-366.39	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D1	Floor	C	545	316	457	214	-243	0.279	1.8	-483.87	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D2	Floor	C	545	316	457	202	-255	0.279	1.8	-507.77	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D3	Floor	C	545	316	457	246	-211	0.279	1.8	-420.16	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D4	Floor	C	545	316	457	261	-196	0.279	1.8	-390.28	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D5	Floor	C	545	316	457	211	-246	0.279	1.8	-489.84	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D6	Floor	C	545	316	457	202	-255	0.279	1.8	-507.77	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D7	Floor	C	545	316	457	231	-226	0.279	1.8	-450.02	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D8	Floor	C	545	316	457	260	-197	0.279	1.8	-392.27	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	Ceiling	C	545	261	457	255	-202	0.264	1.8	-425.08	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C2	Ceiling	C	545	261	457	251	-206	0.264	1.8	-433.50	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	Ceiling	C	545	261	457	286	-171	0.264	1.8	-359.85	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
D5	Ceiling	C	545	261	457	303	-154	0.264	1.8	-324.07	35	0	16	N/A	N/A	0.234	1.8	N/A	-0.48	0	N/A	N/A

Table 18

SCAN SURVEY RESULTS FOR EXTERIOR SURFACES OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Exterior Surfaces
Date: 7/22/2005

			Results in CPM							Results in	Results in CPM								Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Scan Measurements		Instrument		DPM/100cm²	Alpha BKG			Scan Measurements		Instrument		DPM/100cm²	DPM/100cm²			Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta		Contact	1 Meter
B2	S.Wall	L	370	325	290	363	73	0.279	1.8	145.36	25	0	17	N/A	N/A	0.234	1.8	N/A	-0.48	2.2		N/A	N/A
B3	S.Wall	L	370	325	290	331	41	0.279	1.8	81.64	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B4	S.Wall	L	370	325	290	353	63	0.279	1.8	125.45	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B2	N.Wall	L	370	325	290	397	107	0.279	1.8	213.06	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B3	N.Wall	L	370	325	290	370	80	0.279	1.8	159.30	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B4	N.Wall	L	370	325	290	419	129	0.279	1.8	256.87	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A2	W.Wall	L	370	303	290	275	-15	0.264	1.8	-31.67	25	0	17	N/A	N/A	0.234	1.8	N/A	1.37	2.2		N/A	N/A
A3	W.Wall	L	370	303	290	259	-31	0.264	1.8	-65.24	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A4	W.Wall	L	370	303	290	285	-5	0.264	1.8	-10.52	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B2	W.Wall	L	370	303	290	304	14	0.264	1.8	29.46	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B3	W.Wall	L	370	303	290	291	1	0.264	1.8	2.10	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B4	W.Wall	L	370	303	290	303	13	0.264	1.8	27.36	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A1	S.Wall	C	545	325	457	383	-74	0.279	1.8	-147.35	35	0	16	N/A	N/A	0.234	1.8	N/A	-0.48	-1.1		N/A	N/A
A2	S.Wall	C	545	325	457	414	-43	0.279	1.8	-85.62	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A3	S.Wall	C	545	325	457	386	-71	0.279	1.8	-141.38	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A4	S.Wall	C	545	325	457	376	-81	0.279	1.8	-161.29	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A5	S.Wall	C	545	325	457	394	-63	0.279	1.8	-125.45	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A1	W.Wall	C	545	325	457	503	46	0.279	1.8	91.60	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A2	W.Wall	C	545	325	457	413	-44	0.279	1.8	-87.61	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A3	W.Wall	C	545	325	457	428	-29	0.279	1.8	-57.75	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A4	W.Wall	C	545	325	457	462	5	0.279	1.8	9.96	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A5	W.Wall	C	545	325	457	426	-31	0.279	1.8	-61.73	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A6	W.Wall	C	545	325	457	434	-23	0.279	1.8	-45.80	35	0	16	N/A	N/A	0.234	1.8	N/A	1.37	-2.2		N/A	N/A
A7	W.Wall	C	545	325	457	382	-75	0.279	1.8	-149.34	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A8	W.Wall	C	545	325	457	488	31	0.279	1.8	61.73	35	0	16	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A1	N.Wall	B	712	325	631	688	57	0.279	1.8	113.50	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.48	2.2		N/A	N/A
A2	N.Wall	B	712	325	631	673	42	0.279	1.8	83.63	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A3	N.Wall	B	712	325	631	579	-52	0.279	1.8	-103.64	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A4	N.Wall	B	712	325	631	661	30	0.279	1.8	59.74	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A5	N.Wall	B	712	325	631	541	-90	0.279	1.8	-179.21	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B1	N.Wall	B	712	325	631	695	64	0.279	1.8	127.44	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B2	N.Wall	B	712	325	631	601	-30	0.279	1.8	-59.74	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B4	N.Wall	B	712	325	631	653	22	0.279	1.8	43.81	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B5	N.Wall	B	712	325	631	623	-8	0.279	1.8	-15.93	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A1	E.Wall	B	712	325	631	539	-92	0.279	1.8	-183.19	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.48	4.4		N/A	N/A
A2	E.Wall	B	712	325	631	681	50	0.279	1.8	99.56	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A4	E.Wall	B	712	325	631	613	-18	0.279	1.8	-35.84	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A5	E.Wall	B	712	325	631	698	67	0.279	1.8	133.41	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A6	E.Wall	B	712	325	631	651	20	0.279	1.8	39.82	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A7	E.Wall	B	712	325	631	634	3	0.279	1.8	5.97	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
A8	E.Wall	B	712	325	631	648	17	0.279	1.8	33.85	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B1	E.Wall	B	712	325	631	673	42	0.279	1.8	83.63	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B2	E.Wall	B	712	325	631	668	37	0.279	1.8	73.68	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B3	E.Wall	B	712	325	631	646	15	0.279	1.8	29.87	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A
B4	E.Wall	B	712	325	631	441	-190	0.279	1.8	-378.34	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.48	2.2		N/A	N/A
B5	E.Wall	B	712	325	631	683	52	0.279	1.8	103.54	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A		N/A	N/A

Table 18

SCAN SURVEY RESULTS FOR EXTERIOR SURFACES OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Exterior Surfaces
Date: 7/22/2005

			Results in CPM							Results in	Results in CPM							Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Scan Measurements		Instrument		DPM/100cm²	Alpha BKG			Scan Measurements		Instrument		DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
B6	E.Wall	B	712	326	631	696	65	0.279	1.8	129.43	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B7	E.Wall	B	712	326	631	626	-5	0.279	1.8	-9.96	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	E.Wall	B	712	326	631	669	38	0.279	1.8	75.67	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	S.Wall	B	712	326	631	636	5	0.279	1.8	9.96	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A2	S.Wall	B	712	326	631	628	-3	0.279	1.8	-5.97	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A3	S.Wall	B	712	326	631	586	-45	0.279	1.8	-89.61	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	S.Wall	B	712	326	631	667	36	0.279	1.8	71.68	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A5	S.Wall	B	712	326	631	662	31	0.279	1.8	61.73	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	S.Wall	B	712	326	631	577	-54	0.279	1.8	-107.53	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.48	1.1	N/A	N/A
B2	S.Wall	B	712	326	631	602	-29	0.279	1.8	-57.75	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B3	S.Wall	B	712	326	631	641	10	0.279	1.8	19.91	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	S.Wall	B	712	326	631	642	11	0.279	1.8	21.90	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A1	W.Wall	B	712	303	631	560	-71	0.264	1.8	-149.41	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.48	1.1	N/A	N/A
A2	W.Wall	B	712	303	631	581	-50	0.264	1.8	-105.22	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A4	W.Wall	B	712	303	631	659	28	0.264	1.8	58.92	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A5	W.Wall	B	712	303	631	633	2	0.264	1.8	4.21	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A6	W.Wall	B	712	303	631	691	60	0.264	1.8	126.26	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A7	W.Wall	B	712	303	631	626	-5	0.264	1.8	-10.52	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
A8	W.Wall	B	712	303	631	647	16	0.264	1.8	33.67	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B1	W.Wall	B	712	303	631	652	21	0.264	1.8	44.19	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B2	W.Wall	B	712	303	631	595	-36	0.264	1.8	-75.76	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	W.Wall	B	712	303	631	587	-44	0.264	1.8	-92.59	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B5	W.Wall	B	712	303	631	623	-8	0.264	1.8	-16.84	43	0	23	N/A	N/A	0.234	1.8	N/A	1.37	-1.1	N/A	N/A
B6	W.Wall	B	712	303	631	596	-35	0.264	1.8	-73.66	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B7	W.Wall	B	712	303	631	601	-30	0.264	1.8	-63.13	43	0	23	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B8	W.Wall	B	712	303	631	577	-54	0.264	1.8	-113.64	43	0	23	N/A	N/A	0.234	1.8	N/A	-0.48	1.1	N/A	N/A
B2	Roof	L	370	325	290	429	139	0.279	1.8	276.78	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
B4	Roof	L	370	325	290	402	112	0.279	1.8	223.02	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C3	Roof	L	370	325	290	385	95	0.279	1.8	189.17	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A
C5	Roof	L	370	325	290	371	81	0.279	1.8	161.29	25	0	17	N/A	N/A	0.234	1.8	N/A	N/A	N/A	N/A	N/A

Table 19

FSS STATIC SURVEY RESULTS FOR INTERIOR SURFACES OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Interior Surfaces
Date:7/23/05

			Results in CPM							Results in	Results in CPM								Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Static Measurements		Instrument		DPM/100cm²	Alpha BKG			Static Measurements		Instrument		DPM/100cm²	DPM/100cm²			Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta		Contact	1 Meter
A1	1N.Wall	CB	330	325	242	316	74	0.279	1.8	147.35	9	1	1	2	1	0.228	1.8	2.44	1.37	-1.1		N/A	N/A
A2	1N.Wall	CB	330	325	242	335	93	0.279	1.8	185.19	9	1	1	1	0	0.228	1.8	0.00	3.23	-2.2		N/A	N/A
A4	1N.Wall	CB	330	325	242	263	21	0.279	1.8	41.82	9	1	1	3	2	0.228	1.8	4.87	1.37	-2.2		N/A	N/A
B1	1N.Wall	CB	330	325	242	307	65	0.279	1.8	129.43	9	1	1	3	2	0.228	1.8	4.87	1.37	0		N/A	N/A
B4	1N.Wall	CB	330	325	242	313	71	0.279	1.8	141.38	9	1	1	4	3	0.228	1.8	7.31	-0.48	5.51		N/A	N/A
A2	1E.Wall	CB	330	325	242	298	56	0.279	1.8	111.51	9	1	1	3	2	0.228	1.8	4.87	-0.48	0		N/A	N/A
A3	1E.Wall	CB	330	325	242	292	50	0.279	1.8	99.56	9	1	1	7	6	0.228	1.8	14.62	1.37	-2.2		N/A	N/A
A4	1E.Wall	CB	330	325	242	306	64	0.279	1.8	127.44	9	1	1	8	7	0.228	1.8	17.06	1.37	0		N/A	N/A
A5	1E.Wall	CB	330	325	242	317	75	0.279	1.8	149.34	9	1	1	4	3	0.228	1.8	7.31	-0.48	0		N/A	N/A
A6	1E.Wall	CB	330	325	242	280	38	0.279	1.8	75.67	9	1	1	3	2	0.228	1.8	4.87	-0.48	0		N/A	N/A
B3	1E.Wall	CB	330	325	242	279	37	0.279	1.8	73.68	9	1	1	7	6	0.228	1.8	14.62	-0.48	1.1		N/A	N/A
B4	1E.Wall	CB	330	325	242	304	62	0.279	1.8	123.46	9	1	1	4	3	0.228	1.8	7.31	-0.48	2.2		N/A	N/A
B5	1E.Wall	CB	330	325	242	269	27	0.279	1.8	53.76	9	1	1	4	3	0.228	1.8	7.31	-0.48	0		N/A	N/A
B6	1E.Wall	CB	330	325	242	285	43	0.279	1.8	85.62	9	1	1	2	1	0.228	1.8	2.44	1.37	-1.1		N/A	N/A
B7	1E.Wall	CB	330	325	242	272	30	0.279	1.8	59.74	9	1	1	3	2	0.228	1.8	4.87	-0.48	-1.1		N/A	N/A
A1	1S.Wall	CB	330	325	242	281	39	0.279	1.8	77.66	9	1	1	2	1	0.228	1.8	2.44	-0.48	1.1		N/A	N/A
A2	1S.Wall	CB	330	325	242	274	32	0.279	1.8	63.72	9	1	1	0	-1	0.228	1.8	-2.44	-0.48	2.2		N/A	N/A
A3	1S.Wall	CB	330	325	242	306	64	0.279	1.8	127.44	9	1	1	6	5	0.228	1.8	12.18	1.37	-2.2		N/A	N/A
B1	1S.Wall	CB	330	325	242	296	54	0.279	1.8	107.53	9	1	1	2	1	0.228	1.8	2.44	-0.48	0		N/A	N/A
B4	1S.Wall	CB	330	325	242	336	94	0.279	1.8	187.18	9	1	1	1	0	0.228	1.8	0.00	1.37	-2.2		N/A	N/A
A2	1W.Wall	CB	330	325	242	255	13	0.279	1.8	25.89	9	1	1	5	4	0.228	1.8	9.75	1.37	-1.1		N/A	N/A
A3	1W.Wall	CB	330	325	242	271	29	0.279	1.8	57.75	9	1	1	3	2	0.228	1.8	4.87	1.37	-1.1		N/A	N/A
A4	1W.Wall	CB	330	325	242	311	69	0.279	1.8	137.40	9	1	1	4	3	0.228	1.8	7.31	-0.48	0		N/A	N/A
A5	1W.Wall	CB	330	325	242	297	55	0.279	1.8	109.52	9	1	1	7	6	0.228	1.8	14.62	-0.48	0		N/A	N/A
A8	1W.Wall	CB	330	325	242	307	65	0.279	1.8	129.43	9	1	1	1	0	0.228	1.8	0.00	-0.48	0		N/A	N/A
B1	1W.Wall	CB	330	325	242	341	99	0.279	1.8	197.13	9	1	1	1	0	0.228	1.8	0.00	-0.48	-3.3		N/A	N/A
B3	1W.Wall	CB	330	325	242	310	68	0.279	1.8	135.40	9	1	1	4	3	0.228	1.8	7.31	-0.48	-1.1		N/A	N/A
B4	1W.Wall	CB	330	325	242	339	97	0.279	1.8	193.15	9	1	1	2	1	0.228	1.8	2.44	-0.48	-1.1		N/A	N/A
B5	1W.Wall	CB	330	325	242	299	57	0.279	1.8	113.50	9	1	1	2	1	0.228	1.8	2.44	1.37	1.1		N/A	N/A
B8	1W.Wall	CB	330	325	242	324	82	0.279	1.8	163.28	9	1	1	3	2	0.228	1.8	4.87	-0.48	2.2		N/A	N/A
B5	1Ceiling	C	473	325	393	351	-42	0.279	1.8	-83.63	11	1	3	5	2	0.228	1.8	4.87	1.37	0		N/A	N/A
A1	1Floor	C	473	325	393	359	-34	0.279	1.8	-67.70	11	1	3	3	0	0.228	1.8	0.00	-0.48	0		11	11
B3	1Floor	C	473	325	393	314	-79	0.279	1.8	-157.31	11	1	3	6	3	0.228	1.8	7.31	-0.48	-2.2		12	13
C4	1Floor	C	473	325	393	335	-58	0.279	1.8	-115.49	11	1	3	6	3	0.228	1.8	7.31	-0.48	-3.3		13	12
D5	1Floor	C	473	325	393	332	-61	0.279	1.8	-121.47	11	1	3	4	1	0.228	1.8	2.44	-0.48	-1.1		12	12
A1	Bceiling	C	473	325	393	279	-114	0.279	1.8	-227.00	11	1	3	5	2	0.228	1.8	4.87	-0.48	0		N/A	N/A
B3	Bceiling	C	473	325	393	318	-75	0.279	1.8	-149.34	11	1	3	5	2	0.228	1.8	4.87	-0.48	3.3		N/A	N/A
C4	Bceiling	C	473	325	393	317	-76	0.279	1.8	-151.33	11	1	3	2	-1	0.228	1.8	-2.44	3.23	0		N/A	N/A
D5	Bceiling	C	473	325	393	303	-90	0.279	1.8	-179.21	11	1	3	8	5	0.228	1.8	12.18	-0.48	-1.1		N/A	N/A
B6	Bceiling	C	473	325	393	344	-49	0.279	1.8	-97.57	11	1	3	4	1	0.228	1.8	2.44	-0.48	-1.1		N/A	N/A
A1	BN.Wall	C	473	325	393	245	-148	0.279	1.8	-294.70	11	1	3	7	4	0.228	1.8	9.75	-0.48	0		N/A	N/A
B1	BN.Wall	C	473	325	393	286	-107	0.279	1.8	-213.06	11	1	3	5	2	0.228	1.8	4.87	1.37	1.1		N/A	N/A
B2	BN.Wall	C	473	325	393	294	-99	0.279	1.8	-197.13	11	1	3	4	1	0.228	1.8	2.44	-0.48	3.3		N/A	N/A
A2	BE.Wall	C	473	325	393	302	-91	0.279	1.8	-181.20	11	1	3	1	-2	0.228	1.8	-4.87	3.23	5.51		N/A	N/A
A5	BE.Wall	C	473	325	393	279	-114	0.279	1.8	-227.00	11	1	3	4	1	0.228	1.8	2.44	1.37	-2.2		N/A	N/A
A7	BE.Wall	C	473	325	393	287	-106	0.279	1.8	-211.07	11	1	3	4	1	0.228	1.8	2.44	-0.48	-2.2		N/A	N/A

Table 19

FSS STATIC SURVEY RESULTS FOR INTERIOR SURFACES OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Interior Surfaces
Date:7/23/05

			Results in CPM							Results in	Results in CPM								Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Static Measurements		Instrument		DPM/100cm²	Alpha BKG			Static Measurements		Instrument			DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
B4	BE.Wall	C	473	326	393	295	-98	0.279	1.8	-195.14	11	1	3	6	3	0.228	1.8	7.31	1.37	-1.1	N/A	N/A
B5	BE.Wall	C	473	326	393	341	-52	0.279	1.8	-103.64	11	1	3	9	6	0.228	1.8	14.62	-0.48	-1.1	N/A	N/A
B7	BE.Wall	C	473	326	393	330	-63	0.279	1.8	-125.45	11	1	3	7	4	0.228	1.8	9.75	-0.48	-1.1	N/A	N/A
A1	BS.Wall	C	473	326	393	307	-86	0.279	1.8	-171.25	11	1	3	4	1	0.228	1.8	2.44	-0.48	0	N/A	N/A
A3	BS.Wall	C	473	326	393	396	2	0.279	1.8	3.98	11	1	3	3	0	0.228	1.8	0.00	-0.48	5.51	N/A	N/A
B2	BS.Wall	C	473	326	393	288	-105	0.279	1.8	-209.08	11	1	3	4	1	0.228	1.8	2.44	-0.48	-1.1	N/A	N/A
B4	BS.Wall	C	473	326	393	318	-75	0.279	1.8	-149.34	11	1	3	6	3	0.228	1.8	7.31	-0.48	3.3	N/A	N/A
A1	BW.Wall	C	473	326	393	282	-111	0.279	1.8	-221.03	11	1	3	5	2	0.228	1.8	4.87	-0.48	1.1	N/A	N/A
A3	BW.Wall	C	473	326	393	280	-113	0.279	1.8	-225.01	11	1	3	6	3	0.228	1.8	7.31	-0.48	5.51	N/A	N/A
B5	BW.Wall	C	473	326	393	324	-69	0.279	1.8	-137.40	11	1	3	4	1	0.228	1.8	2.44	-0.48	0	N/A	N/A
A3	BFloor	C	473	326	393	309	-84	0.279	1.8	-167.26	11	1	3	4	1	0.228	1.8	2.44	-0.48	-2.2	9	8
C4	BFloor	C	473	326	393	335	-58	0.279	1.8	-115.48	11	1	3	5	2	0.228	1.8	4.87	-0.48	-1.1	9	8
B6	BFloor	C	473	326	393	318	-75	0.279	1.8	-149.34	11	1	3	2	-1	0.228	1.8	-2.44	-0.48	2.2	10	10
D7	BFloor	C	473	326	393	343	-50	0.279	1.8	-99.56	11	1	3	1	-2	0.228	1.8	-4.87	-0.48	2.2	11	10

Table 20

FSS STATIC SURVEY RESULTS FOR EXTERIOR SURFACES OF THE WJN WELL HOUSE

Area/Building: Well House
Room: Exterior Surfaces
Date:7/23/05

			Results in CPM							Results in	Results in CPM							Results in	Smear Results in		Results in µR/hr	
	Surface	Material	Alpha + Beta BKG			Static Measurements		Instrument		DPM/100cm²	Alpha BKG			Static Measurements		Instrument		DPM/100cm²	DPM/100cm²		Gamma	
Grid	Medium	Type	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	DLV	Ambient	Mean	Gross Counts	Net Counts	EFF	CF	Activity	Alpha	Beta	Contact	1 Meter
A1	N.Wall	B	587	279	499	609	110	0.279	1.8	219.04	12	1	4	5	1	0.228	1.8	2.44	1.37	-1.1	N/A	N/A
A3	N.Wall	B	587	279	499	600	101	0.279	1.8	201.12	12	1	4	7	3	0.228	1.8	7.31	-0.48	0	N/A	N/A
A4	N.Wall	B	587	279	499	586	87	0.279	1.8	173.24	12	1	4	8	4	0.228	1.8	9.75	-0.48	1.1	N/A	N/A
B1	N.Wall	B	587	279	499	627	128	0.279	1.8	254.88	12	1	4	11	7	0.228	1.8	17.06	-0.48	-2.2	N/A	N/A
B4	N.Wall	B	587	279	499	581	82	0.279	1.8	163.28	12	1	4	11	7	0.228	1.8	17.06	-0.48	4.4	N/A	N/A
A1	W.Wall	B	587	279	499	576	77	0.279	1.8	153.33	12	1	4	6	2	0.228	1.8	4.87	-0.48	0	N/A	N/A
A4	W.Wall	B	587	279	499	494	-5	0.279	1.8	-9.96	12	1	4	7	3	0.228	1.8	7.31	-0.48	0	N/A	N/A
A5	W.Wall	B	587	279	499	468	-31	0.279	1.8	-61.73	12	1	4	10	6	0.228	1.8	14.62	-0.48	-1.1	N/A	N/A
A6	W.Wall	B	587	279	499	456	-43	0.279	1.8	-85.62	12	1	4	4	0	0.228	1.8	0.00	-0.48	-2.2	N/A	N/A
A7	W.Wall	B	587	279	499	501	2	0.279	1.8	3.98	12	1	4	6	2	0.228	1.8	4.87	-0.48	1.1	N/A	N/A
B1	W.Wall	B	587	279	499	518	19	0.279	1.8	37.83	12	1	4	7	3	0.228	1.8	7.31	1.37	2.2	N/A	N/A
B5	W.Wall	B	587	279	499	488	-11	0.279	1.8	-21.90	12	1	4	8	4	0.228	1.8	9.75	-0.48	-2.2	N/A	N/A
B6	W.Wall	B	587	279	499	528	29	0.279	1.8	57.75	12	1	4	5	1	0.228	1.8	2.44	-0.48	-3.3	N/A	N/A
B7	W.Wall	B	587	279	499	543	44	0.279	1.8	87.61	12	1	4	7	3	0.228	1.8	7.31	-0.48	-1.1	N/A	N/A
B8	W.Wall	B	587	279	499	507	8	0.279	1.8	15.93	12	1	4	10	6	0.228	1.8	14.62	3.23	-1.1	N/A	N/A
A1	S.Wall	B	587	279	499	466	-33	0.279	1.8	-65.71	12	1	4	11	7	0.228	1.8	17.06	-0.48	-1.1	N/A	N/A
A2	S.Wall	B	587	279	499	461	-38	0.279	1.8	-75.67	12	1	4	6	2	0.228	1.8	4.87	-0.48	2.2	N/A	N/A
A3	S.Wall	B	587	279	499	494	-5	0.279	1.8	-9.96	12	1	4	7	3	0.228	1.8	7.31	-0.48	-2.2	N/A	N/A
B1	S.Wall	B	587	279	499	471	-28	0.279	1.8	-55.75	12	1	4	2	-2	0.228	1.8	-4.87	-0.48	0	N/A	N/A
B4	S.Wall	B	587	279	499	482	-17	0.279	1.8	-33.85	12	1	4	7	3	0.228	1.8	7.31	-0.48	-3.3	N/A	N/A
A1	E.Wall	B	587	279	499	484	-15	0.279	1.8	-29.87	12	1	4	9	5	0.228	1.8	12.18	-0.48	1.1	N/A	N/A
A2	E.Wall	B	587	279	499	532	33	0.279	1.8	65.71	12	1	4	7	3	0.228	1.8	7.31	1.37	-2.2	N/A	N/A
A3	E.Wall	B	587	279	499	452	-47	0.279	1.8	-93.59	12	1	4	5	1	0.228	1.8	2.44	-0.48	-1.1	N/A	N/A
A7	E.Wall	B	587	279	499	420	-79	0.279	1.8	-157.31	12	1	4	8	4	0.228	1.8	9.75	-0.48	-1.1	N/A	N/A
A8	E.Wall	B	587	279	499	490	-9	0.279	1.8	-17.92	12	1	4	8	4	0.228	1.8	9.75	-0.48	-2.2	N/A	N/A
B1	E.Wall	B	587	279	499	462	-37	0.279	1.8	-73.68	12	1	4	5	1	0.228	1.8	2.44	-0.48	2.2	N/A	N/A
B2	E.Wall	B	587	279	499	463	-36	0.279	1.8	-71.68	12	1	4	10	6	0.228	1.8	14.62	-0.48	-1.1	N/A	N/A
B3	E.Wall	B	587	279	499	505	6	0.279	1.8	11.95	12	1	4	10	6	0.228	1.8	14.62	-0.48	-2.2	N/A	N/A
B7	E.Wall	B	587	279	499	446	-53	0.279	1.8	-105.54	12	1	4	5	1	0.228	1.8	2.44	-0.48	4.4	N/A	N/A
B8	E.Wall	B	587	279	499	427	-72	0.279	1.8	-143.37	12	1	4	10	6	0.228	1.8	14.62	-0.48	1.1	N/A	N/A

Attachment A

Minimum Detectable Activity Calculations for a Ludlum Model 43-20 Detector and Eberline ESP-2 Meter

The minimum detectable activity (MDA) for scanning an alpha/beta point source with an instrument progression rate of 5 centimeters per second (cm/sec) is calculated using the following method:

Given:

Width of detector = 10 cm
Area of detector = 180 cm^2

Time probe is above point (T) = $\frac{10cm}{5cm/\sec} * \frac{1\min}{60\sec} = 0.033\min$

Alpha/beta background (worst case brick) = 729 counts per minute (cpm)

C_b = scanning background = 729 cpm x 0.033 min = 24.1 counts (c)
S_b = standard deviation of $C_b = \sqrt{C_b} = 4.91$
Eff = efficiency of detector = 0.28 counts per disintegration (c/d)

$$MDA = \frac{3 + (4.65 * S_b)}{Eff * T * \frac{A}{100}} = \frac{3 + (4.65 * 4.91)}{(0.28 * 0.033 * \frac{180}{100})} = 1600 \text{ dpm/100 cm}^2$$

For a wide area alpha/beta source, the MDA would approach the static 1 minute count MDA:

T = 1 minute
S_b = $\sqrt{background} = \sqrt{729} = 27$ cpm

$$MDA + \frac{3 + (4.65 * 27)}{(0.28 * 1 * \frac{180}{100})} = 260 \text{dpm/100 cm}^2$$

The MDA for an alpha source is calculated using the same methodology. The following presents the calculation.

Given:

Width of detector = 10 cm

Area of detector = 180 cm^2

Time probe is above point (T) = $\frac{10cm}{5cm/\sec} * \frac{1\min}{60\sec} = 0.033\min$

Alpha background = 1 counts per minute (cpm)

C_b = scanning background = 1 cpm x 0.033 min = 0.033 counts (c)

S_b = standard deviation of $C_b = \sqrt{C_b} = 0.18$

Eff = efficiency of detector = 0.23 counts per disintegration (c/d)

$$MDA = \frac{3 + (4.65 * S_b)}{Eff * T * \frac{A}{100}} = \frac{3 + (4.65 * 0.18)}{(0.23 * 0.033 * \frac{180}{100})} = 281\,\text{dpm}/100\ \text{cm}^2$$

For a wide area alpha source, the MDA would approach the static 1 minute count MDA:

T = 1 minute

S_b = $\sqrt{background} = \sqrt{1} = 1$ cpm

$$MDA + \frac{3 + (4.65 * 1)}{(0.23 * 1 * \frac{A}{100})} = 18.5\,\text{dpm}/100\ \text{cm}^2$$