3001 0405250002

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CH2MHILL

SM-085/03
November 3, 2003

Mr. Richard B. Provencher, Director
Miamisburg Closure Project
U. S. Department of Energy
P. O. Box 66
Miamisburg, OH 45343-0066

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152
BUILDING 50, BUILDING DATA PACKAGE, PUBLIC REVIEW DRAFT
Bldg 50 GFS/I: Planning Document Complete – Activity ID EBDEE050CK

REFERENCE: Statement of Work Requirement 055 - Regulator Reports

Dear Mr. Provencher:

Paul Lucas from your office has approved the following document to be released for public and regulator review:

- Building 50, Building Data Package, Public Review Draft

The review period will be from 7 November 2003 until 7 December 2003, and the site contractor will respond to any comments received and incorporate the responses into the final document. If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Bob Ransbottom at 865-4220.

Sincerely,

K. L. Kehler
SMPP/TFV Project Manager

KLK/VKD

Enclosures

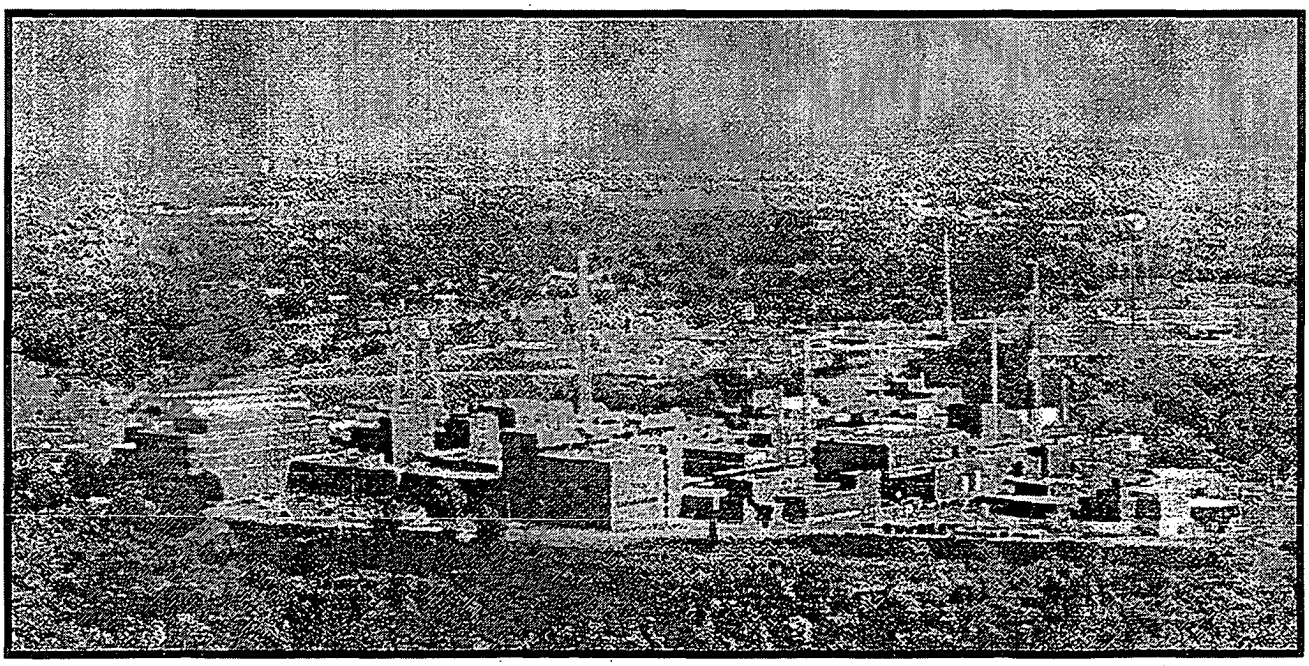
cc: David Seely, USEPA, (1) w/attachments
Brian Nickel, OEPA, (4) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Mary Wojciechowski, Tetra Tech, (1) w/attchs
Frank Schmaltz, DOE/MCP, (1) w/attachments
Lisa Rawls, DOE/MCP, w/o attachments
Randy Tormey, DOE/OH, (1) w/attachments
Dann Bird, MMCIC, (3) w/attachments
Jim Bonfiglio, MESH, (1) w/attachments
Public Reading Room, (4) w/attachments
Kurt Kehler, CH2M Hill, (1) w/attachments
Val Darnell, CH2M Hill, (1) w/attachments
DCC (1) w/attachments
John Fulton, CH2M Hill, w/o attachments
Bob Ransbottom, CH2M Hill, w/o attachments
Dave Rakel, CH2M Hill, w/o attachments

Environmental
Restoration
Program

Miamisburg Closure Project
Building Data Package

Building 50
(Demolition)

Pubic Review Draft
November 2003



MIAMISBURG CLOSURE PROJECT

BUILDING DATA PACKAGE

The following document is available (November 7, 2003) for public information in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio.

BDP Building 50: Alpha Fuels Environmental Test Facility

Questions can be referred to Paul Lucas at (937) 847-8350 ext. 314

U.S. Department of Energy
U.S. Environmental Protection Agency
Ohio Environmental Protection Agency

BDP Building 50

REV	DESCRIPTION	DATE
WORKING DRAFT (to DOE)		**October 2003**
DRAFT (to Core Team)	BDPs for construction demolitions undergo simultaneous review by the Core Team and public.	**N/A**
DRAFT PROPOSED WORKING DRAFT (incorporates Core Team comments)		**N/A**
PUBLIC REVIEW DRAFT	Public review period started November 7, 2003.	**November 2003**
WORKING DRAFT		

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1.0 GENERAL OVERVIEW

1.1 Introduction

The purpose of this Building Data Package (BDP) is to prepare for the demolition of Building 50 (Alpha Fuels Environmental Test Facility) and to identify, if possible, any recognized environmental conditions (defined below) that may affect the subject property and building.

Recognized Environmental Condition: The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a likely release, a past release, or a material threat of a release of any hazardous substances or petroleum into structures, or into the air, ground, groundwater, or surface water near the building.

1.2 Scope

This document has been prepared in accordance with the agreements and requirements as specified in the *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach*. This document is a BDP for Building 50 located at the Department of Energy (DOE) Miamisburg Closure Project (MCP) in Miamisburg, Ohio. The investigation performed to support this BDP models procedures found in *ASTM Standard Practice for Environmental Site Assessments; Phase I Environmental Site Assessment Process* (Designation E 1527-97).

The scope of the investigation included Building 50, the soil beneath, and a 15-foot wide perimeter border around the building. The investigation of Building 50 included the following:

A) A building and perimeter inspection.
B) An examination of historical aerial photographs and maps.
C) A review of federal and state regulatory agency records.
D) Personnel interviews.
E) A review of site records for:

   1) History of spills, releases and chemical inventories
   2) Past sampling data

      - Radiological survey
      - Soil sampling
      - Lead-based paint
      - Asbestos
      - Radon

In addition to the building investigation conducted by site contractor personnel, documents were reviewed. Information used to compile BDPs includes the following:

- Characterization of Mound's Hazardous, Radioactive, and Mixed Wastes, August 1990
- Operable Unit 9 (OU-9) Site Scoping Report, Volumes 1-12
- Mound Facility Physical Characterization, December 1992
- Active Underground Storage Tank Plan, November 1994
- OU-9 Hydrological Investigation, Bedrock Report, January 1994
- OU-9 Hydrological Investigation, Buried Valley Aquifer Report, March 1994
- Environmental Appraisal Report of the Mound Plant, March 1996
- Title Search
- Lease Information
- EDR Report - Radius Map
- Building Prints
- Potential Release Site (PRS) information
- MD-22153, Mound Site Radionuclides By Location, June 1995 Contaminant Surveys
- MLM-3791, Mound Facility Physical Characterization, December 1993

2.0 BUILDING 50 OVERVIEW

Constructed in 1970, Building 50 is located on the east central portion of the site (Figure 1). The facility is a two-story, reinforced concrete block, slab-on-grade structure, containing a row of seven test cells (107 through 113) constructed of reinforced concrete within the building (floor plans provided in Appendix D). The east wall of the row of test cells is 36 inches thick. The remaining walls of the test cells, as well as the inter-cell walls and ceilings are 27 inches thick. The floor and the ceilings of the building as well as the footer and foundation walls are constructed of reinforced concrete. The roofs (partially above the first floor and partially above the second floor) are a built-up membrane of asphalt. Building 50 has not had any major modifications, other than reconfiguration of some of the interior rooms, and contains 14,849 square feet of floor space.

Building 50 was designed and constructed for the purpose of conducting safe, nondestructive tests on sealed heat sources fueled with alpha-emitting isotopes. The design of the building used features and control systems, such as shielding, remote handling systems, air pressure differentials, and filtered ventilation to prevent or minimize the consequences of a potential accident. The operating side of the test cells (the east wall, adjacent to the operating gallery – Room 118) is 36 inches thick. Viewing windows (one window in each of the seven test cells) in the operating wall contained glass windows with a 36-inch space filled with a zinc bromide solution to moderate neutron and gamma emission. A byproduct of the zinc bromide solution was the prevention of algae build-up on

the glass. The rear side of the cells (the west wall, adjacent to the service gallery – Room 114) is 27 inches thick. The access doors to each cell, which opens to the service gallery, are of concrete construction and are 27 inches thick (for shielding). These doors are hung on a manual monorail. The access door is made airtight by the use of a recessed rubber inflatable boot seal. During normal operations, the shielding of the cells assured adequate protection of personnel anywhere in the building outside the test cells. The test cells were equipped with manipulators to permit remote handling of high dose rate heat sources. The cells were connected by a water-filled canal, which permitted the transfer of high dose rate heat sources between cells, as well as to and from the storage pool in the floor of Cell 113 (high-radiation-level storage pool). The canal was formed by the installation of a low concrete wall running parallel to and about twenty-one inches from the operating wall (36 inches thick) inside of the cells. A low-radiation-level storage pool was in the floor of Room 116. Heat sources could also be transferred using the conveyer system as well as via the service corridor under appropriate administrative controls. The test cells were maintained at a pressure that is negative with respect to both the operating and service galleries. Zoning of areas as "White", "Yellow", "Red" Gallery/Equipment Areas, and "Red" Cells/Filter Room was to designate air flow patterns, dividing the building into four areas of decreasing pressure, from white to red. The purpose of this ventilation scheme was to minimize the spread of possible radioactive contamination within the habited areas. All exhaust ventilation is HEPA filtered before leaving the test cells.

The canal connecting the cells is no longer functional and the low wall of the canal has been removed from each cell except from cells 107, 111, and 112. The canal in Cells 111 and 112 is currently covered by metal plates and the canal in Room 107 is exposed. The high-radiation-level storage pool in Cell 113 was modified (increased length and width and decreased depth) to allow for the installation of a vibration tester for the Radioisotope Thermoelectric Generator (RTG) program. The low-radiation-level storage pool in the floor of Room 116 has been filled with concrete.

Building 50 had been classified as a Category 3 Nuclear Facility. The facility was downgraded to Standard Industrial Hazard on 10/24/2002 (DOE MB-0018-03). This downgrade was based on DOE's verification that all nuclear materials and chemicals in excess of releasable quantities were removed from the building.

The building uses hot water (from Building 128-PST Boiler Building) for heating and a chilled glycol (standalone) unit for cooling, which was recently removed. Electric service is 480 volts. The building has potable and service water, a fire sprinkler system (except for cells 108, 109, 110, 111, and 113), sanitary services, and storm drains.

2.1 Past Uses of Building 50

Building 50 was originally built as a test laboratory for evaluating the integrity of sealed, fueled sources (polonium-210, plutonium-238 and other alpha-emitting fuels). Facility capabilities included test equipment for vibration, shock, fire, external pressure, earth burial, fluoroscopy, vacuum environments, source integration, and fusion experiments. None of the tests were intended to breach the heat source capsule integrity; however, the facility was designed to mitigate the affects of a breached, fueled capsule. Testing was

performed in the test cells, which were maintained at a pressure that was negative with respect to the rest of the building. Before leaving the cell, all exhaust ventilation was HEPA filtered. An "Impact Gun" and a pressure burst facility were installed in Building 50 and from 1974 through 1979, Building 50 was used to perform impact tests and pressure burst tests on fueled capsules for the Milliwatt Generator (MWG) program. In the late 1970s and early 1980s an Inert Atmosphere Assembly Chamber (IAAC) was installed in Room 116 and Building 50 was further modified to provide the capability to assemble and test Radioisotope Thermoelectric Generators (RTGs). Testing capabilities included thermal vacuum, vibration, mass properties, and magnetics. These activities continued until December 2002 when all heat source/RTG production activities at the MCP site were terminated.

2.2 Current Uses of Building 50

Building 50 is currently inactive. The equipment is in the process of being removed. All required equipment will be removed from the building, and any remaining equipment will be left in place and demolished/disposed of with the building. Safe Shutdown activities will be conducted prior to the commencement of demolition.

2.3 Summary of Environmental Concerns and Findings - Building 50

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Lead-Based Paint	Previous lead surveys (sampling data) for Buildings 50 indicate that selective tested surfaces of process equipment contain lead paint. Since the building is scheduled for imminent demolition, painted surfaces will be tested for lead content as planned work indicates the need for such testing in order to avoid worker exposure to lead. Although untested paint coatings must be assumed to contain lead, the observed condition of the untested paint indicates that there are currently no lead paint hazards within the buildings. (Appendix J)	No further action would be necessary to protect occupant or worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings should be tested to verify the absence of lead. Since the building is scheduled for demolition, these restrictions have been incorporated into work plans for which disturbance of paint is a possibility. Per Waste Management, building debris containing lead-based paint can be disposed of in a sanitary landfill.
Chemicals	Appendix K provides a list of chemicals reportedly used or stored in Building 50. Applicable pages from the CY2001 Emergency and Hazardous Chemical Inventory Report (dated March 2002) are also provided.	All cell windows (Section 4.2.2) have been drained of all chemical solutions. All remaining chemicals will be removed prior to demolition, and dispositioned by Waste Management.

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Fluorescent Lamps and PCBs	Fluorescent lamps were used in the building. Ballasts may contain polychlorinated biphenyls (PCBs).	Ballasts that may contain PCBs will be removed prior to demolition, and disposed of by Waste Management.
Air Emissions	The Environmental Appraisal (Appendix F) indicates that when the building was operational, air emission sources included the RTG process and the ethanol cleaning process (Rooms 109-113, 114a, and 116). These processes were performed in the test cells (no fumehoods). All HVAC vented to a HEPA filter and the exhaust was released via the roof stack.	Air emissions from Building 50 processes are believed to have had no adverse impact on the building or the environment. All processes in Building 50 have ceased and the building is currently undergoing safe shutdown activities in preparation for demolition.
Asbestos	Previous asbestos surveys for Building 50 were completed in 1989 and 1993. These surveys were intended to identify all reasonably accessible asbestos-containing materials (ACMs) within the building for the purposes of identifying damaged material and managing asbestos in place. The following ACMs were previously identified: pipe insulation, transite cement pipes, tank insulation, and floor tiles. In September of 2003, a comprehensive walk-through survey of all areas of Building 50 was performed to identify all ACMs prior to facility demolition. The following ACMs were identified as requiring removal before demolition: pipe insulation and associated debris, transite cement board table top, fire rated doors, application points of fire-stop putty, sheet vinyl flooring, transite cement pipe, and tank insulation. (Appendix I)	ACM requiring removal before building demolition will be removed by a licensed asbestos hazard abatement contractor. The asphalt roofing is assumed to contain asbestos, but as a Nonfriable Category II material in accordance with NESHAP, it will remain in place during demolition and be disposed of as construction waste. One variety of floor tile within the building was found to be asbestos-containing, but it is also classified as a Category I Nonfriable and need not be removed. All work will be performed in accordance with current state and federal regulations.

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Drainage Sumps	Sanitary waste from Building 50 drained into a sanitary sewage basin (concrete vault), which served as a lift station, where it was automatically pumped to the sanitary sewer line. Although partial walls of the basin remain in place, the lift station was removed in 2001 as part of the sanitary sewer upgrades during the construction of Building 126. Wastewater from the areas in Building 50 of potential radioactive contamination drains into a 1,100-gallon sump (adjacent to the above mentioned sanitary sewage basin). The sump is a steel tank in a secondary concrete containment pit. The water is tested to measure level of contamination, and subsequently released to the sanitary treatment plant or trucked to Building WD for treatment. No records of contaminated wastewater have been found; all indications are that the wastewater from the sump has always been released to the sanitary system.	The remaining walls and floor of the sanitary sewage basin, and the steel tank and concrete containment pit that constitute the sump will be removed during demolition activities. The removed concrete and tank will be radiologically surveyed, and disposed of per Waste Management direction. Following removal of the basin and sump, Radiological Control will perform a walkover survey of the soil at the base of excavation under the previous location of the basin and sumps. Radiological Control will collect three biased soil samples from the base of excavation below the removed vault and adjacent sump and send the samples to the onsite laboratory for gamma spec analysis. Soil results will be included in the Closeout Report.
Lead	Lead bricks (approximately 10) are located in Room 119.	These items will be removed from the building and disposed of per Waste Management direction.
Mercury	N/A	N/A
Radiological	The Building 50 Predemolition Survey Plan is provided in Appendix G. Radiological surveys are not yet complete.	Survey results will be documented in the Final Status Report (FSR), which will be reviewed by the Core Team prior to commencement of demolition activities. The FSR will be included in the Final BDP.
Septic System	N/A	N/A
Wastewater	Handled by site wastewater facility.	N/A
Stains & Corrosion/HVAC	N/A	N/A
Storage Tanks	Photos in Appendix C show two aboveground storage tanks on the north side of Building 50; one tank (Tank T04) contains nitrogen, and the other tank (Tank T18) contains argon.	The nitrogen tank has been removed. The argon tank is empty and disconnected from Building 50. The argon tank will be removed prior to building demolition.
Solid Waste Disposal	N/A	N/A

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Migratory Hazards	N/A	N/A
Radon	Radon level is not applicable for open air demolitions.	N/A
HVAC	HVAC refrigerant will be drained and disposed of during Safe Shutdown.	No further action required.
Energetic Materials	Energetic materials were not present in Building 50.	N/A
Soil Contamination	Appendix L contains a graphic showing all soil sample locations within 15 feet of the Building 50 perimeter, and provides tables for detected compounds (results above laboratory detection limits) and non-detected compounds (results below laboratory detection limits). Maximum exceedances to screening levels (Core Team approved or the more stringent of either 10^{-6} Risk-Based Guideline Value [RBGV] plus background or Hazard Index = 1) are listed in Table 2. All other results are below applicable screening levels.	The existing soil data does not indicate the need for further soil sampling in this area. However, soil samples will be collected following removal of the basin and sump. Refer to discussion under Drainage Sumps, Table 1.

N/A: Not applicable

Table 2 - Maximum Results Exceeding Screening Levels

Analyte	Maximum Result	Background	RBGV (10^{-6})	Screening Level
Benzo(a)pyrene (mg/kg)	0.43*	NA	0.41	0.41
Radium-226 (pCi/g)	2.53*	2	0.09	2.1

RBGV: most stringent of construction and office worker scenarios per Risk-Based Guideline Values, March 1997, Final, as performed using April 2001 HEAST slope factors.

NA: Not analyzed for as part of background soils investigation.

* All results are below Cleanup Objectives.

2.4 Radiological Information for Building 50

A radiological assessment of Building 50 was performed by reviewing its operational history and preliminary radiological survey information. Building 50 was constructed in 1970 as the Alpha Fuels Environmental Test Facility (AFETF). The AFETF was designed and constructed for the purpose of conducting safe, non-destructive tests on heat sources fueled with alpha-emitting isotopes. Since there is a potential for residual contamination to be present, Building 50 is designated as impacted.

The radiological status of all building surfaces will be determined to facilitate a free release of the structure consistent with project goals and site procedures. The Predemolition Survey Plan for Building 50 was prepared commensurate with operational history and in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), and is presented in Appendix G. The survey plan will be implemented and will provide the necessary data to dictate appropriate demolition and disposal. A Final Status Report (FSR) will summarize results from implementation of the survey plan and provide justification for the designated disposal of debris. The FSR will be reviewed by the Core Team prior to proceeding with building demolition, and will be included in the final BDP.

3.0 SITE DESCRIPTION

3.1 Site/Vicinity Location and Characteristics

Building 50 is located at the DOE MCP site, formerly known as the Mound Plant. The MCP site is situated in the City of Miamisburg, Miami Township, Montgomery County, State of Ohio as shown in Appendix B.

The Mound Plant at one time was situated on approximately 300 acres of land and contained approximately 130 buildings with a total of approximately 1.4 million square feet of floor space (the number of buildings is constantly diminishing as buildings are decommissioned and either sold or demolished). The original 182-acre site, purchased by the Manhattan Engineering District in 1946, consisted of two hills and an intervening valley that runs approximately east and west. The 124-acre tract acquired in 1981 was an undeveloped mixture of fields and woods that undulates and slopes downward to the west, away from the main site. This area was acquired to serve as a buffer and has been used as a staging area and parking area for contractors working onsite.

To the west lie a railroad line and the north south trending Miami-Erie Canal. The northern boundaries of the site abut the residential area of Miamisburg, Ohio. Mound Road marks the northern half of the eastern perimeter of the facility then veers east, away from the southern half of the eastern boundary. A public golf course (belonging to the City of Miamisburg), the Miamisburg Mound Memorial Park, old agricultural fields, residential lots, and vacant wooded lots border the facility along Mound Road. Benner Road formed the southern property line of the Mound Plant (at the 300-acre stage), with agricultural fields and farms occupying the lands beyond.

3.2 Description of Structures, Roads, and Other Improvements in Proximity to Building 50

Building 50 is bordered by a concrete pad and Building 126 on the north; an asphalt service road and the current site fenceline on the east; an asphalt service road, the current site fenceline, and an asphalt parking lot on the south; and a concrete sidewalk and Buildings 36, 128, and 37 on the west. The terrain surrounding Building 50 is covered with rip-rap/rock (Figure 3).

3.3 Current and Past Uses of Buildings in Proximity to Building 50

Buildings in proximity to Building 50 include:

- Building 126 (PST Administration Building), located north of Building 50, is a 12,500 square-foot single-story office building that supported the Nuclear Energy mission at Mound.

- Building 36 (PST Assembly and Testing Support Facility), located west of Building 50, is a 4,255 square-foot single-story structure with a penthouse that supported the general purpose heat source (GPHS) assembly and testing program.

- Building 37 (Heat Source Testing Facility), located west of Building 50, is a 2,464 square-foot single-story structure with a penthouse that was used for three purposes: research, development, and production in conjunction with the US Advanced Battery Consortium; converting processes with freon and other hazardous materials to processes that use safer materials; and a machine shop in support of the heat source program.

- Building 128 (PST Boiler Building), located west of Building 50, is a 900 square-foot single-story building which houses the boilers for the hot water heating system for Buildings 36, 37, 50, and 126.

- Building 88 was a 7,200 square-foot, single-story modular structure that was located to the north of Building 50. It was constructed in 1984 to provide administrative offices for the RTG program, and demolished in 2000 to make room for the construction of Building 126. Other projects that were located in Building 88 include the Health Physics group, and later the Environmental Restoration (ER) project.

- Building 44 was a 2,480 square-foot, single story concrete block structure that was located to the south of Building 50. It was constructed in 1970 and originally used as a cafeteria. After the cafeteria services were discontinued in 1994, the building was used as a lunchroom and meeting facility, and later, a storage area, and an office area. Building 44 was demolished in 2000.

- SM Building (Special Metallurgical) was a 21,700 square-foot, single-story metal structure with a penthouse that was located southwest of Building 50. It was constructed in 1963 as a plutonium production facility. In 1972, a decontamination and decommissioning project removed the interior of the building along with the soil beneath the floor. During the 1990s, the outer shell of the building was taken down, with the last remnants being removed in 1995. Approximately 60 to 100 feet of the SM Building foundation remains near the Building 38 stack to prevent the undermining of the stack. The removal of the Building 38 stack was completed in August 2003.

These buildings are believed to have had no adverse environmental impact on Building 50.

4.0 RECORDS REVIEW

4.1 General/Historical CERCLA Information

In compliance with permit requirements under Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and the Clean Air Act (CAA), Mound Plant has applied for or has received permits for its surface water discharges, air emissions, and hazardous waste program. The site is currently operating a hazardous waste storage facility under a RCRA Part B permit dated October 18, 1996. The site also maintains a National Pollutant Discharge Elimination System (NPDES) surface water discharge permit with Facility I.D. number OH 0009857. Operations that produce particulate or vaporous emissions are either permitted or registered with RAPCA and the Ohio Environmental Protection Agency (OEPA). The site also submits annual Emergency and Hazardous Chemical Inventory forms to OEPA, pursuant to the Superfund Amendment and Reauthorization Act (SARA), Title III, the Emergency Planning and Community Right-to-Know Act. The March 2002 version of this report indicated that reportable chemicals were stored in Building 50 (Appendix K).

The Mound Plant was identified as a contaminated site on the National Priorities List (NPL) under CERCLA (Superfund) in 1989. The Mound Plant was originally listed due to volatile organic compound (VOC) contamination in the western end of the lower valley area. The cleanup of the site was originally to be accomplished under the CERCLA mandated procedures for regulating Superfund Sites using the operable unit (OU) system to define and characterize cleanup areas. As the cleanup effort went forward, it became apparent that the site did not fit the profile for a cleanup strategy based on the operable units. The DOE, the United States Environmental Protection Agency (USEPA), and OEPA designed a new decision making process for the cleanup of the site.

The new process is known formally as a "removal site evaluation process" and informally as the "Mound 2000 Process." For a more detailed description, refer to the *Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach*. The Mound 2000 Process system divided the site into geographical parcels containing more than 400 PRSs with approximately equal numbers of PRSs concerned with potentially contaminated soil and with potential contamination in or associated primarily with building operations. A PRS is an area where knowledge of historic or current use indicates that the site may have had releases of radioactive and/or hazardous materials. The PRSs were initially identified and documented as part of the Mound site scoping process under the Federal Facility Agreement (FFA). The original list of PRSs can be found in the OU9- Site Scoping Report Volume 12, Site Summary Report, 1994. One of the objectives of the Site Scoping report was to provide a comprehensive summary of PRSs identified through the scoping process. Subsequent to the 1994 Site Scoping Report, additional PRSs have been identified as information became available, bringing the site total to 440 PRSs. The assignment of a PRS does not necessarily mean that there is a threat to human health or the environment. The tabulation of all PRSs simply provides an explicit means of tracking

and evaluating all potential releases onsite, the need for further action, and the identification of the authority responsible for action.

Through the process described above, the specific PRSs in the vicinity of Building 50 are listed in Table 3 along with their binning status. Their locations are shown on Figure 2. Of the five PRSs in the vicinity of Building 50, three have been determined by the Core Team to require No Further Assessment (NFA), and two are unbinned PRSs associated with Building 37. For a PRS to be binned NFA, the Core Team has reviewed the PRS data and agrees that all existing environmental issues associated with that PRS have been resolved and the PRS is protective of human health and the environment. No other PRSs associated with Building 50 have been identified.

4.2 Specific Record Sources for Building 50

4.2.1 Occurrence Reports

A search of the occurrence reporting system revealed twenty-nine reports, all of which were minor and without environmental impact:

- rupture of water shielded window (Appendix M),
- continuous air monitor (CAM) false alarm or equipment failure (9),
- fire alarm system false alarm or equipment failure (6),
- air handling system failure (4),
- communication (security alarm) system failure,
- standby generator battery failure (dead or weak battery),
- withdrawal of sealed source acceptance,
- filter bank deluge system test not performed,
- excavator breaks street light line,
- high winds cause damage across Mound Plant Site,
- electrical short circuit,
- low oxygen in test cell.

4.2.2 Spills and Releases

On April 27, 1994, it was observed that approximately 33 gallons of water containing zinc bromide (neutron/gamma radiation moderator with algae inhibitor properties) leaked from a water shielded observation window in Cell 107 onto the floor of Corridor 118. The spill was contained and cleaned up by the Fire Department hazardous material clean-up team. There was no evidence that the spill had entered the sanitary sewage lines. The Fire Department sampled the air for bromine and none was detected. The liquid was counted for radioactivity as a precaution and no significant counts were observed. (Shielding was not required in Cell 107 because it is an instrument and pump room that contains no radioactive material.) Exposed individuals were taken to the Mound Medical Department as a precaution and they found that no chemical exposures had occurred. See Appendix M for additional information.

In 1997/98, all shielding windows were drained of zinc bromide and filled a water/algaecide solution. Subsequently, all windows have been drained and either removed or left empty.

4.2.3 Associated PRS Overview

As a result of the investigations and documentation accomplished to comply with the CERCLA cleanup process via the Federal Facilities Agreement (FFA)/DOE Environmental Restoration (ER) Program, DOE and the site contractor tabulated all the PRSs identified under the various regulatory programs in effect at the site. Of these 440 PRSs, five are at or near Building 50, as identified in Table 3. The PRS locations are shown on Figure 2, and recommendation sheets are provided in Appendix N.

Table 3 - PRSs in Proximity to Building 50

PRS	CERCLA or Bldg. Related	Binning Status	Comments
269	CERCLA	No Further Assessment (NFA)	Building 36 Historic Gasoline Tanks (Tanks 239 and 240)
270	CERCLA	NFA	Underground Sanitary Sewer Lines G6 and G7
271*	Building	Unbinned	Building 37 Sanitary Waste Tank (Tank 100)
336*	Building	Unbinned	Building 37 Waste Tank (AKA Low Risk Waste Tank 267)
391	CERCLA	NFA	Elevated Soil Gas Location

* *PRSs 271 and 336 will be binned by the Core Team based on data and information collected as part of the Building 37 demolition activities; the Core Team recommendation will be included in the Building 37 Closeout Report.*

4.3 Review of Building Prints

Building prints were reviewed and no significant items were identified. Floor plans are included in Appendix D.

4.4 Aerial Photographs

Aerial photographs from 1968 (prior to construction), 1973 (following construction), and 1996 (most recent aerial photo) were reviewed and no significant items were identified. Aerial photographs are presented in Appendix E.

4.5 Interviews

Past Building Manager, P.C. Molloy, was interviewed via a building manager questionnaire (included in Appendix F). The current Building Manager, Gary Weidenbach, was also interviewed regarding past facility operations and current conditions. No significant items in the building were identified based on the questionnaire or interviews.

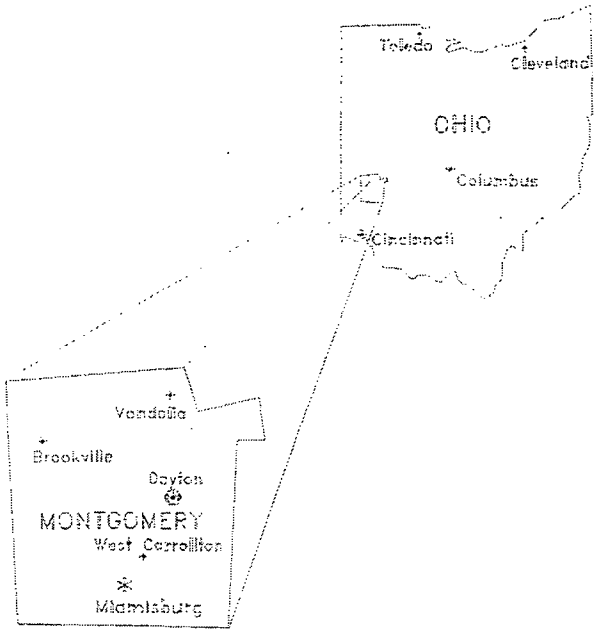
Appendix A

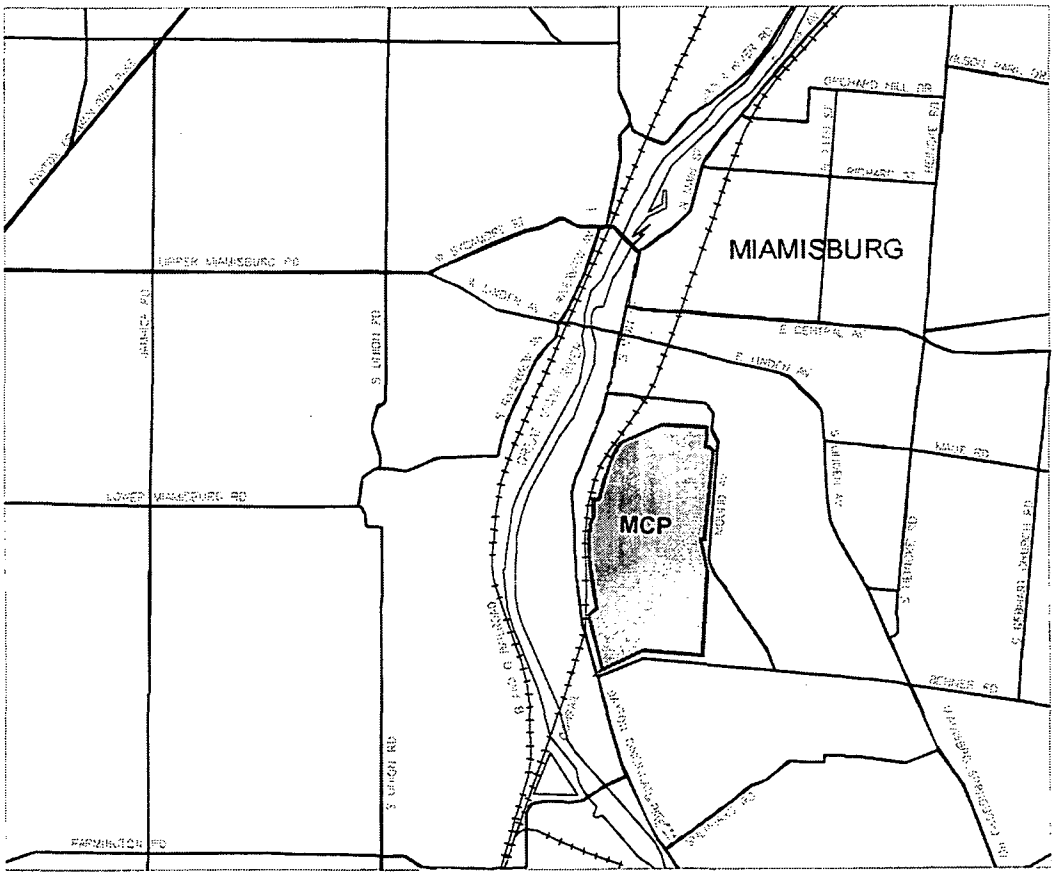
General Listing of Acronyms

ASTM	American Society for Testing and Materials
BDP	Building Data Package
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
cm^2	centimeters squared
CWA	Clean Water Act
DOE	United States Department of Energy
DPM	disintegrations per minute
EPA	United States Environmental Protection Agency
ER	Environmental Restoration (Program)
FFA	Federal Facility Agreement
HAZMAT	hazardous materials
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCP	Miamisburg Closure Project
N/A	not applicable
NPDES	National Pollutant Discharge Elimination System
OEPA	Ohio Environmental Protection Agency
OU	Operable Unit
PCB	polychlorinated biphenyl
pCi/L	picoCuries per liter
PRS	Potential Release Site
RI/FS	Remedial Investigation/Feasibility Study
RAPCA	Regional Air Pollution Control Agency
RCRA	Resource Conservation and Recovery Act
RSDS	Radiological Survey Data Sheet
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

Appendix B

Map of Montgomery County


Toledo
Cleveland
OHIO
Columbus
Cincinnati
Vandalia
Brookville
Dayton
MONTGOMERY
West Carrollton
Miamisburg


MIAMISBURG
MCP
UPPER MIAMISBURG RD
LOWER MIAMISBURG RD
S LUDLOW RD
S LINDEN RD
E CENTRAL AV
E LINDEN AV
MAIN ST
FARMINGTON RD

B 1 of 1

Appendix C

Figures

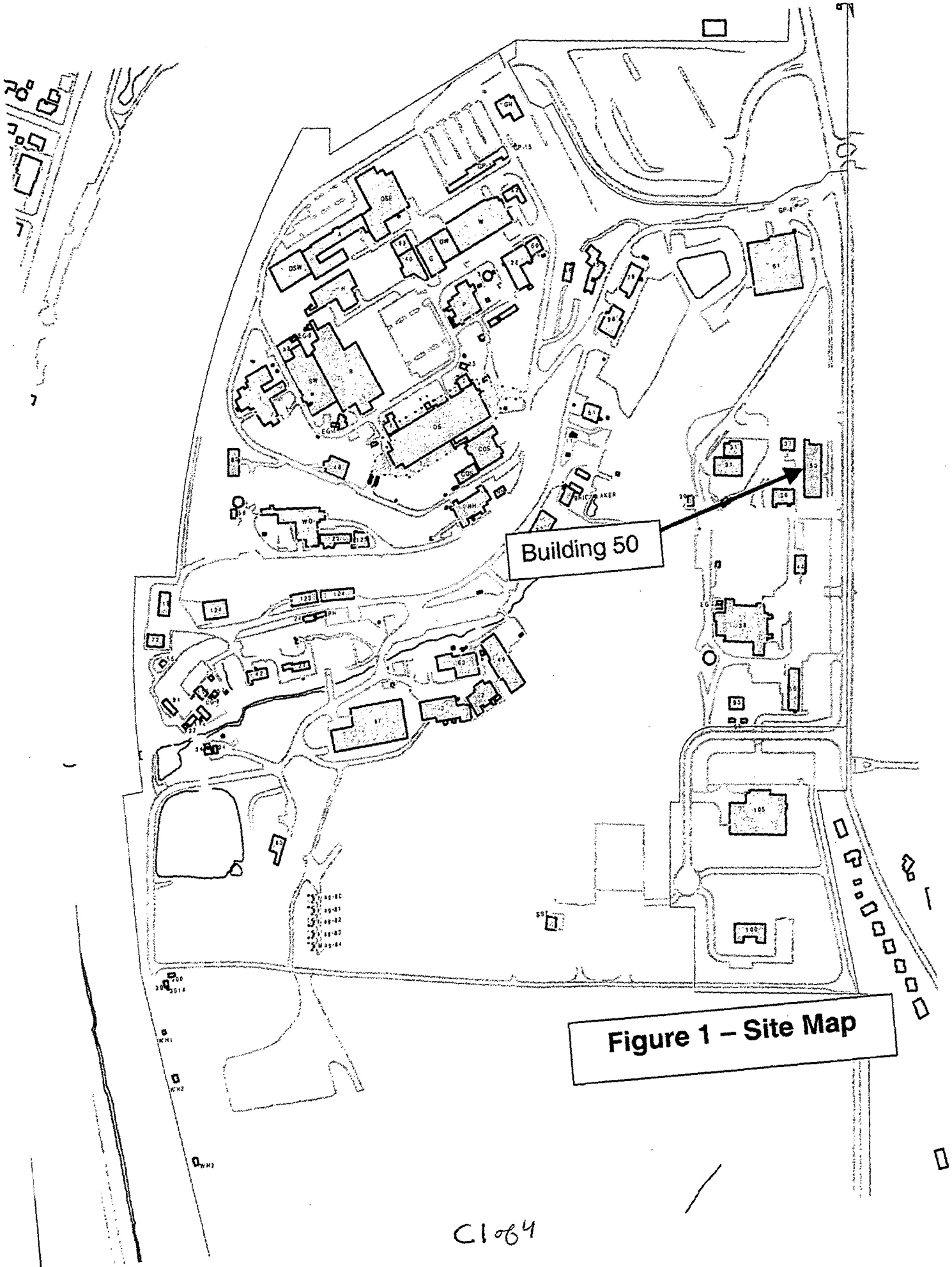
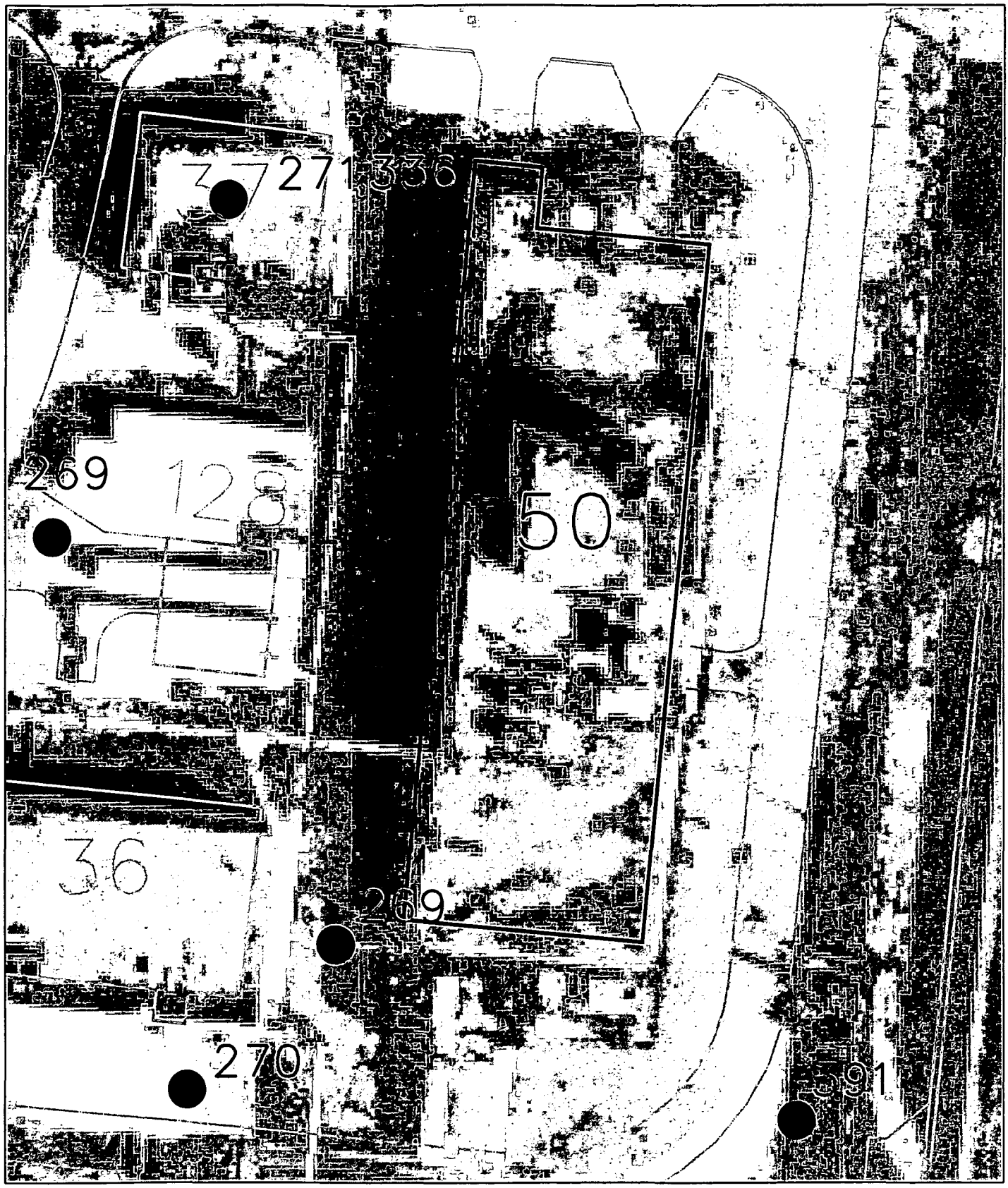


Figure 1 – Site Map

C1064



PRS Point

PRS Area

PRS Line

20 10 0 20 40FT

GRAPHIC SCALE

MOUND

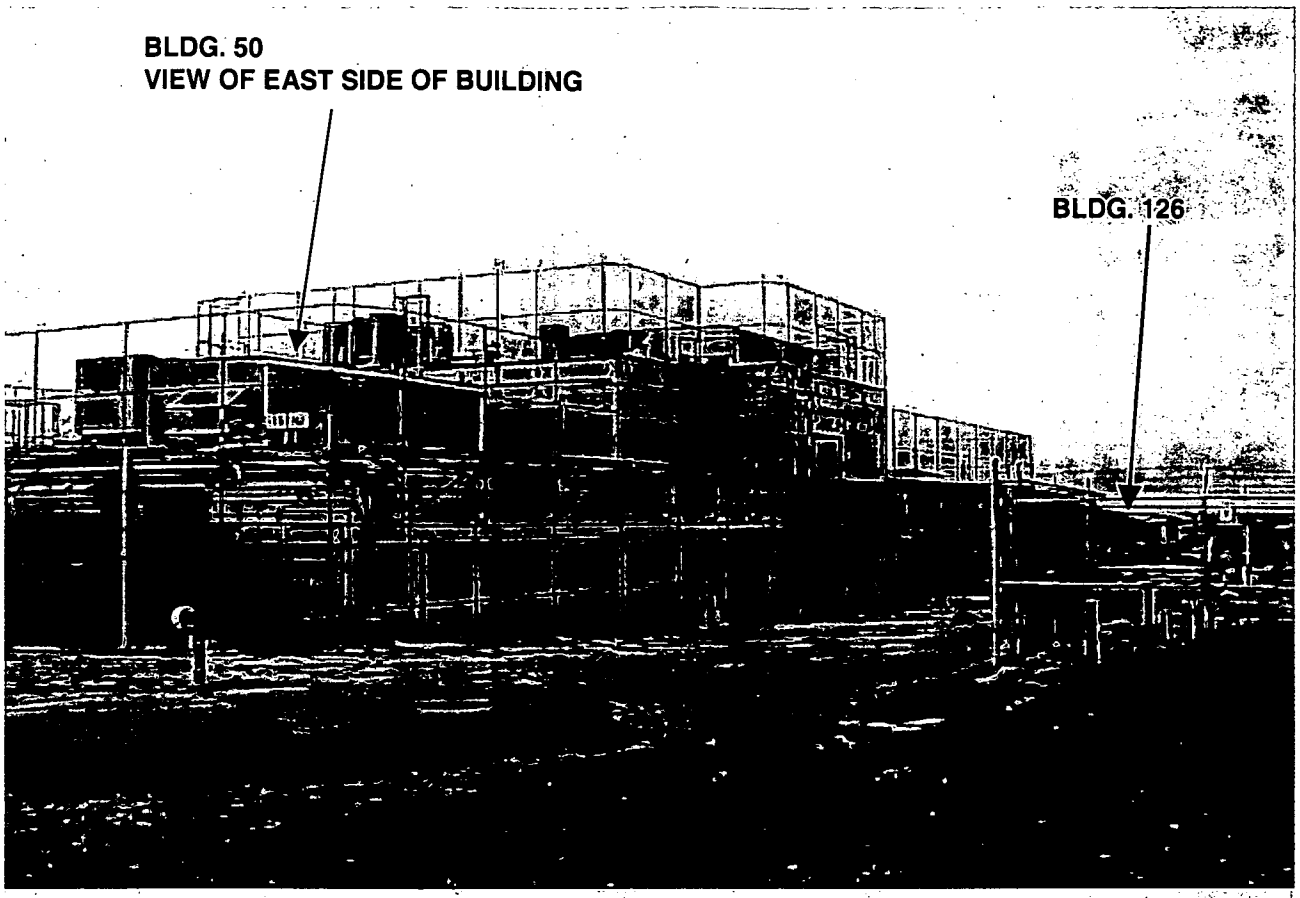
Environmental Restoration Geographic Information System

Figure 2
Building 50
and Vicinity

DRAWING CLASSIFICATION: UNCLASSIFIED	SIZE	DRAWING NUMBER: vicinity.dgn	JOB NUMBER
DGN TYPE: STE	PRNG: ER-GIS	CADD:	SCALE: SHEET 1 OF
STATUS: MD-REL-00/00/00		ORIGIN: MSTATION / J	

	DATE	REVISION	BY	CHKR	DNG	UPDC	APVD	B
	04/29/03		SSF					

C2 of 4



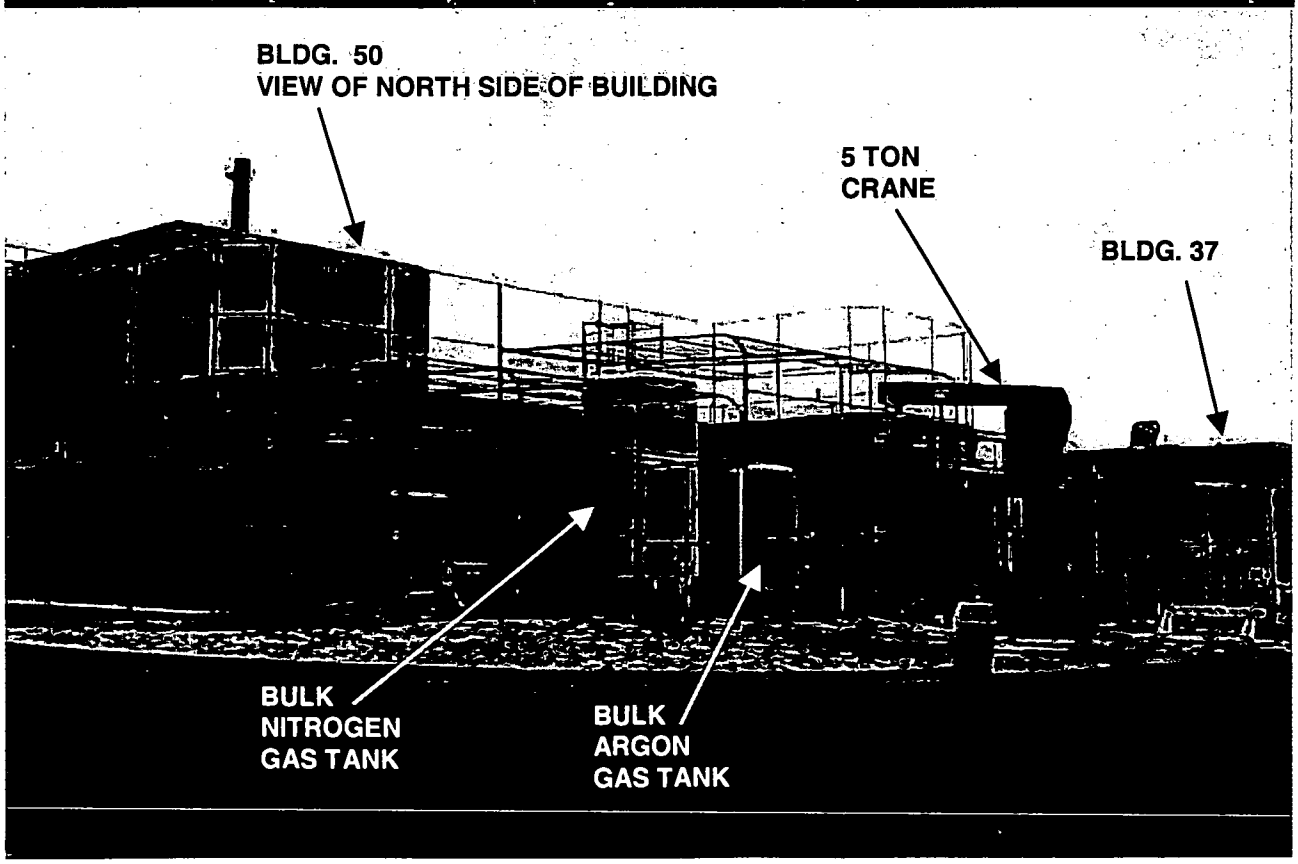
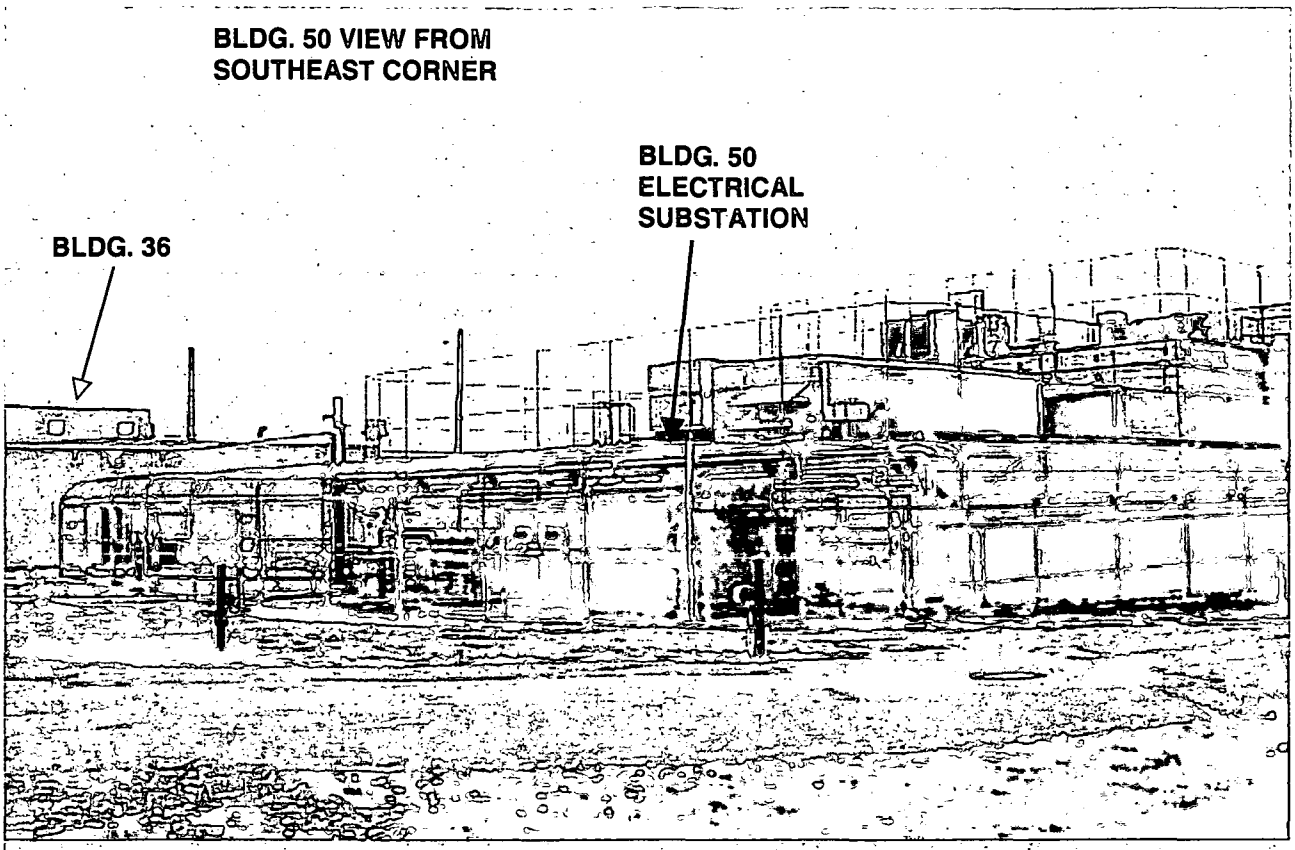


Figure 3A – Bldg. 50

C3of4



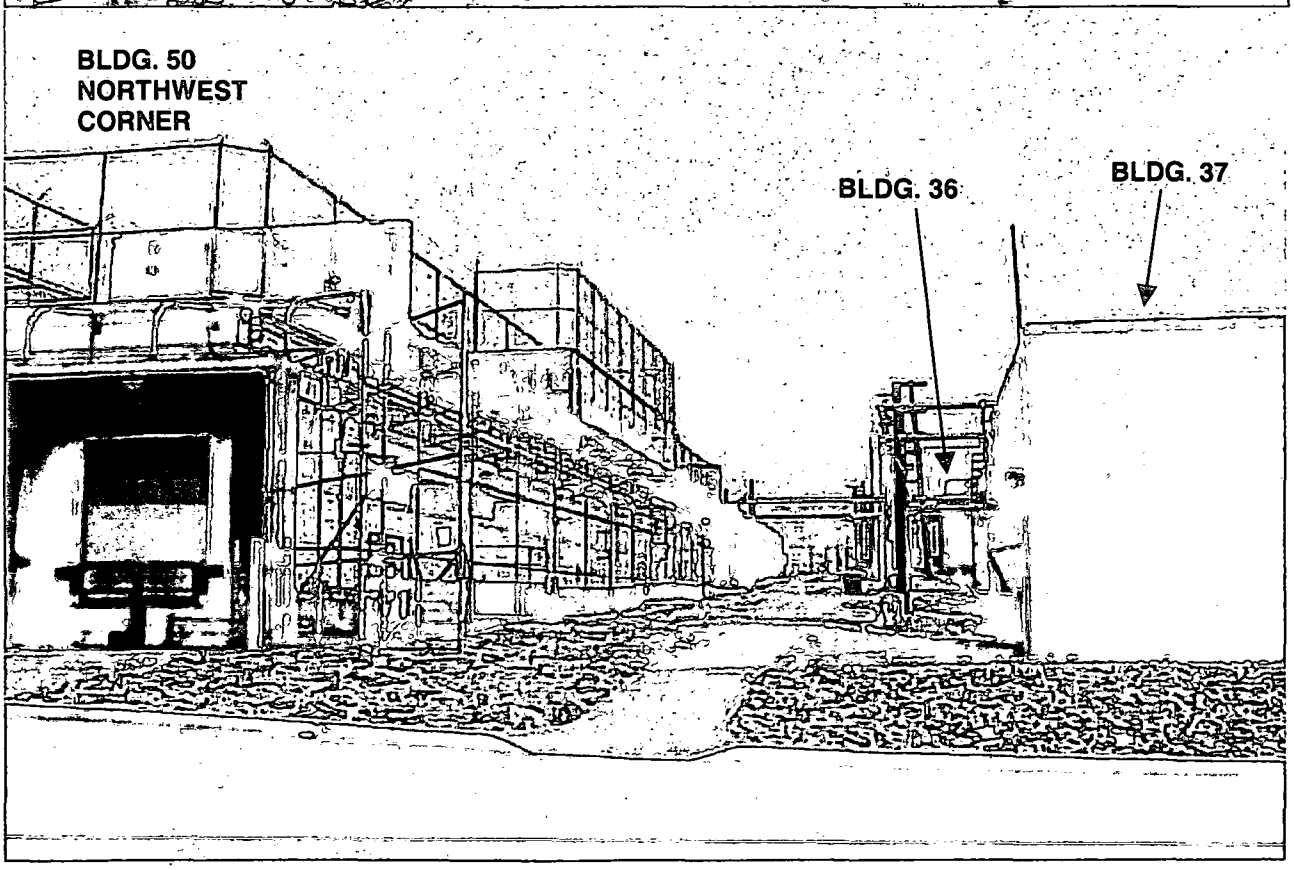


Figure 3B – Bldg. 50

C4 of 4

Appendix D

Floor Plans

According to floor plans, the following functions were assigned to the following rooms:

Room	Function
101	Entrance and Lobby
102	Operations Control
103	Health Physics
104	Air Lock
105	Men's toilet room (white)
106	Men's Change Room (white)
107	Shock / Vibration / Fire Test Cell
108	Pressure and Burial Test Cell
109	Fluoroscopy Test Cell
110	Assembly & Disassembly Cell
111	Vacuum Test Cell (non-hazardous)
112	Vacuum Test Cell (hazardous) (high bay room)
113	High Level A& D Cell (w/pool, standpipe, and guard rail)
114	Service Corridor (red)
115	Air Lock (yellow)
116	Low Level Storage Pool and Cell (yellow)
116a	Air Lock
116b	Service Area (red)
117	Janitors closet
118	Operating Gallery (yellow)
119	Machine Shop
120	Operating Control
121	Electronic Shop
122	Operation's Control
123	Counting Room
124	Operation's Control
125	Women's Change Room (yellow)
126	Air Lock
127	Women's Change Room (yellow)
128	Women's Restroom
129	Men's Change Room (yellow)
130	Corridor (white)
131	Janitors closet
132	Air Lock
201	Equipment Area (white)
202	Filter Equipment Area (red)
203	Equipment Area (red)
204	Operating Gallery (yellow)
205	Change Room (yellow)
206	Air Lock (red)

The zoning of areas as white, yellow, red gallery/equipment, and red cells/filter room was to designate air flow pattern, dividing the building into four areas of decreasing pressure from red to white. The purpose of the ventilation scheme was to minimize the spread of possible radioactive contamination.

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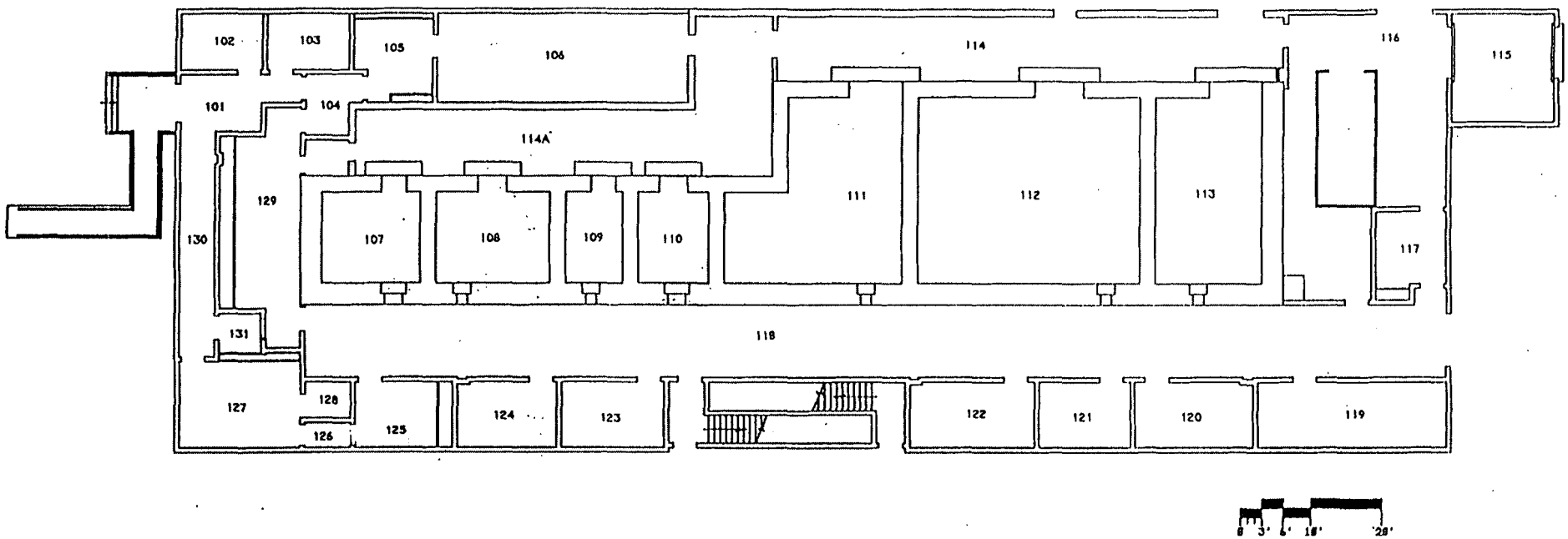
ISS	DATE	REVISION	BY	CHKD	CHD	INSPD	APVD	R
B	12/12/91	ASBUILT ISSUE	DCW				DVD	



NOTICE: This document ___ or page ✓ does not contain Unclassified Controlled Nuclear Information (UCNI)
Reviewing Official: H.A. (Rob) Robinson
Date: 4-23-03

BLDG #50
FIRST FLOOR
BLDG CODE:3050

APPROVALS:
SAFETY COMMITTEE REQUIRED:
___NONE ___TRUEROC ___YEROC ___EMROC
TECH. REVIEW. _____ _____
ES. MGR. _____ _____
TRUEROC _____ _____
YEROC _____ _____
EMROC _____ _____

NOT FOR PUBLIC DISSEMINATION
~~MAY CONTAIN UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION SUBJECT TO SECTION 148 OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED (42 USC 2168). APPROVAL BY THE DEPARTMENT OF ENERGY PRIOR TO RELEASE IS REQUIRED.~~

DESIGN ENG | PROJ MGR | BRCHMN | ENG MGR | CP & EC | PROD REV | CNS MGR | APVD | DATE

SHEET	1	2	3	4	5	6
ISSUE	B	B				

PART CLASSIFICATION

(U) TITLE CLASSIFICATION

TITLE: BLDG #50 FLOOR PLANS

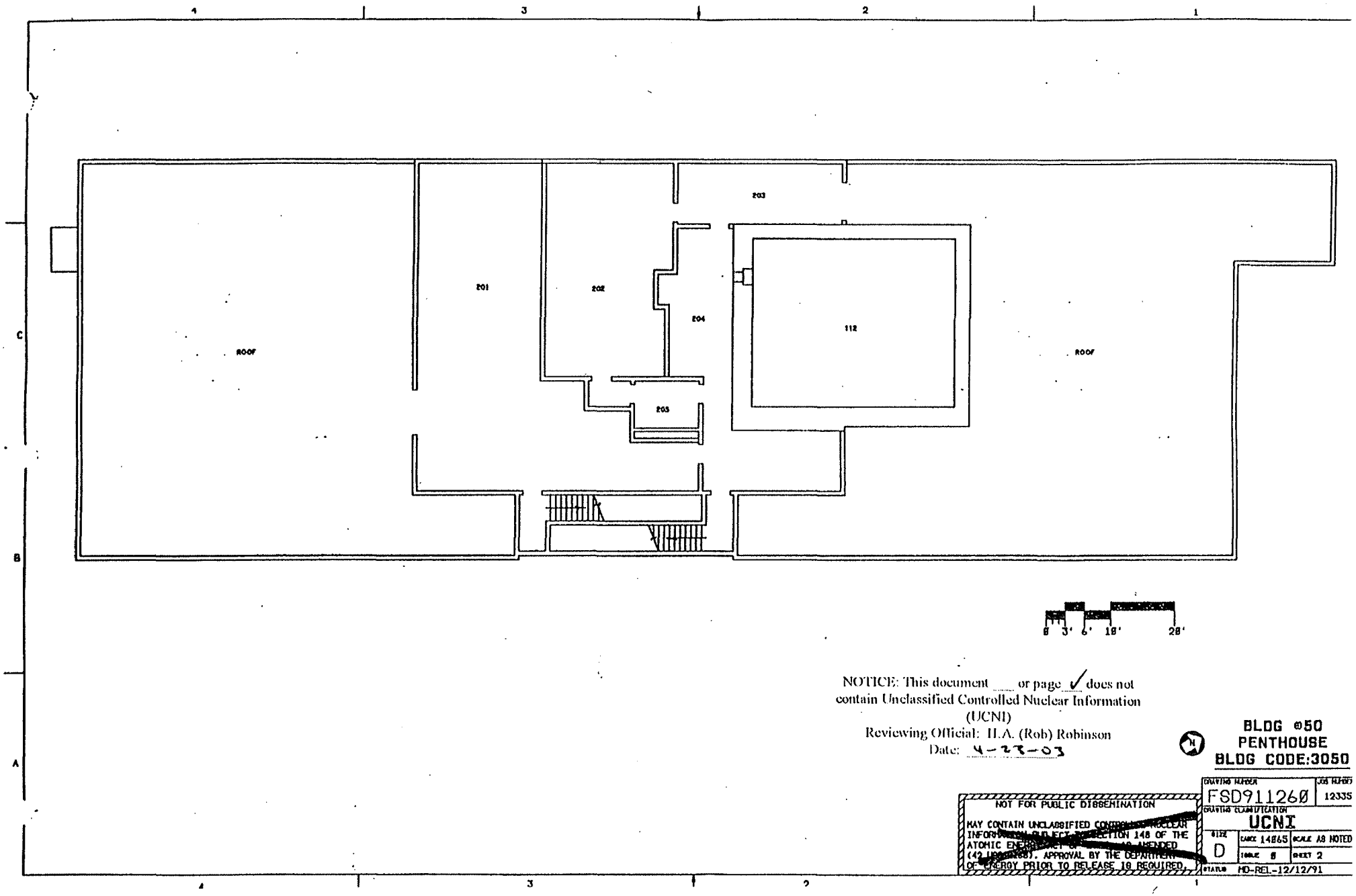
DRAWING CLASSIFICATION: UCNI

SIZE: D | DRAWING NUMBER: FSD911260 | JOB NUMBER: 12335

DWG TYPE: BFP | PROJ: BLDG #50 | CAGE: 14863 | SCALE AS NOTED | SHEET 1 OF 2

STATUS: MD-REL-12/12/91 | ORIGIN: MD-BR3-V3.8

T 3 of 4



NOTICE: This document ____ or page ✓ does not contain Unclassified Controlled Nuclear Information (UCNI)
Reviewing Official: H.A. (Rob) Robinson
Date: 4-28-03

BLDG 050
PENTHOUSE
BLDG CODE:3050

NOT FOR PUBLIC DISSEMINATION

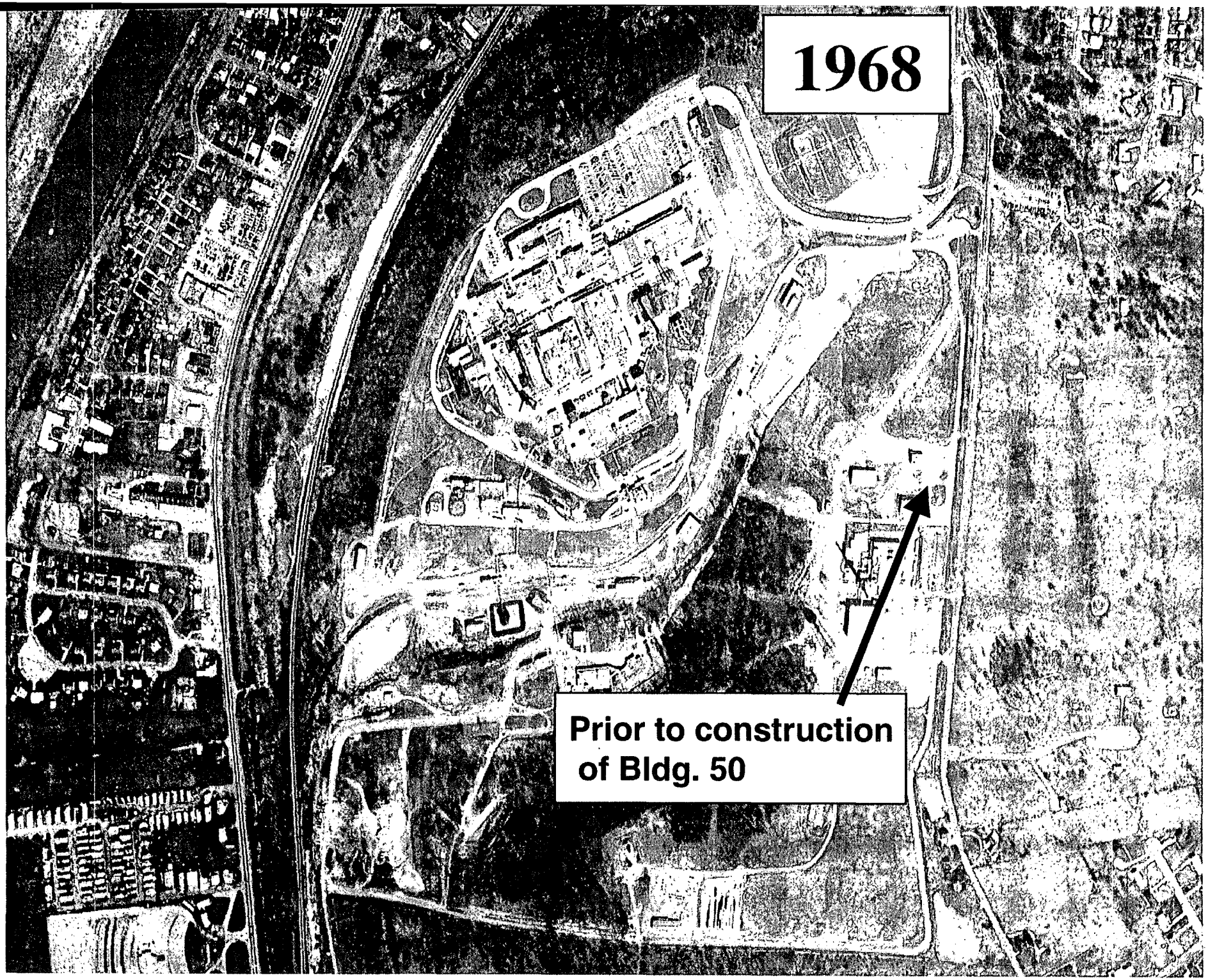
MAY CONTAIN UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION SUBJECT TO SECTION 148 OF THE ATOMIC ENERGY ACT OF 1954 AS AMENDED (42 USC 2168). APPROVAL BY THE DEPARTMENT OF ENERGY PRIOR TO RELEASE IS REQUIRED.

DRAWING NUMBER	FSD911260
JOB NUMBER	12335
DRAWING CLASSIFICATION	UCNI
SIZE	D
CARD	14865
SCALE	AS NOTED
ISSUE	8
SHEET	2
STATUS	MD-REL.-12/12/91

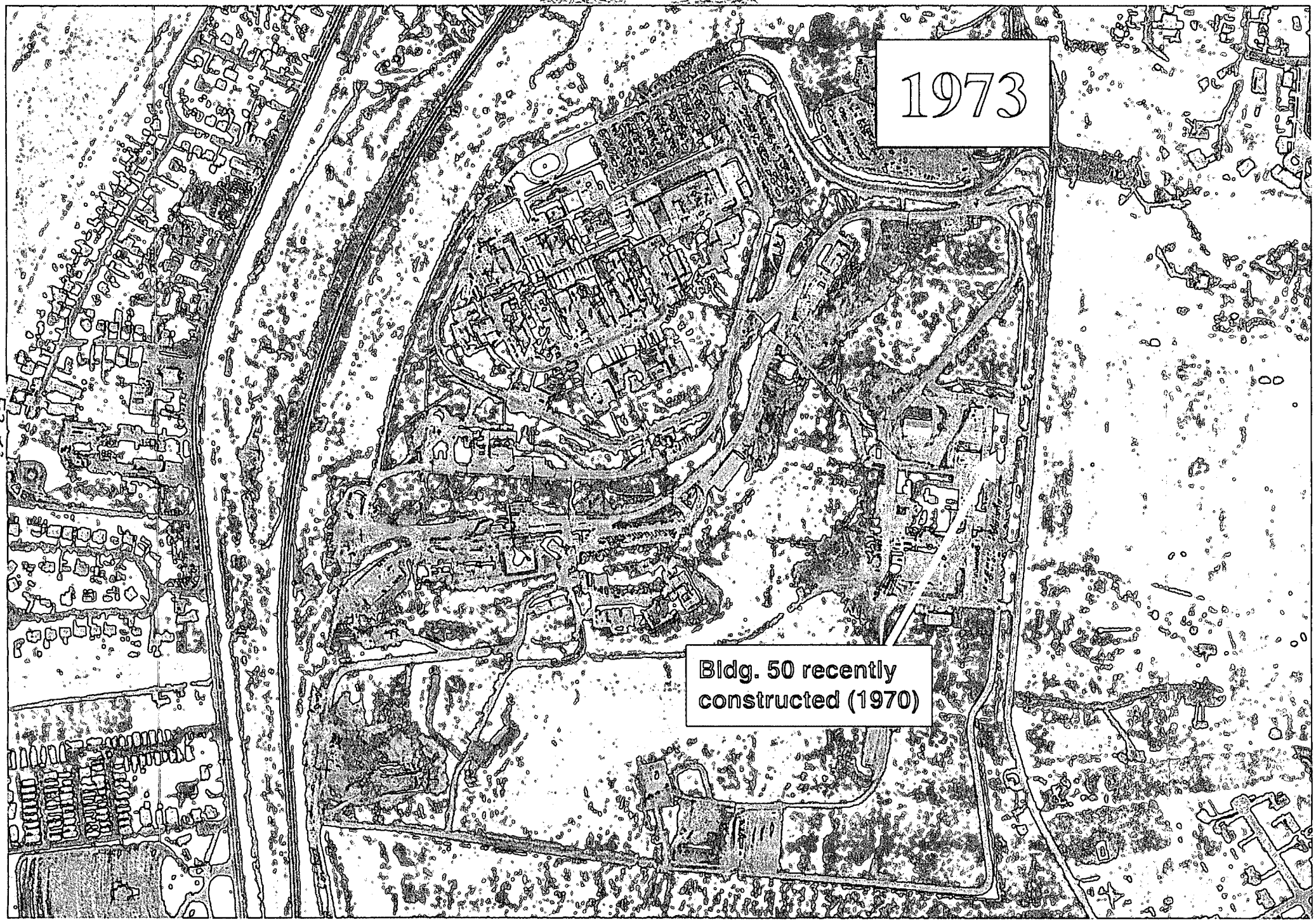
D 4 of 4

Appendix E

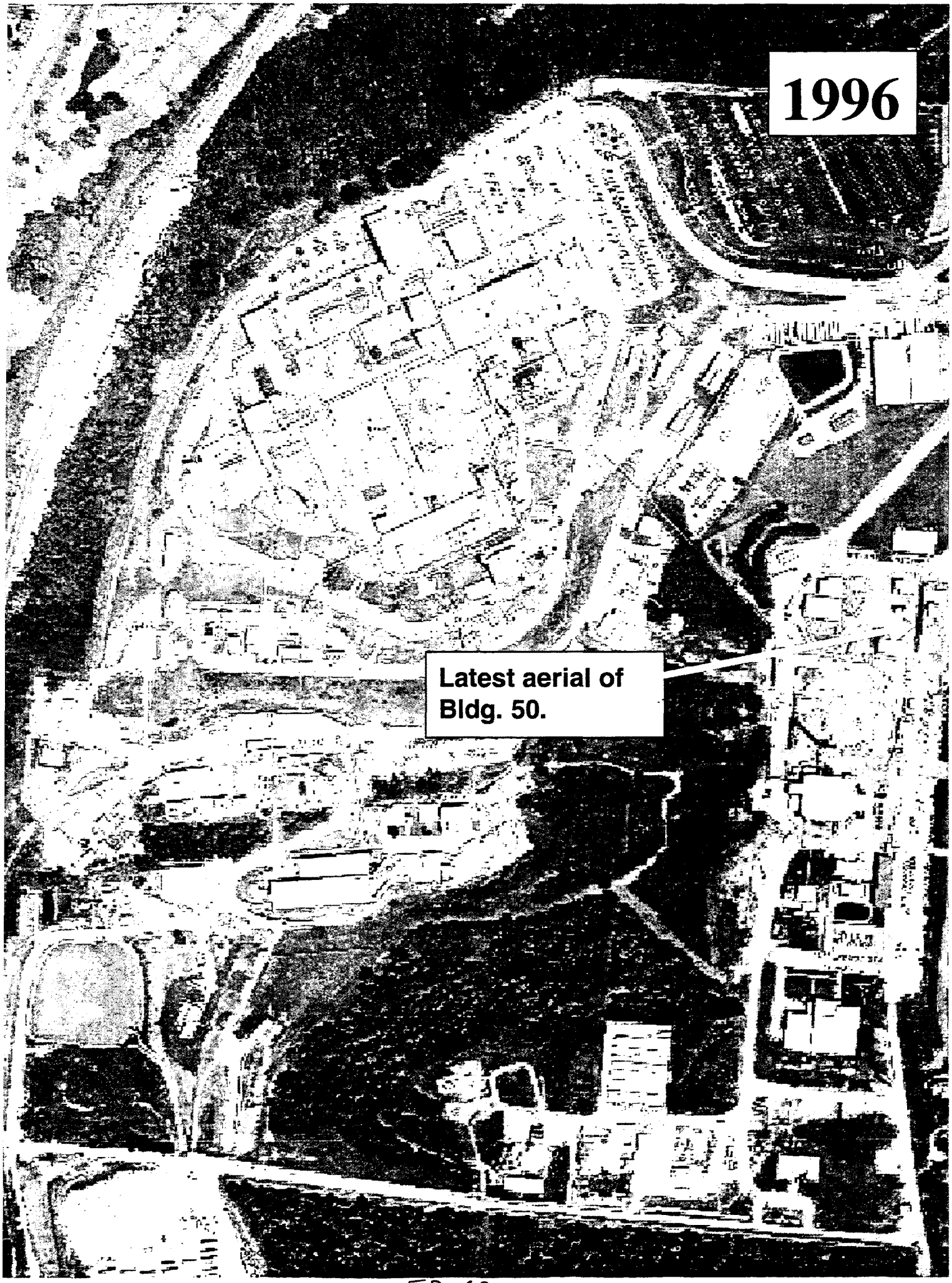
Aerial Photographs



E1 d3



E-103



E3-63

Appendix F

Environmental Appraisal Report of the Mound Plant (excerpt)

Based on an August 2003 review by subject matter experts,
hand-written corrections have been made to the report provided in this appendix.

9.72 BUILDING 50

9.72.1 Scope of Building 50 Report

In late 1995 and the early months of 1996, EG&G MAT performed a review of environmental conditions at the Mound Plant. The purpose was to develop a performance baseline, and to identify areas for improvement on a building and a sitewide basis. EG&G MAT did not perform a "due diligence" or Phase I Environmental Site Assessment as specified by ASTM 1527 or ASTM 1528. The scope of the appraisal effort and a discussion of the appraisal methodology are detailed in Sections 2.0 and 5.0, found in Volume 1 of this report.

The appraisal team performed a walk-through of Building 50 on the morning of January 17, 1996 and made a second visit on March 21, 1996. The Environmental Appraisal Checklist (EAC) was used to record findings. The EAC is found in Attachment 1 (Section 9.72.6.1). The appraisers were accompanied by the building manager and the process manager. Other information was supplied by the building manager and recorded on the Building Manager's Questionnaire (BMQ), included as Attachment 2 (Section 9.72.6.2).

9.72.2 Description of Building 50

Building 50 is the radioisotopic thermoelectric generator (RTG) assembly and testing facility. It is bordered by Building 36 and Building 37 to the ~~north~~ west, the site perimeter fence to the ~~south~~ east, and Building 88 to the ~~west~~ north. There is an electrical substation to the ~~south~~ east side of the building. Its location is shown in Attachment 3 (Section 9.72.6.3).

The building is a 14,849-square-foot concrete and concrete block structure with a built-up membrane bituminous material roof. It was constructed in ~~1971~~ 1973. There is electrical service of 480V. Heating and air conditioning systems are central steam and chilled water. The building has a fire sprinkler system except for cells 108, 109, 110, 111, and 113. The building is supplied with service water and potable water.

The first floor of the structure is a process area for the assembly of RTGs. RTGs are sealed contained radioactive sources. The building is segregated into two areas, a buffer area where RTG assembly and storage is conducted, and a controlled area, where support activities occur. The second floor penthouse houses utility services. A floor plan is presented as Attachment 4 (Section 9.72.6.4) and in Volume 12.

An excellent reference for information about Building 50 is the *Final Safety Analysis Report (SAR) for the Building 50 Radioisotopic Thermoelectric Generator Assembly and Testing Facility,* November 1995. This document provides details related to construction, operations, facility management, ES&H, and QA. Because of the high level of current and accurate documentation which exists for this building, some descriptions in this report are abbreviated. It is suggested that the SAR is reviewed in conjunction with this appraisal report.

9.72.3 Summary of Findings

The building is well-maintained. There were several findings of environmental concern identified during the walk-through and subsequent review of reference materials. Of most concern were issues related to air emissions monitoring and wastewater disposition. These issues are discussed in detail in the following sections of this report.

It should be noted that the RTG process assembly was scheduled to begin the day after the appraisal. Continuing operations related to the RTG project had been ongoing in Building 50.

9.72.4 Observations

9.72.4.1 Air Emissions

There are sources of air emissions, including the RTG process and the ethanol cleaning process conducted in Rooms 109, 110, 111, and 112, 113, 114A, and 116. The building is not included in the Mound Air Emissions Database, 11-30-95. Emissions have not been calculated, and no documentation exists to support the determination by the EG&G MAT environmental monitoring group that emissions are de minimis. No air emissions permit applications have been submitted for activities in this building. There is no fugitive dust generated by process or environmental condition.

Building ventilation, both for the buffer and the controlled area, is routed through high efficiency particulate air (HEPA) filters, then exhausted. Ducts conveying air to the filters and subsequently to discharge points were not labelled by content. The HEPA filters are maintained by a technician in Building 50 in accordance with standards followed at Mound: Nuclear Standard NEF3-45, *Specifications for HEPA filters Used by Department of Energy (DOE) Contractors (DOE, 1986)*, and Nuclear Standard NEF3-43, *Quality Assurance Testing of HEPA Filters (DOE, 1984)*. On a weekly basis, pressure differential is measured across the filters by the technician. A report is provided to the building manager. There is no pollution control equipment other than the HEPA filter bank.

While inspecting the penthouse, the appraisal team noted two stack monitors (CAMs) on effluent ducts. For stack monitor RFB, a warning light was on. An audible alarm was not on. The warning light, a 6-inch red dome light, was mounted at the center top of monitor. Maintenance technicians working in the Building 50 penthouse indicated that the alarm was being repaired. The warning light was called to the attention of the building manager, and he accompanied the appraisal team to the penthouse. The building manager had not been notified by Health Physics technicians that it was non-functional. * See page 40

Posted beside the alarm was a two-page letter from a member of the EG&G MAT Environmental Monitoring Group, dated June 20, 1995, included as Figure 1. It explained that "alarm levels are now components of the Federal Facility Compliance Agreement (FFCA) between the United States Environmental Protection Agency (EPA) and DOE. For this reason it is mandatory that the monitors use the documented alarm values." The second page of the letter provided direction for the alarm setting in Building 50.

Fax Note	7671	21/2449/	Pages C
To E. WARMOTH		From P. C. MOLLOY	
Co./Dept. EG&G MO		Co. EG&G MO	
Phone # 4317		Phone # 3269	
Fax # 3099		Fax # 3223	

MOUND

INTEROFFICE CORRESPONDENCE

DATE: June 20, 1995

cc: Distribution

FROM: B. M. Farmer

SUBJECT: Stack Alarm Settings

TO: R. L. Johnson
T. J. Quale

Staff from ET&M, Tritium and Plutonium Facilities, and Radiological Protection have evaluated the alarm settings for the alpha and tritium stacks. As documented on the attached table, alarm values have been established for each stack. These alarm levels are now components of the Federal Facility Compliance Agreement (FFCA) between the U.S. EPA and DOE. For this reason, it is mandatory that the monitors use the documented alarm values.

Since Radiological Protection personnel perform the daily monitor inspections, it is requested that confirmation of the proper alarm setting be added to the daily checklist for each monitor listed in the table. If any alarm value is not consistent with the table, it is further requested that ET&M management receive immediate notification.

Your cooperation in affecting these changes as soon as possible is greatly appreciated. ET&M must meet a 7/7/95 milestone to complete a Quality Assurance Plan (QAP) for the FFCA; documentation of effective stack alarm controls and procedures will be key sections of the QAP.

If you have any questions, please let me know.

Sincerely,

B. M. Farmer

B. M. Farmer

Figure 1

P.O. Box 3000 Miamisburg, Ohio 45343-3000 (513) 865-4020

STACK ALARM SETTINGS

ALPHA EMITTING STACKS	ALARM LEVEL
T-WEST (R BLDG) STACK	50 C/M
WDAHR STACK	100 C/M
WDALR STACK	100 C/M
WDSS STACK	100 C/M
BLDG 38	100 C/M
SM-PP STACK	100 C/M
HEFS STACK	50 C/M
SW1CN STACK	350 C/M
BLDG 50 (RED)	70 C/M
BLDG 50 (YELLOW)	70 C/M

TRITIUM EMITTING STACKS	ALARM LEVEL
HEFS STACK (LOW LEVEL)	10 uCi/M^3
HEFS STACK (HIGH LEVEL)	71 uCi/M^3
NCDPF STACK (LOW LEVEL)	15 uCi/M^3
NCDPF STACK (HIGH LEVEL)	15 uCi/M^3
SW219 STACK (LOW LEVEL)	30 uCi/M^3
SW219 STACK (HIGH LEVEL)	36 uCi/M^3
R STACK (LOW LEVEL)	15 uCi/M^3
R STACK (HIGH LEVEL)	231 uCi/M^3
HH STACK (LOW LEVEL)	10 uCi/M^3
HH STACK (HIGH LEVEL)	100 uCi/M^3
T-WEST KYLE (LOW LEVEL)	10 uCi/M^3
T-WEST KYLE (HIGH LEVEL)	100 uCi/M^3
T-WEST 61/63 (LOW LEVEL)	10 uCi/M^3
T-WEST 61/63 (HIGH LEVEL)	100 uCi/M^3
T-EAST (LOW LEVEL)	10 uCi/M^3
T-EAST (HIGH LEVEL)	100 uCi/M^3

During the debriefing, the red warning light on the stack monitor alarm was also called to the attention of the process manager also. He noted that it was a building manager responsibility to assure that the CAM was functional. The process manager added that in the past, the alarm has had several "false alarms" due to the presence of radon. The process manager understood that the process SAR required that the alarm be functioning, and had not been notified that it was non-functional. During the debriefing, there was discussion as to the requirement for the alarm, i.e., was it necessary as the source was encapsulated.

Neither the building manager nor the process manager had been alerted that the warning light was on prior to the appraisal team's discussions on the day of the walk-through. Neither took immediate action to determine the meaning of the red light. It was of concern to the appraisal team that line management had not been notified that the alarm light was on, indicating that it was non-functional.

Subsequent investigation by the building manager and his supervisor determined that the alarm had been inspected and recorded as functional by the Health Physics technician on the day of the appraisal. It has not been determined what caused the warning light to glow red.

To obtain addition information regarding requirements for effluent gas monitoring at Building 50, the appraisers reviewed the *EG&G MAT NESHAPs FFCA Compliance Work Plan, Feb 20, 1995*. There is no mention in the document of monitoring or alarm requirements or historical data from Building 50. The document states that, "The Compliance Work Plan (CWP) has been prepared as required under Section VI of the FFCA. The purpose of the CWP is to describe and characterize all emission points subject to NESHAPs regulations, identify point sources subject to continuous emission monitoring requirements,...." (p. 1-1). The document also states that, "Areas where radioactive materials are present only in sealed containers, such as soil screening laboratories, and areas where fixed contamination is present (it is not mobile in its present state) were not considered release points" (p. 2-4). As noted earlier in this report, the RTG source is encapsulated.

The letter posted by the alarms, calling for monitoring, is dated after the report. There is inconsistency regarding monitoring requirements between the letter and the NESHAPs report. The SAR requires that emissions be monitored and the alarm be functional; the SAR is the basis for the Segment Readiness Review which is performed prior to initiating RTG processes.

9.72.4.2 Wastewater Emissions

The Mound Facility has three wastewater collection systems: a sanitary wastewater system; a storm water system; and a radioactively contaminated process wastewater system. Sanitary wastewater is treated at an onsite tertiary treatment plant and subsequently discharged by hard pipe to the Great Miami River. Storm water and any non-process wastewater, single pass cooling water, and softener backwash may be discharged directly to the Great Miami River, via the Miami-Erie Canal, or may be diverted to a 3.1-million-gallon holding pond for settling prior to discharge. Radioactively contaminated wastewater is treated in Building WD by physical-chemical treatment. If appropriate, wastewater may be discharged by hard pipe to the Great Miami River. If concentrations of radioactive contaminants cannot be reduced to acceptable

levels, wastewater is solidified and shipped to the Nevada Test Site or Envirocare for disposal. All outfalls are permitted under an active NPDES permit. Routine monitoring activities are in place. Based on NPDES monitoring report data reviewed, it appears that the facility is in compliance with qualitative and quantitative conditions of the permit.

9.72.4.2.1 Sanitary Wastewater

According to a diagram of underground utility lines, presented as Attachment 5 (Section 9.72.6.5), the building is serviced by a sanitary wastewater collection line. According to the building manager, water from the controlled area drains to the sanitary system. This includes effluent from the shower room. Confirmation of drainage of sanitary wastewater into sanitary lines was not within the scope of this appraisal, therefore neither dye nor smoke tests were conducted.

9.72.4.2.2 Storm Wastewater

The building is serviced by storm drains according to drawings presented in Attachment 5 (Section 9.72.6.5). There are four storm drains located on the east side of the building exterior, and one on the north side. It was outside the scope of this appraisal to perform tests to confirm drainage patterns. Inspection showed no signs of odors, colored discharges, or scarring which would indicate that any materials other than storm water had entered the drains.

9.72.4.2.3 Process Wastewater

Wastewater from the buffer area, i.e., that area of potential radioactive contamination, drains into a 1,100-gallon sump. The water is tested to measure levels of contamination, and subsequently is released to the sanitary treatment plant or trucked to Building WD for treatment. To date, wastewater has not been contaminated and has been released to the sanitary system.

Process cooling water treated with fungicides has on occasion been "dumped" to the storm or to the sanitary collection system. (The appraisal team received conflicting information from the building manager and the process manager.) This has occurred when temperatures of cooling water exceed acceptable limits to protect the process. According to the building manager and the process manager, this practice occurs infrequently, perhaps six times per year.According to the building manager, water drains to the sanitary treatment plant, and there has been no impact on the sanitary treatment plant. In the past, Dow Therm containing fungicide and ethylene glycol was used instead of the fungicide anacocide. On one occasion reported to the appraisal team, approximately 250 gallons of cooling water containing Dow Therm was discharged. Emergency response action by wastewater treatment personnel caused the wastewater to be contained. There is no monitoring of building effluent.

The sump has never overflowed. If it were to overflow, in-ground lines would carry water to the pond at Building 61. This pond is used for settling of surface runoff. Other sumps which have been designed for the same purpose at other buildings at Mound also overflow to the pond at Building 61. The pond at Building 61 has overflowed its banks during heavy rains. Effluent from

the pond is permitted under an NPDES permit. The sumps and potential for radioactive effluents have not been addressed in the permit application.

The sump was installed ~~approximately 15 years ago~~ in 1970 with the original building construction VKO 10/14/03. It is a steel tank in a secondary concrete containment pit. Integrity has not been tested. There is no procedure in place for visual inspection, or to verify that the sump is watertight.

9.72.4.2.4 Chemicals

Chemicals related to the RTG process and related maintenance activities are found in Building 50. A list is detailed in the BMQ which is presented in Attachment 2 (Section 9.72.6.2). The information was gathered as part of the chemical inventory which is conducted annually. The inventory information dates to 1994, as 1995 data were not yet available at the time of the walk-through. No attempt was made to confirm the accuracy of the inventory by the appraisal team. However, storage, handling, and disposal of chemicals were reviewed to assure conformance to regulations 40 CFR 122, 40 CFR 26-265, and 29 CFR 1910. There was no visual evidence that chemicals had entered the drainage system in Building 50. Asbestos, a chemical listed as a priority pollutant in the Clean Water Act, is found in Building 50

9.72.4.3 Potable and Service Water

Potable water is supplied to the building from a 100-millimeter water line from the SM area water tower, according to information presented in the site drawing and shown as Attachment 5 (Section 9.72.6.5). Water is distributed through the building, servicing restrooms, showers, eyewash stations, safety showers, equipment rooms, and drinking fountains. A steam water heater located in Room 201 provides hot water for showers and lavatories.

Drinking fountains have not been tested for lead contamination. A program is underway at Mound to identify and replace all lead-contaminated fountains.

The potable water and fire main loop are interconnected in the event of a water supply disruption. Dual backflow preventers are installed in the piping crossover manifold in Room 106. Water sources are marked.

9.72.4.4 Chemical Storage and Hazardous Materials

There were janitorial supplies and chemicals stored in the building. Janitorial supplies were in restrooms and shower rooms. There were no Material Safety Data Sheets (MSDSs) available for janitorial supplies. Chemicals were stored in three different locations. All locations had flammable storage cabinets which met National Fire Protection Association (NFPA) requirements, and chemicals were stored in accordance to 29 CFR 1910. MSDSs were available.

The building is equipped with emergency response equipment such as an eyewash, safety shower, and a fire extinguisher. Inspection tags were current. Emergency Evacuation Plan information and signs were posted in work areas as required in 29 CFR 1910.

There are no aboveground storage tanks in or around the building. There are no separators or catch basins in the building. There is a sump; it was discussed in detail in Section 9.72.4.2.3 of this report.

According to the 1995 PCB Annual Document Log, the building does not contain polychlorinated biphenyls (PCBs). There are a number of capacitors located in the control room. Following the walk-through, the process manager and a utility specialist determined that they are a dry type and do not contain PCBs.

The building was tested and does contain asbestos, based on screening recorded in MD-10391, *Asbestos Program Manual* (9-14-95). There is visual evidence that asbestos insulating material on the HVAC chilled water circulation system requires repair. Appraisers noted that a piece of insulation had fallen into the foyer area. Repair has been scheduled.

Compressed gas cylinders are located in Building 50. All are in use. For some cylinders labelling was not in conformance with 29 CFR 1910.151. The process manager planned to label them properly. Near the entrance to Building 50 a large nitrogen tank obscures from view a small bank of hydrogen cylinders. A No Smoking sign should be posted in the area.

9.72.4.5 Solid, Hazardous, and Radioactive Waste

According to information provided in Attachment 2 (Section 9.72.6.2) on the BMQ, hazardous wastes are generated in Building 50. PCB-related waste is not from the building, but from the electrical substation located by the south door.

According to the process manager, the RTG assembly and testing process does not generate hazardous or radioactive waste. Disposable clothing worn by workers in the controlled area is monitored and is not contaminated. It is disposed as LSA waste, consistent with a management practice of diverting such items from local landfills.

Ethanol is used to wipe parts clean during the RTG testing and assembly process. The solvent is used in small quantities of less than 5 gallons per year. Solvent evaporates from paper wipes used to clean equipment. The paper wipes are disposed of as solid waste.

All waste generated in the buffer area is evaluated by Health Physics prior to disposal to determine if there is radioactive contamination, then handled accordingly.

The solid waste stream is characteristic of office waste. Solid waste is removed by janitorial personnel to a site collection point, where waste streams are segregated and sent to recycle or to a local landfill.

Four drums of waste were located on asphalt and gravel outside of the north door of the building. One was marked oil; the others were unmarked. According to the building manager, the origin and ownership was unknown, and the drums had been at the building for an indeterminate time. Following the walk-through, the building manager identified owners, and requested that they properly characterize, store, and dispose of the waste. The building was revisited 60 days

following the initial walk-through. The drums had not been removed. They had been placed on asphalt, but were not labeled as to characterization, and had no secondary containment. The building manager planned to contact owners again to request disposal.

9.72.4.6 Waste Minimization and Pollution Prevention

At Mound there is an active program to minimize waste streams in accordance with state and federal requirements and Executive Order 12856.

9.72.5 Findings and Recommendations

Photographs were taken to document environmental appraisal activities. Findings related to the environmental appraisal of Building 50 indicate that the following action items, in priority order, should be planned and scheduled.

50-1 Requirements for monitoring of air emissions and the reporting requirements for the associated alarm system must be clarified for members of the Environmental Monitoring Group (EMG) and line managers. Information directing monitoring requirements should be posted at the source. The Environmental Monitoring Group should inform the process and building managers of requirements for monitoring, in accordance with NESHAPs or other requirements. Inconsistencies between the *NESHAPs Compliance Work Plan*, the June 20, 1995 letter of instruction for monitoring in accordance with NESHAPS, should be resolved. Requirements for investigating and reporting of inconsistent information, such that found at Building 50 on the day of the walk-through, i.e., the red light indicating that an alarm was non-functional, should be delineated.

50-2 Operating procedures for the RTG process should be reviewed to determine why the red light on the stack monitor alarm (CAM) was not called to the attention of line management. The reason for the red light to glow, an indication that the CAM is non-functional, should be determined to avoid confusion in the future.

50-3 Process procedures including the Segment Readiness Review, should include a review and report of environmental monitoring and control equipment function.

50-4 Emissions from Building 50 should be included in the Mound Air Emissions Database, and emissions permits requirements investigated. Even though the RTG is an encapsulated source, since emissions from Building 50 come from a buffer area, a de minimis determination may not be allowed, as OAC 3745-15-05(C)(3) states that a de minimis exemption does not apply if the source emits radionuclides. The state may argue that by building configuration and work practice Mound handles the source as though it may emit radionuclides.

50-4 In the event of a system upset or failure, Building-50 has a sump to contain radioactive contaminated wastewater. Information to support design sizing was not available in the SAR. The design basis should be documented and reviewed to determine if it is an acceptable risk for the system to overflow to the pond at Building 61. It is recommended

that the issue of sitewide handling of overflow from "rad" sumps be reviewed to establish that handling is appropriate, and that the pond is adequate to contain the overflow if it occurs at the same time as a storm event.

50-5 The NPDES application contains details regarding sources of wastewater. In a review of information provided to the state by the EG&G MAT EMG, the "rad" sump overflow was not noted as a source or a potential source. Since many other sources were detailed (the sitewide appraisal has identified some sources not known or detailed at the time of submission of the application), the state could infer that the information was deliberately withheld. As data is currently being developed for submission of a new application. It is recommended that a full disclosure of contributors to the storm drainage system be made.

50-6 The emergency response plan or other appropriate document does not detail plans or procedures for wastewater evaluation, containment onsite, or other appropriate handling in the event of an overflow of radioactive wastewater to the pond at Building 61. There is no alarm in place, or any other system to alert appropriate personnel to an overflow. It would require a telephone call from Building 50 personnel to the emergency response center; they would notify the EMG who would then notify maintenance personnel to close effluent gates. Occasionally in the past, emergency response personnel have not notified the EMG regarding other wastewater issues in a timely fashion.

50-7 A routine inspection of the condition and the integrity of the sump should be instituted. Written records should be maintained.

50-8 Waste improperly stored outside of Building 50 must be properly characterized, stored, and disposed of, in accordance with OAC 3745-52-11. Following the walk-through, the building manager determined the owners of the waste, and requested that it be properly managed. A visit to the building made 60 days after the initial walk-through showed no evidence that action has been taken by owners of the waste.

EG&G MAT Waste Management professionals or other individuals knowledgeable of waste disposal practices and requirements have not performed routine field surveillance to evaluate waste characterization, storage, handling, or assure that the Building 50 generator/process manager is properly managing waste streams. It is recommended that such a review be completed.

Training requirements and records of the process manager were not verified to confirm that he had completed appropriate waste management training. This should be reviewed.

50-9 Air handling systems, red, yellow, and white, should be labelled by type, both for ease of maintenance and for emergency response.

ENVIRONMENTAL APPRAISAL CHECKLIST

Building Name 50

Appraisers: Nancy Vyas, civil/environmental engineer
Name Discipline

Name Discipline

Name Discipline

Name Discipline

Building Manager: Paul Millay

Process Manager: Tim Hoy

Date: 1-17-96 a.m.

Appraisal team:

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ENVIRONMENTAL APPRAISAL CHECKLIST

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-95am

Clean Water Act (CWA) Screening Checklist

Question	Response	Comments
Does the outside drain spouting of the building discharge directly to a storm sewer/sanitary system?	(Y)/ N	Confirmed visually If the answer to any of these questions is yes, proceed with the following checklist.
Are there sinks, toilets and floor drains in the building?	(Y)/ N	
Are chemicals being used in the building?	(Y)/ N	
Is there a process which discharges to the storm or sanitary system?	(Y) N	

CWA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 122 Appendix D Table V	If chemicals are used/stored in the building, are they on the attached list? Are they properly contained?	(Y)/ N (Y)/ N	to BMQ list add ethanol @ ≈ 5gal/yr
	Is the building in operation? What are the processes and where do they discharge to?	(Y)/ N _____ _____	RTG assembly & storage
	Do the floor drains, sinks & toilets appear to be draining properly?	(Y)/ N	
OAC 3745-33	Do the floor drains and sinks drain to a sanitary or storm sewer?	Sanitary Storm	non-buffer area to sanitary buffer area to sump → pond
	Is there a sump/pit in the building? If so, what does it contain? How often is it pumped out? Does water collect in sump? Does sump have secondary containment?	(Y)/ N _____ _____ (Y)/ N (Y)/ N	contains process/cooling → storm water. 1100 gal steel tank in concrete. Fills ≈ 6 times/yr ~~Water tested + discharged~~ to s
	Are there any manholes, catch basins, drains, or fill pipes in or around the building? If so, are there any unusual appearances, colors, and/or odors? Describe in comment section. Can chemicals flow into the drain?	(Y) N Y / (N) Y / (N)	Storm drain + grate in Nat dock 4 Storm drains on E

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(AIR) • Exhaust has alarms which are not functioning. Determine reason & maintenance/repair schedule.

• Check information about sump overflo to pond by B-61. This is potential cro

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96 am

Clean Air Act (CAA) Screening Checklist

Regulatory Guideline	Question	Response	Comments
	Are there any rooms that have air emissions sources that vent to the outside of the building, e.g., fumehoods, equipment? If so, note the rooms.	(Y) / N	All HVAC vented to HEPA filter. Exhaust to stack on roof
OAC 3745-35	Using the air emissions inventory reference for this building, are there any sources in the building that are not documented?	(Y) / N	Rad sources not included in inventory.
	Is there evidence of fugitive dust emissions inside or outside of the building	Y / (N)	

CAA Checklist

Regulatory Guideline	Question	Response	Comments
	Are there existing air permits or applications applicable to the building?	Y / (N)	Documentation to support decision for no permit is needed
OAC 3745-31,35	If yes, are the terms and conditions of the permit or the information included on the application (see air emissions database) being followed? Note any differences and update the air emissions database.	N/A Y / (N)	
OAC 3745-31	Are there any sources that are not included in the air emissions database? If so, note the room, hood number, active or not, POC, and applicable air emission database information on Table B.	(Y) / N	Rad source not included in Mound inventory. Other source: ethanol ≈ 5gal/yr.
OAC 3745-31-03	Are there sources which are lab equipment of lab fumeheads used exclusively for chemical or physical analyses and bench scale lab equipment? These sources do not require a permit. However, the air emissions database should be updated.	Y / (N)	used in Rms 113, 110, 109.
	Has there been any release of air contaminants from this building?	Y / (N)	Several false alarms due to radon

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96 am

CAA Checklist

Comments: Note the number of sources/hoods per room, the number that are active, and the POC on the reference document.
NONE

TABLE A									
Process Source	Room Number	Hood Number	In Database	Active	Chemicals Used	Quantity Used	Quantity to Waste Management	Hours/Yr. Operation	Air Emissions
			Y / N	Y / N					
			Y / N	Y / N					
			Y / N	Y / N					
			Y / N	Y / N					
			Y / N	Y / N					

Source:_____

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Hazardous Materials (HM) Screening Checklist

Question	Response	Comments
Are any chemicals used or stored in this building, now or in the past?	(Y) / N	If the answer is yes, proceed with the following checklist.

HM Checklist

Regulatory Guideline	Question	Response	Comments
29 CFR 1910.1200(b,f)	All containers of hazardous chemicals shall be labeled as to the identity of the chemical and the appropriate hazard warnings.	Y / (N)	Penthouse flammables cabinet - small red can is full w no label
29 CFR 1910.1200(g)	MSDS shall be available to the employees in close proximity to the work area.	(Y) / N	dated 1993. 2 missing
29 CFR 1910.22, 1910.106, 1910.176	All places of employment, passageways, storerooms and service areas shall be kept clean and orderly and in a sanitary manner. Aisles shall be unobstructed. Drums and containers are not leaking and are tightly sealed.	(Y) / N	Rm 127 - storeroom; improve housekeeping + storage procedures
29 CFR 1910.106	Storage cabinets for flammable materials are constantly kept closed, are fire resistant and are labeled "FLAMMABLE - Keep Fire Away". Containers inside should be labeled and closed. No spills inside cabinet.	Y / (N)	Spill in cabinet in penthouse.
29 CFR 1910.106(d)(7)	Incompatible chemicals are not stored together.	(Y) / N	
29 CFR 1910.106(d)(4)	Inside Flammable/combustible storage rooms must meet the following: 4 in. raised sill or trench that drains to a safe area, liquid tight wall/floor joints, self-closing doors, gravity or mechanical exhaust providing 6 room changes/hr., exhaust switch located outside room, at least one 3 ft. aisle; no cracks in secondary containment.	Y / N N/A	

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyne Date: 1-17-96

HM Checklist

Regulatory Guideline	Question	Response	Comments
29 CFR 1910.106(d)(7)	All flammable/combustible storage locations have at least one 12-B portable fire extinguisher located outside and within 10 ft. of a door opening into any room for storage. No smoking signs are posted.	(Y) / N	
29 CFR 1910.151	Eyewashes/showers shall be provided within the work area. Ensure unit is operational.	(Y) / N	
CGA P-1 3.3 & 3.3.10	All gas cylinders (full or empty) shall carry a legible label or marking identifying the contents.	(Y) / N	
CGA P-1 3.5.3	Full and empty containers should be stored separately with the storage layout planned so that containers comprising of old stock can be removed first with a minimum handling of other containers.	Y / (N)	outside cell III - empty & full together. Segregate
CGA P-1 3.5.8	All compressed gas containers in service or in storage shall be stored standing upright and the container shall be secured.	(Y) / N	
CGA P-1 4.2.2	Oxygen cylinders shall be separated from flammable gas containers or combustible materials a minimum of 20 ft. or a noncombustible barrier 5 ft. high.	Y / N N/A	
29 CFR 1910.104(2)(10)	Oxygen stored as a liquid shall be on a noncombustible surface. Asphalt is considered combustible. Wood and long dry grass shall be cut back 15 ft. from the container.	Y / N N/A	
29 CFR 1910.104	Bulk oxygen storage shall be permanently placarded "OXYGEN - NO SMOKING - NO OPEN FLAMES".	Y / N N/A	
	Is there a sign posted in each work area regarding emergency egress and emergency response action?	(Y) / N	
	Is there an emergency response plan available?	(Y) / N	

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Environmental Appraisal Checklist

Building Name: Appraisers: Date:

HM Checklist

Regulatory Guideline	Question	Response	Comments
	Is there a process area?	(Y) N	
	Does it have proper containment?	(Y) N	
	Is there a liquid bulk transfer area?	(Y) N	to fill argon & Nitrogen tanks
	Is there proper containment?	Y (N)	gases - not necessary
	Is there an above ground storage tank? If so, complete Table B.	(Y) N	gas

Above Ground Storage Tanks Inventory

TABLE B—Above Ground Storage Tanks Inventory

Building	Capacity (Gal.)	Contents	Estimated Volume	In Service	Containment *	Visual Stains/ Contamination	If Empty, Flushed
50	5000	liquid N	unknown	Y / (N)	Y / (N)	Y / (N)	Y / N
				Y / N	Y / N	Y / N	Y / N
50	3000 (est)	argon	unknown	Y / (N)	Y / (N)	Y / (N)	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N
				Y / N	Y / N	Y / N	Y / N

* not necessary

Source: Observation

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Environmental . ppraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96 am

Safe Drinking Water Act (SDWA) Screening Checklist

Does this facility have potable water?	(Y)/ N	If yes, conduct the following survey.

SDWA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745 95-02 (A)	Do actual or potential cross-connections exist between potable (light green) and service water (dark green)?	Y / (N)	
OAC 3745 95-04 (B)(C)	Are backflow prevention devices installed where cross connections (hoses connected to faucets, hot water tank vented directly to a drain) exist?	(Y) / N	
	Are sources of service water (janitorial and laboratory faucets, or outdoor spigots) posted as non-potable water sources?	Y / N NA	
	Does the facility contain any water coolers or fountains that are not lead free? Complete Table C.	(Y) / N	

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TABLE C—Water Fountain Survey			
Building	Location	Model #	Comments / Date of Analysis for Lead
50	Corridor by 113	RWM 13A	S # 69605604 Halsey Taylor (*)
			Not Working!

(*) Drinking fountain removed in 1997/98.

Source: Observation (VKD) 10-27-03

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96 am

RCRA Screening Checklist

Does this facility generate waste or use chemicals?	(Y) / N	If yes, conduct the following survey.

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745 52-11	Has any material generated been characterized RCRA hazardous? Was charactarization by analysis or by process knowledge? Are lab results or documentation of process knowledge readily available? Note any uncharacterized material in comment section. Is it waste? If yes, proceed with next section.	Y / (N) analysis / process Y / N Y / N	There are 4 containers outside of N entrance of bldg. Characterize & dispose.
OAC 3745 52-11	Are any of the materials noted RCRA hazardous waste? If no, note and stop here. If yes, note the location of the management unit, and the method of management, and proceed with the appropriate section below.	Y / N	

- Update BMQ to reflect that haz waste is not generated in bldg.

- Characterize & dispose of waste outside of N entrance (4 drums)
- Update waste stream documentation for characterization.
- Label + contain all wastes. Dispose of them immediately

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
I. HAZARDOUS WASTE STORED IN CONTAINERS			
	Is there an area in the building that could qualify as a Satellite Accumulation Area? Is it treated as such?	Y / N Y / N	
OAC 3475-52-34 (C)	Has any of the RCRA hazardous waste in this building been managed in Satellite Accumulation Areas? If no, proceed to the next section. If yes, answer the following.	Y / N	
	Are the containers marked with the words hazardous waste, or other words denoting the hazard?	Y / N	
	Are the containers in good condition?	Y / N	
	Are the waste compatible with the containers?	Y / N	
	Are containers managing ignitable hazardous waste stored at least 50 feet from the plant site boundary?	Y / N	
	Are containers kept closed and locked except during filling?	Y / N	
	Are containers moved within 3 days of being filled?	Y / N	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745-52-11 (A)	If a Satellite accumulation area has been abandoned and/or if waste left in place, and the containers may be subject to the 90-day-storage exclusion. If this exclusion does not apply, go to the next section. If the containers have been in storage under this exclusion, answer the following:		
	Are the containers in good condition?	Y / N	
	Are the waste compatible with the containers?	Y / N	
	Are the containers kept closed except during filling?	Y / N	
	Are the containers managed in such a way, that they are not ruptured, or leaks caused?	Y / N	
	Is the area inspected at least once weekly?	Y / N	
	Is the inspection recorded? Where is the log? Is it properly completed, dated, and signed?	Y / N _____ Y / N	
	Are containers managing ignitable hazardous waste stored at least 50 feet from the facility boundary?	Y / N	
	Are incompatible wastes managed in such a way that they will not react with another incompatible waste?	Y / N	
OAC 3745-52-34(B)	Has any of the waste (except in Building 23, Building 72 and the Burn Area) been managed in excess of 90-days?	Y / N	
	If no go to next section.		
	If yes, note.		
	For Building 23, Building 72 & Burn Area use special checklist.		

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
II. HAZARDOUS WASTE STORED IN TANKS			
OAC 3745-52-32 (B)	Has any chemical waste stored in a tank, piece of process equipment or ancillary equipment been in storage in excess of 90-days?	Y / N	
	If the answer was no, then proceed with the following:	Y / N	
	Has the tank or piece of equipment had an integrity assessment?	Y / N	
	Is there a sump?	Y / N	
	Is it dry?	Y / N	
	Does the tank or equipment have secondary containment?	Y / N	
	Does the tank or equipment have leak detection device(s)?	Y / N	
	Has spill control prevention been enacted?	Y / N	
	Has any hazardous waste stored in a tank, piece of process equipment or ancillary equipment been in storage in excess of 90-days?	Y / N	
	If the answer was no, then proceed with the following:		
	Has the tank or piece of equipment had an integrity assessment?	Y / N	
	Does the tank or equipment have secondary containment?	Y / N	
	Does the tank or equipment have leak detection device(s)?	Y / N	
	Has spill control prevention been enacted?	Y / N	
	Is there a closure plan?	Y / N	
	If yes, then note.		
OAC 3745-67	Has any of the waste been managed in a surface impoundment? If yes, then note. Go to the next section.	Y / N	

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Environmental Appraisal Checklist

Building Name: 5D Appraisers: Vyas Date: 1-17-96

RCRA Checklist

Regulatory Guideline	Question	Response	Comments
OAC 3745-68	Has any of the waste been managed in a Landfill? If yes, then note. Go to the next section.	Y / N	
OAC 3745-68	Has any of the waste been managed in an Incinerator (other than Burn area units)? If yes, then note. Go to the next section.	Y / N	
OAC 3745-68	Has any of the waste been managed in a Thermal treatment Unit (other than Burn area units)? If yes, then note. Go to the next section	Y / N	
OAC 3745-69	Has any of the waste been managed in a Miscellaneous Treatment Unit (other than Burn area units)? If yes, then not. Go to the next section.	Y / N	
OAC 3745-56	Has any of the waste been managed in a Waste Pile? If yes, then note. Go to the next section.	Y / N	

General Comments:

Environmental Appraisal Checklist

Building Name: Appraisers: Date:

Asbestos Screening Checklist

Does this facility contain ACBM?	(Y) / N	If yes, conduct the following survey.

Asbestos Checklist

Note: Routinely, the asbestos standard for ACBM in schools has been applied to facilities for purpose of cleanup. In addition to AEHERA, there are additional standards in the NESHAPS that may be of importance.

Regulatory Guideline	Question	Response	Comments
ADAPTED FROM TSCA ACBM IN SCHOOLS:			
	Has this building been characterized either through process knowledge, by analyses, or by inspection to determine if it contains asbestos? If no for this building or area note this conclusion in the comment section. Is there any evidence of friable asbestos? Is the asbestos removal properly managed? (See questions listed below)	(Y) N (Y) N Y / N	Work order written & maintenance scheduled for asbestos repair. Investigate mens room, kentry, mechanical room in penthouse If there is no asbestos removal, do not complete the following section.
NESHAPS FOR ASBESTOS FOR ANY ONGOING ASBESTOS REMOVAL:			
40 CFR 61.156	There are no discharges of visible emissions to the outside air from collection, processing, packaging, transporting, or deposition of ACBM during the removal.	Y / N	NO CURRENT MAINT.
40 CFR 61.152(b) (1)	ACBM is treated with water in accordance with 40 CFR 152(b)?	Y / N	
40 CFR 61.154	Is friable asbestos adequately wetted during stripping? Or, has an adequate ventilation and collection system been installed?	Y / N	
40 CFR 61.152	Is wetting continued until the waste friable asbestos is collected for disposal?	Y / N	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Toxic Substances and Control Act (TSCA) PCB's Screening Checklist

Does this facility potentially contain any PCB's or PCB contaminated equipment? *	Y / N possible	If yes, are transformers labeled (Blue or Yellow stickers)? If yes, conduct the following survey.

TSCA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 761	Has any waste generated in, or from, this building been characterized either through process knowledge or by analyses to determine if it contains PCB's ? If the answer is no, note . If the answer is yes, proceed with next section.	Y / N	
	Based on an inspection, are any of the materials or equipment potentially PCB contaminated? If no, note and stop here. If yes, note the location of the management unit, and the method of management, and proceed.	Y / N	
40 CFR 761.65 (c) (5)	Are PCB articles or containers stored in this building checked for leaks at least once every 30 days?	Y / N	N/A VKD 10-24-03
	If yes, are auditable records maintained.	Y / N	
40 CFR.30 (a) (1) (ix)	Are any PCB transformers in use, or stored for possible reuse, that contain PCB's at concentrations of 500 ppm or greater?	Y / N	
	Are they visually inspected quarterly? If yes, are auditable records maintained?	Y / N	

* In amplifier room there is a bank of

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

TSCA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 761.30 (a) 1,viii	Are all combustible materials (i.e., paints, solvents, plastics, paper, sawn wood, etc.) cleared from areas containing PCB transformers to a distance of five meters?	Y / N	N/A (N/A) 10-24-03
40 CFR 761.65 (b) (8)	Are all PCB articles and containers labeled with the date they were placed in storage?	Y / N	
	Are labeled PCB articles and containers stored so that the labels can be referenced?	Y / N	
40 CFR 761.65 (a)	Are all PCB's and PCB contaminated items at concentrations above 50 PPM, that are stored for disposal, stored no longer than one year from the date they were placed in storage?	Y / N	
40 CFR 761.62 (b) (1) (i)	Do all PCB storage areas have an adequate roof and walls to prevent rainwater from reaching the stored items?	Y / N	
40 CFR 761.62 (b) (1) (iv)	Are storage are floors curbed and constructed of continuous smooth and impervious materials?	Y / N	
40 CFR 761.62 (b) (1) (i)	Are the curbs at least 6 inches high?	Y / N	
40 CFR 761.62 (b) (1) (iii)	No drains are allowed in storage areas. Are there drains in the storage areas?	Y / N	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

TSCA Checklist

Regulatory Guideline	Question	Response	Comments
40 CFR 761.65 (c) (2)	Only non-leaking and undamaged large high voltage PCB's capacitators and PCB-containing electrical equipment are allowed to be stored outside of PCB storage areas, on pallets if stored outside, with containment for 10 percent of the volume of the equipment. Do all PCB's stored in this configuration conform with this requirement?	Y / N	N/A VPM 10-24-03
40 CFR 761.45 and .65	Are all PCB storage areas marked with a large PCB mark as described in 40 CFR 761.45 (a)?	Y / N	
40 CFR 761.65 (c) (5)	Have all leaking PCB articles and containers been transferred to non-leaking containers?	Y / N	
40 CFR 761.65 (c) (6)	Do all PCB storage containers for the storage of liquid and non-liquid PCB's comply with DOT shipping container specifications?	Y / N	

GENERAL COMMENTS:

Environmental Appraisal Checklist

Building Name: Appraisers: Date:

Low-Level Waste and Transuranic Waste Screening Checklist

Does this facility contain radioactive waste ?	Y / N *	If yes, conduct the following survey.

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response	Comments
Low-Level Waste			
DOE Order 5820.2A Chapter III	Can any waste generated in, or from, this building be characterized either through process knowledge or by analyses to determine if it is LLW ? If the answer is no, note. If the answer is yes, proceed with next section.	Y / N	Rad material is encapsulated. There is no contamination. There is a potential for contamination.
DOE Order 5820.2A Chapter III.	Are any of the materials noted by inspection LLW? If no, The audit would stop here, because there are no LLW. If yes, note the location of the management unit, and the method of management, and proceed with the section below.	Y / N	*
DOE Order 5820.2A Chapter III, 3.a.	Have the storage configurations in use in this area been taken into account for keeping external exposures to the general public below 25 mrem/yr?	Y / N NA	
	Is the waste stored in a configuration that protects ground-water resources?	Y / N NA	
DOE Order 5820.2A Chapter III, 3.b.	Has monitoring been conducted in this area in accordance with DOE Order 5820.2A in order to evaluate the area against the performance standard?	Y / N NA	
	Based on field data, does the monitoring conducted in this area conform to the performance standard?	Y / N NA	

* Technicians wear rad-type smocks. Clothing is handled as LLW.

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response NA	Comments
DOE Order 5820.2A Chapter III, 3.d.	Based on field data, is the characterization of the materials in this area sufficient to assure proper segregation to assure proper segregation, treatment, storage, and disposal?	Y / N	
	Based on field data does the characterization as documented at the time of generation of the waste ensure that the actual physical and chemical characteristics, and major radionuclide content of this material are recorded and known at all stages of the waste management process?	Y / N	
	Do characterization data include the following:		
	Physical and chemical characteristics of the waste?	Y / N	
	Volume of the waste (including solidification and absorbent material)?	Y / N	
	Weight of the waste (including solidification and absorbent material)?	Y / N	
	Major radionuclides and their concentrations?	Y / N	
	Packaging date, package weight, external volume?	Y / N	
	How were the concentration of radionuclides determined? Direct methods?		
	How were the concentrations of radionuclides determined? Indirect methods?		
DOE Order 5820.2A Chapter III, 3.h	Is the storage configuration in long term storage sufficient to meet the performance standard?	Y / N	
	Are records maintained at the facility enabling this waste to be traced from its origin?	Y / N	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: N Yates Date: 1-17-96

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response	Comments
TRU WASTE			
	Can any waste generated in, or from this building be characterized either through process knowledge or by analyses to determine if it is TRU waste? If no, note and stop. If yes, proceed with the next section.	Y / N	
	Are any of the materials noted as being TRU waste during an inspection? If no, note and stop. If the answer is yes, note the location of the management unit, and the method of management and proceed with the appropriate section below.	Y / N	
DOE Order 5820.2A, Chapter II, 3.a	Was this material evaluated as soon as possible in the generating process, to determine if it is TRU (>100nCi/g), if it is recoverable, or if it is waste? (Note if the activity level is less than 100nCi/g, the waste is not TRU, and can be managed as LLW.)	Y / N	
	Did the determination of TRU radionuclide concentration include the mass of the container, including shielding? These should be included in calculating the specific activity of the waste.	Y / N	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response NA	Comments
DOE Order 5820.2A, Chapter II, 3.b	Has the TRU waste been assayed or otherwise evaluated to determine its radioactive content prior to storage?	Y / N	
	Has the TRU waste been characterized or otherwise evaluated to determine if hazardous waste is present?	Y / N	
	Has classified TRU waste been treated to destroy the classified characteristics?	Y / N	
DOE Order 5820.2A, Chapter II 3.d	Has all newly generated TRU waste been packaged in non-combustible packaging that meets DOT requirements?	Y / N	
	Have all Type A TRU waste packages been equipped with a method to prevent pressure buildup?	Y / N	
	Have all TRU packages been marked, labeled and sealed in accordance with 40 CFR 261 Subpart C and 49 CFR 172 Subparts D, E and 49 CFR 173 Subpart I?	Y / N	

Environmental Appraisal Checklist

Building Name: 50 Appraisers: V yus Date: 1-17-96

Low-Level Waste and Transuranic Waste Checklist

Regulatory Guideline	Question	Response N/A	Comments
DOE Order 5820.2A, Chapter II 3.e	Has the TRU waste been segregated in manner that will not permit commingling of TRU waste with LLW or high-level waste?	Y / N	
	Has the TRU waste been protected from unauthorized access?	Y / N	
	Has the TRU waste been monitored periodically to ensure that it is not releasing its radioactive and/or hazardous constituents?	Y / N	
	Has this TRU waste storage area been designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or accidental release of its radioactive and/or hazardous constituents?	Y / N	
	Does the facility have a contingency plan designed to minimize the adverse impacts of fire, explosion, or accidental release of its radioactive and/or hazardous constituents?	Y / N ✓	

GENERAL COMMENTS:

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Environmental Appraisal Checklist

Building Name: Appraisers: Date:

Waste Minimization/Pollution Prevention Activities Screening Checklist

Does this facility generate waste or use chemicals?	(Y)/ N	If yes, conduct the following survey.

Waste Minimiaztion/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Based on available information and a walk through, are there any apparent opportunities to curtail the consumption of raw materials (including but not limited to paper, chemicals, electricity, and etc.). If yes, list candidate areas in the comment section.	Y / (N)	
	Are there solvent wastes?	(Y)/ N	Ethanol used @ 5gal/yr volitilizes,
	Is vehicle maintenance performed?	Y / (N)	
	Are oils used ?	(Y)/ N	
	Are these corrosive wastes?	Y / (N)	
	Are there sludges?	Y / (N)	
	Are there halogenated organic (nonsolvent) wastes?	Y / (N)	
	Are metals recovered from wastewater?	Y / (N)	
	Is waste sludge generated?	Y / (N)	
	Are any waste minimization practices used that reduce the generation of sludge? N/A	Y / (N)	
	Ion exchange process?	Y / N	
	Lead in gasoline lowered to reduce tank sludge toxicity?	Y / N	
	Storage tank agitators installed?	Y / N	
	Corrosive resistant materials used?	Y / N	
	Prevention of crude oil oxidation ?	Y / N	
	Drying?	Y / N	

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
HALOGENATED ORGANIC (NONSOLVENT) WASTES		N/A	
	Are halogenated organic wastes used as fuel in cement kilns?	Y / N	
	Are baghouse filters used to collect pesticides and pesticide intermediates?	Y / N	
	Are solid wastes generated from the collection of baghouse dust?	Y / N	
	Wet instead of dry grinding used?	Y / N	
	The output spray dried?	Y / N	
	Has baghouse emptying and recycling of baghouse fines been scheduled?	Y / N	
	Have operations been evaluated to improve procedures such as handling, storage and spill prevention for increased efficiency?	Y / N	
METAL WASTES		N/A	
	Are any technologies for the recovering of metals from waste rinsewater used?	Y / N	
	Evaporation of waste rinsewater?	Y / N	
	Reverse osmosis?	Y / N	
	Ion exchange?	Y / N	
	Electrolysis?	Y / N	
	Agglomeration?	Y / N	
CORROSIVE WASTES			
	Are acidic or basic cleaning solutions used as treatment for pH adjustment chemicals?	Y / N N/A	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Are ion exchange resins used to remove heavy metals and cyanides from acid and base solutions?	NA Y / N	
	Is crystallization used to remove corrosives from solution by cooling?	Y / N	
	Is the process of evaporation of liquid wastes by heating used to leave behind a more concentrated solution?	~~Y / N~~	
CYANIDE AND REACTIVE WASTES		NA	
	Has non-cyanide or low concentration of cyanide process replaced zinc cyanide bath ?	Y / N	
	Are any of these processes used to recycle cyanide wastes?	Y / N	
	Refrigeration/crystallization?	Y / N	
	Evaporation?	Y / N	
	Ion exchange?	~~Y / N~~	
	Membrane separation which includes reverse osmosis or electrodialysis?	~~Y / N~~	
VEHICLE MAINTENANCE		NA	
	How are auto parts cleaned?	Y / N	
	Solvent sink?	Y / N	
	Solvent dunk bucket?	Y / N	
	Solvent dip tank?	Y / N	
	Are parts cleaning solvents used for anything else besides cleaning parts?	Y / N	
	Are spills reduced by locating sinks or dunk buckets near auto service bays?	~~Y~~ / N	

Environmental Appraisal Checklist

Building Name: Appraisers: Date:

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Are cleaned parts drained on the sink to minimize solvent spills?	Y / N	
	Are drip tanks used to capture losses?	Y / N	
	Is a solvent sink used for mineral solvents rather than a dunk bucket or dip tank?	Y / N	
	Does a waste hauler collect solvent waste for recycling or treatment?	Y / N	
OILS			
	What kind of oils are used?		Vacuum pump, refrigerant oil, lube oil, capacitor oil
	Hydraulic oil?	Y / N	
	Transformer oil?	Y / N	
	Metal working fluids?	Y / N	
	Spent lubricating oils?	Y / N	
	Can the process be modified or changed to use water-based fluids?	Y / N	
	Are these good housekeeping and operation practices used to minimize oil waste production?	Yes	
	Use oils not contaminated with other liquids?	Y / N	
	Oil spills prevented?	Y / N	
	Drip pans installed?	Y / N	
	Oil soaked rags laundered?	Y / N	
	Rags and absorbants used to their limit?	Y / N	

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Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response	Comments
	Are these treatment techniques used to promote separation of oil/water wastes?	NA	No oil/water wastes are produced.
	Reclaiming process to remove water and solvents by heat?	Y / N	
	Gravity setting?	Y / N	
	Screening?	Y / N	
	Centrifugation?	Y / N	
	Filtration?	Y / N	
SOLVENT WASTES			
	Has there been an attempt to reduce volume or toxicity by:	N/A	
	Eliminating solvents?	Y / N	
	Reducing the use of solvents?	Y / N	
	Reducing the loss of solvents?	Y / N	
	Increasing recyclability?	Y / N	
	Are solvents segregated?	Y / N	
	Are waste solvents free from water and garbage?	Y / N	
	Are recycled solvent containers labeled as such?	Y / N	
	Are containers kept closed?	Y / N	
	Free and sheltered from the elements?	Y / N	
	Are solvent tanks kept as free from contaminations as possible so that the waste can be recycled?	Y / N	
	Is a method used to minimize the use of new materials such as a countercurrent process?	Y / N	

Environmental Appraisal Checklist

Building Name: 50 Appraisers: Vyas Date: 1-17-96

Waste Minimization/Pollution Prevention Activities Checklist

Regulatory Guideline	Question	Response NA	Comments
	If there is a recycling program, what technique is used?	Y / N	
	Distillation?	Y / N	
	Solids removal?	Y / N	
	Dispersion breaking?	Y / N	
	Dissolved and emulsified organics recovery?	Y / N	
	Are any of these housekeeping procedures used to minimize the production of solvent wastes?		
	Separators cleaned and checked?	Y / N	
	Parts not allowed to enter the degreaser while wet?	Y / N	
	Sludge from the bottom of the tank not allowed to accumulate?	Y / N	
	Lids kept on tanks?	Y / N	
	Freeboard space on tanks increased?	Y / N	
	Are better operating practices used to reduce waste?	Y / N	
	How long is solvent waste stored and where?		

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M o u n d Electronic Message/AOS

From :Gary D. Miller
MILLGD
Dept. :Operations
Tel. No :3574
Date :22-Mar-1996 02:51pm EST
Subject :Building 50 Environmental Appraisal

TO :Nancy Vyas (PAPER MAIL)
TO :Eunice Warmoth (WARMEM)

This is to document that I find portions of the Building 50 Environmental Appraisal in conflict with information I have received from the Building Manager and through my own investigations.

While the team noted a nonfuctioning effluent CAM, the Building Manager did not notice it and does not recall it being pointed out on the tour. He also did not come away from the tour with the understanding that there was an unresolved issue regarding the effluent CAM. The Building Manager is very aware that this is designated as building safety equipment in the FSAR and is required to be functional. In fact, its operability is one of the items he independently verifies each workday on his walkthrough as he is verifying that all LCOs are in place.

Facts that have been retrieved since 3/21/96 when this issue came to my attention are:

1. The LCO daily record book shows that the RCT verified the CAMs as being operational the morning of 1/17/96. As well, the Building Manager noted nothing unusual on his tour.

2. The Plan of the Day does not indicate that any CAMs were under maintenance or repair.

3. The Plan of the Day does indicate that there was a maintenance job going on related to the chill water system, in particular the alarms on the part of it that services the IAAC. There should be no connection between this system and the CAMs, but it does explain the presence of maintenance personnel in the penthouse working on alarms.

My investgation leads me to believe that what was seen on the tour was a CAM with its red failure light on. (It is normal for the CAM to cycle between counting and failure.) However an individual on the tour believes he saw the large red light on top of the CAM either constantly lit or flashing. All parties agree that the bell was not ringing. CAM alarms come in to a central location at Mound. Neither I nor the Building Manager was informed of a CAM alarm.

As a follow-up, I will investigate with with experts from Mound Radiologic Engineering and the HP Calibrations Laboratory what events might cause a CAM to display a constantly lit warning light or a flashing light with no bell actuation.

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Gary Miller
HS/RTG Facility Manager

- training ~~plans~~ posted
- flammables well managed except in storage room
- Good house keeping except for storage room
- Farmer letter posted by Rad monitoring device on exhaust

General Improvements Suggested

get rid of stuff outside via characterization & disposal

monitoring req? — Farmer's letter posted

alarm to be repaired/removed

check sump overflow to Pond by B61. Reroute if necessary.

Building Manager's Questionnaire

Building Name: 50 Building Manager: P.C. Mollov Phone: 3269 Date: 12-07-95
Alternate: T.J. GEESUER Phone: 5568

Tim Hoye - Chem E

RWP 500296
503 96

1. What are the access requirements (training, clearance, etc.)?

PER TNC PLAN # B001; COURSE NO. 056041; 056050; 035063; 476103; G001; G002. PRIOR FOR ALL THOSE WHO REQUIRE PERMANENT (UNESCORTED) ACCESS TO BLDG. 50. ALL EMPLOYEES REQUIRE G001. NOTE: SEE ATTACHMENT

2. What protective equipment is required to enter the building?

NORMAL PPE WITHIN THE B0-50 AREA IS SAFETY GLASSES, SAFETY SHOES; PENTHOUSE REQMT FOR HARD HAT. ROOF AREAS REQUIRE HARD HAT, OR AS DIRECTED BY THE RCT ON THE SPECIFIC RADIATION WORK PERMIT (RWP); DOSIMETER IS REQUIRED.

3. Are there any restricted areas? Yes No
Where are they? CELL 112; CELL 108

4. Provide a physical description of the building.

This is a two-story structure containing 14,849 ft². It is constructed of reinforced concrete and concrete block with a BUM roof (coal tar). HVAC systems are central steam and chilled water. The building was built in 1971.

(HEPA) (High Efficiency Particulate air)

SEE Ref: FSAR MLM-ML-91-52-00 REVISION 02 NOV. 1993

Source: Mound Facility Physical Characterization, 12-1-93

5. Provide a drawing of the building.

Attached.

6. What is the current building use?

Building is used to assemble and test RTGs.

Source: Mound Buildings, 5-9-95

7. What is the history of building use other than that described in #6?

Originally built as a test laboratory for evaluating the integrity of radioactive heat sources. Later modifications have provided the capability for assembly and testing of RTG's

Source: Mound Buildings, 5-9-95

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Building Name: 50 Building Manager: P.C. Mollov Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

8. What are ongoing operations or processes? What are the raw materials and waste streams from each process? Who is the best contact for each process?

Process(es) Housed: RTG assembly and testing

How Wastes Are Generated:

Hazardous wastes are not routinely generated in this building. There are three possible sources of occasional wastes.

First, water from the building is collected in a 1,100-gal sump where it is tested for radioactive contamination. If it is not contaminated (the normal condition), it is released to the sewer. If it is contaminated, it is sent to WD for treatment.

Second, the coolant in the closed chilling loop can be released to the sewer if there is a loss of power or other failure of the system. The fluid in that cooling loop previously contained about ~~250 gal of~~ ethylene glycol. That material has been replaced with Dow Therm which is supposed to cause fewer environmental concerns. Several options for modifying the cooling system so that Dow Therm will not be released to the sewer are being considered.

Freon and alcohol are used to wipe parts clean. The solvents are normally used in very small quantities and evaporate, leaving no waste liquids. In the rare instances where larger amounts are needed and wastes are generated, the wastes are collected and Waste Management is asked to pick them up.

No radioactive or explosive wastes are generated in this building.

Contact:
Phone:

Source: Characterization of Mound's Hazardous, Radioactive, and Mixed Waste, (8-15-90).

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Building Manager's Questionnaire

Building Name: 50 Building Manager: P.C. Mollov Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

9. In the last six months, have any modifications been made to the building or to processes in the building? Yes No

10. Does the building have air emission sources? ~~No~~ Yes

Process Source	Room Number	Hood Number	Active	Chemicals Used	Quantity Used	Quantity to Waste Management	Lbs./Yr. Operation	Air Emissions
			Y / N					
			Y / N					
			Y / N					
			Y / N					
			Y / N					

Source: Mound Air Emissions Database 11/30/95

Pad Waste properly voted

Page 4 of 11 of the Building Manager's Questionnaire was not provided.

Building Manager's Questionnaire

Building Name: 50 Building Manager: P.C. Mollov Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

17. Does the building contain transformers or capacitors? No

Source: PCB ANNUAL DOCUMENT LOG

18. Has the building been identified as containing PCBs? No

Source: PCB ANNUAL DOCUMENT LOG

19. What chemicals are used or stored inside or outside of the building? Include compressed gasses not in large tanks.

Chemical Name	State	Amount (MAX)
OXYGEN	G	5/CF
PUMP OIL	L	1/QT
PUMP OIL 704	L	5/L
TAP MAGIC CUTTING FLUID	L	1/QT
TFE SPRAY	L	16/OZ
TRACIT-600 HARDENING CEMENT	L	2/GA
[illegible]E FLOOR FINISH	L	3/GA
[illegible]X CLEANER	S	4/LB
[illegible] STONE ACRYLIC SEAL	L	5/GA
[illegible]C BATHROOM CLEANER	L	4/QT
FMQ CLEANER	L	5/GA
POLISH, FURNITURE	L	17/OZ
STRIPPER PROFESSIONAL #237	L	1/GA
WINDOW SHINE GLASS CLEANER	L	2/GA
ARGON		6000/CF
ARGON LIQUID		600/GA
ARGON ULTRA PURI		1125/CF
ARGON(95)HYDROG		3500/CF
ARGON(96)HYDROG		800/CF
COS(1.97%)/CO(1 GON(R)		250/CF
HELIUM		3000/CF
LIQUID NITROGEN		110/GA
ACETYLENE GAS		225/CF
ACTIVATED ALUMI		36/LB
ANCOCIDE 4020		3/GA
ANCOCIDE 4070		3/GA
ANCOOL 3310		5/GA
DOWTHERM SR-1,		30/GA
FREON GENETRON		90/LB
3 IN 1 OIL		3/OZ
ACETONE	L	1/L
BUTANE FUEL	G	9/OZ
CHEM GLAZE WASH PRIMER	L	6/GA
DUO SEAL PUMP OIL	L	2/GA
ETHYL ALCOHOL	L	2/GA
LAQUER THINNER	L	0.5/GA
MINERAL SPIRITS	L	2/GA

COORDINATOR

MIKE

Building Name: 50 Building Manager: P.C. Mollov Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

20. Has there been a reported spill, leak, or other release of any chemical? Yes No
What, how much, and what clean-up measures were followed?

Chemical	Amount	Clean-up Measures

Source: _____

21. Where do waste chemicals go?

Normally collected in metal drums and eventually turned over to Waste Mgmt. for proper disposal.

22. What janitorial supplies are stored inside or outside of the building?

General floor & restroom supplies as used at Mound.

23. Where do excess janitorial supplies go?

Normally close to south entry corridor.

Source: _____

24. Are pesticides or herbicides stored or used in or around the building? Yes (No)

Chemical	Amount	Chemical	Amount

Source: _____

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Page 7 of 11 of the Building Manager's Questionnaire was not provided.

Building Name: 50 Building Manager: P.C. Molloy Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

Materials	Amount
ZINC BROMIDE, WATER WASTE	999.9
ZINC BROMIDE, WATER WATE	451.5
ZINC BROMIDE, WATER WASTE	999.9
ZINNC BROMIDE, WATER, ABSORBED IN	849.7
FLUORCO	
ZINC BROMIDE, WATER ABSORBED IN	961.4
FLUORCO	
ZINC BROMIDE, WATER, ABSORBED IN	368.1
FLUORCO	
ZINC BROMIDE, WATER, ABSORBED IN	328.9
FLUORCO	
PCB CAPACITORS(6)>500PM,SN:	345.4
6908-3946,6904-6800,-6794,-6809,800	
4-2465,-0592	
PCB OIL>500PM,FROM SN:G856883	686.4
PCB OIL>500PPM,FROM SN:G856883	499.4
PCB OILL>500PMM, FROM SN:G856883	686.4
PCB TRANSFORMER>500PPM,SN:	495.8
G856883,OUT OF SERVICE DATE	

Source: Characterization of Mounds Hazardous, Radioactive, and Mixed Wastes 08/15/90

Substation by South door
capacitors - have failed in ~~Bldg~~ Amplifier Rm

CL W [redacted] 3323

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FS0 & S8

Page 8 of 11 of the Building Manager's Questionnaire was not provided.

Building Name: 50 Building Manager: P.C. Molloy Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

33. Is TRU radioactive waste generated, stored, or disposed of from the building?
Yes (No)
Where are logs found?

Process	Waste	Stored	Disposed	Logs
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N
		Y / N	Y / N	Y / N

Source: _____

Page 10 of 11 of the Building Manager's Questionnaire was not provided.

Building Name: 50 Building Manager: P.C. Mollov Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

36. Is there a waste minimization program in the building? Yes (No)
Discuss your ideas about how to minimize waste.
Plantwide program exists.

37. Has a pollution prevention program been developed for the building? Yes No
No formal program exists

9.72-60

NUCLEAR ENERGY PROGRAMS DEPARTMENT TRAINING PLAN

Issued: December 19, 1995

Section: Nuclear Energy **Training Plan:** #B001

Group: Plutonium Facilities and Quality Engineering **Facility:** Building 50

Course No.	Course Title	Position Affected	Type of Course	Regulatory Requirement	Re-training Period
050041	Building 50 OSR/LCO Orientation	1	Class	Mound	None
050050	Bldg. 50 Sensitivity Training	1	Class	Mound	None
035063	Rad Worker II	1	CBT	10 CFR 835	Biennial
470103	Criticality Alarms and Assembly Area Procedure	1	SS	DOE 5480.24 MD 10038	Biennial
G001	General Employee Training Plan (GET)	5	All Employees are required to complete the training requirements listed in the GET. Refer to training plan #G001.		
G002	Supervisory Training Plan	1 02	Supervisors are also required to complete the training requirements listed in the Supervisory Training Plan. Refer to training plan #G002.		

Radiation Work Permit Training (?)

~~Brian Brumley x4054~~
~~Gregosky x4409~~

— Note: In approval/ Updated versp. review pro 01/16/9 Plan

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NUCLEAR ENERGY PROGRGAMS DEPARTMENT TRAINING PLAN

Issued: December 18, 1995

Section: **Nuclear Energy** **Training Plan: #B001**

Group: **Plutonium Facilities and Quality Engineering** **Facility: Building 50**

KEY:

Position Affected	Type of Course	Regulatory Requirement	Re-training Period
1 = All those who require permament access (unescorted) to Bldg. 50 5 = All employees 2 = Supervisors	Class = Classroom OJT = On-the-job-training CBT = Computer based training SS = Self study Video = Videotape	DOE order or other Agency requiring the training	None = Course taken once, no re-training is required Annual = Employee must be re-trained every year Biennial = Employee must be re-trained every two years

NOTES:

This training plan lists the minimum required training, by position, for employees working in the facility listed. Individuals may have additional training needs depending on their job responsibilities.

NUCLEAR ENERGY PROGRGAMS DEPARTMENT TRAINING PLAN

Issued: December 18, 1995

ction: **Nuclear Energy** **Training Plan: #B001**

roup: **Plutonium Facilities and Quality Engineering** **Facility: Building 50**

aining and Employee Development is responsible for reviewing this plan for format, providing assistance to the Group/Unit Manager in developing the required course list, d maintaining the approved document in Training Records.

is the responsibility of the area line supervisor to determine the exact training needs of each employee, approve the plan, and keep the plan up to date through periodic views as needed.

Reviewed by:

Training Analyst: Robert B. Abram _____ Date _____
(signature)

Approved by:

Building Manager: Paul C. Molloy _____ Date _____
(signature)

Plutonium Facility Manager: Gary D. Miller _____ Date _____
(signature)

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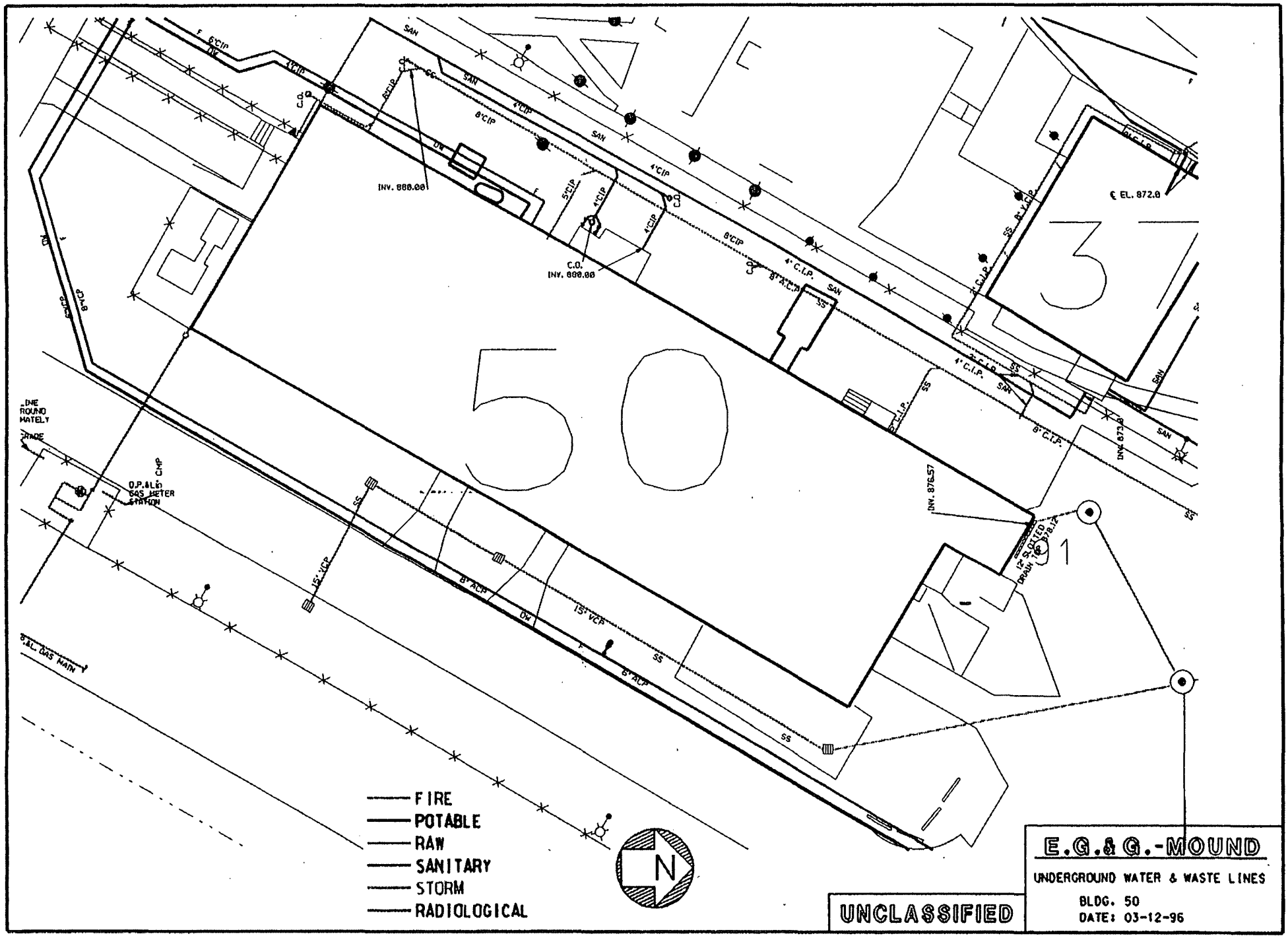

UNCLASSIFIED

E.G.&G.-MOUND

UNDERGROUND WATER & WASTE LINES

BLDG. 50

DATE: 03-12-96

FS 8 of 8

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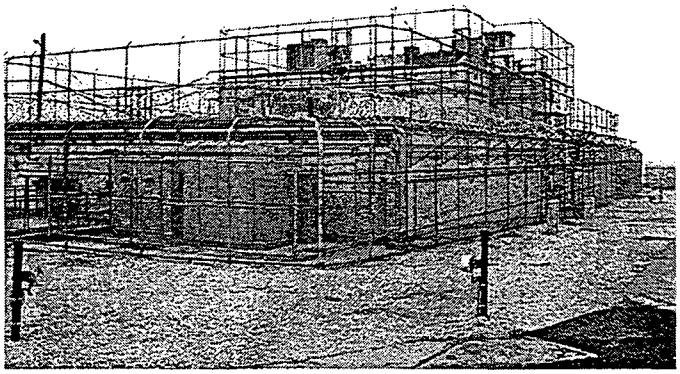
Appendix G

Radiological Information

Pre-demolition Survey Plan

For

Building 50



Prepared By:	**Roderick C. Case** /	**Date:**	**9/25/03**
Reviewed By:	**Kevin Doody** /	**Date:**	10/4/03
Approved By:	**A. Stephen Collas** /	**Date:**	10/9/03

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1.0 Historical Overview

Building 50 was constructed in 1970, as the Alpha Fuels Environmental Test Facility (AFETF). The AFETF was designed and constructed for the purpose of conducting safe, non-destructive tests on heat sources fueled with alpha-emitting isotopes. Encapsulated heat sources were tested under conditions simulating environments that might be encountered in space, terrestrial, and marine applications. None of the tests were intended to breach the heat source capsule integrity, but should a breach occur, radioactivity would be locally contained. Based upon construction drawings, Building 50 square footage is approximately 15,275-ft2.

The building exterior walls are concrete block. All floors and roofs are poured-in-place, reinforced concrete. The seven test cells are poured-in-place, reinforced concrete, 36-in. thick at the front wall: all other walls and ceilings are 27 in. thick.

An 1100-gallon tank, set in a concrete pit, was designed to receive potentially contaminated wastewater. This pit is located in the center of the western side of the building. The water was tested to measure levels of contamination, and subsequently released to the sanitary treatment plant or trucked to Building WD for treatment. No documentation was found to indicate that the wastewater was ever found to be contaminated.

Waste Management plans from 1974 to 1984 list Building 50 as a contaminated facility based upon potential contamination of one hot cell during heat source tests. However, no information was found to indicate that any fueled heat sources failed during testing and no documentation of contamination was found.

Since there is a potential for residual contamination to be present, Building 50 is designated as impacted. A complete history of Building 50 can be found in Reference 1.

1.1 Current Status

Building 50 is scheduled for demolition in accordance with the Miamisburg Closure Project goals. The radiological status of building surfaces must be determined to facilitate a free release of the structure in accordance with site procedures. A characterization study of the radiological condition of this building will direct the appropriate decisions of its final status.

2.0 Data Quality Objectives

The Data Quality Objectives (DQO) process is a series of planning steps that have been defined by the EPA (USEPA, 1994) to ensure that the type, quantity, and quality of survey data used in decision making are appropriate for the intended application. The DQO's for this survey plan are derived from Mound procedures and consistent with the Mound 2000 Approach for building disposition (Reference 2).

2.1 Problem Statement

Determine whether or not the residual radioactivity of the surfaces of building materials associated with Building 50 satisfies the release criteria specified in DOE Order 5400.5.

2.2 Decision Statement

The radiological impact of site operations on structural surfaces will be determined by hypothesis testing the survey data in accordance with Reference 5. The null hypothesis is stated as:

H_0 = The average concentration of residual radioactivity in the survey unit is greater than the release criteria.

The alternate hypothesis is:

H_a = The average concentration of residual radioactivity in the survey unit is less than the release criteria.

If all the measurements are below the $DCGL_w$, the release criteria will be met and the survey unit passes. Any measurement from the survey unit will be considered elevated if it exceeds the $DCGL_w$. However, the elevated measurement alone does not indicate that the survey unit fails to meet the release criterion, only that further investigation will be necessary to determine the extent and concentration of the elevated area.
This survey plan will provide the necessary data to make this decision.

2.3 Inputs to the Decision

The Historical Site Assessment and current survey data are initial inputs to determine area classifications. Gross surface activity measurements for alpha and beta activity will be performed. Removable alpha, beta, and tritium activity will be counted. Sediments will be analyzed for radioisotopes and compared to site screening values.

The instrumentation selected for this survey plan will be appropriate for the radionuclides typical for the Mound site.

Surface scanning will be performed to locate anomalies that might indicate elevated areas of residual activity and that require further investigation or remedial action. A floor scan for alpha contamination will be performed using a Ludlum 2350/43-37 Floor Probe at a scan speed of 1 inch per second, with the probe located within 1/4 inch to the surface being scanned. The minimum detectable activity (MDA) is 85dpm/100 cm^2 with 95% detection probability, at a background level equal to or less than 10 cpm. A 30 second integrated count will be performed at locations where elevated measurements are observed. The MDA in the integrated mode is 49dpm/100 cm^2 or 286 dpm/probe.

Direct measurements of building surfaces will be made at fixed locations using a Ludlum 2350/43-68 gas flow proportional probe (or equivalent) for alpha and beta contamination. The integrated count time is two minutes. The alpha MDA is 50 dpm/100cm^2 at a background of less than 3 cpm. The beta MDA is 375 dpm/100cm^2 at a background of less than 400 cpm.

The presence of loose surface activity, including H^3 will be determined using coin smears. An area of 100cm^2 will be smeared at each data point. Smears will be counted in an alpha/beta counter. A liquid scintillation counter (LSC) will measure removable tritium. Smear samples with gross activity above the $DCGL_w$ and sediment samples will be analyzed by alpha and/or gamma spectroscopy.

All field and laboratory instrumentation will be specified on the Survey Plan Form (SPF) and shall be operated in accordance with the appropriate Mound procedures.

All surveys and samples collected for this survey plan will be performed in accordance with the Quality Control requirements of Reference 3. Replicate surveys, sample recounts, instrument performance checks, chain of custody for samples, control of field survey data and databases, and QC investigations provide the highest level of confidence in the data collected to support the survey outcome. The SPF will specify the QC requirements for this survey.

2.4 Study Boundaries

Defining the study boundaries helps ensure the data taken during the final status survey are representative of the survey unit. The area under consideration is the physical surfaces inside and outside of the Building 50 structure. Subsurface material (under-slab, footers, etc) and associated soil is not evaluated in this survey, but will be assessed separately when surfaces are accessible in accordance with Mound procedures.

Each survey unit is classified in accordance with Reference 5 based on historical data and current characterization surveys. Class 1 areas are those areas where contamination was found above the $DCGL_w$ prior to remediation and have the greatest potential for residual contamination. Class 1 areas receive the highest degree of survey effort (100% surface scan). Class 2 areas are areas where radioactive material may have been present, but are not expected to exceed the $DCGL_w$. Class 2 areas receive a moderate degree of survey effort (50% surface scan). Class 3 areas are areas that are impacted by building operations, but are not expected to have any residual radioactivity. Class 3 areas may also be buffer areas to Class 1 or 2 areas and receive a smaller degree of survey effort (up to 25% surface scan). Non-impacted areas have no reasonable potential for residual contamination and are judgmentally (bias) surveyed to confirm this designation.

Building 50 is impacted since there is a potential for residual radioactive material to be present. The facility was designed and operated with distinctly separate high risk and low risk areas. No documentation was found to indicate that contamination was ever present above the $DCGL_w$. The greatest potential for residual radioactivity is expected on high-risk floor areas. The high-risk areas are given a Class 2 designation and low risk areas and interior walls up to 8 feet are given a Class 3 designation. The remainder of the building surfaces will be judgmentally surveyed. A characterization SPF will be written to specify the survey and sampling requirements.

Building 50 Survey Units

Survey Unit	Room	Class	Area (Sq.Ft.)	Scan %
1	101-106	3	1,120	10
2	123-128	3	3,060	10
3	119-122	3	1,080	10
4	107	2	168	50
5	108	2	192	50
6	109/110	2	192	50
7	111	2	650	50
8	112	2	832	50
9	113	2	390	50
10	114	2	648	50
11	114A	2	749	50
12	115/116/117	2	1,080	50
13	118 South	2	790	50
14	118 North	2	790	50
15	129	2	288	50
16	107 Walls	3	416	10
17	108 Walls	3	448	10
18	109 Walls	3	320	10
19	110 Walls	3	352	10
20	111 Walls	3	816	10
21	112 Walls	3	920	10

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22	113 Walls	3	656	10
23	114 Walls	3	1,296	10
24	114A Walls	3	1,088	10
25	115,116,117 Walls	3	1,272	10
26	118 Walls	3	2,688	10
27	201	3	2,250	10
28	202,206	2	640	50
29	203	2	240	50
30	204	2	650	50
31	201Walls	3	1520	10
32	202 Walls	3	808	10
33	203 Walls	3	544	10
34	204 Walls	3	1,104	10
35	205,206 Walls	3	464	10
36	Exterior Walls	Judgmental	10,080	Judgmental
37	Roof	Judgmental	12,152	Judgmental

Sampling of building materials will include removable loose surface contamination (smears) and sediment sampling of floor drains, sumps, and ventilation units. Smears (100cm2) will be collected at survey data point locations. Any areas of elevated activity above the $DCGL_w$ will be evaluated for isotopic content by intrusive sampling or insitu analysis.

In Class 2 survey units, the starting point is randomly selected and data points are located within the survey unit using the triangular grid method. The spacing of data points is determined by:

$$L = \sqrt{\frac{A}{0.866n}}$$

Where: A = Survey unit area
n = # of data points
L = Distance between data points in feet

In Class 3 areas, the location of each data point is determined by multiplying the east-west (Y) and the north-south (X) dimensions of each survey unit by a randomly generated number for each dimension. A calculator, computer, or tables may be used to determine random numbers. If additional surveys are required due to area reclassification or remediation, the survey design parameters will be specified as necessary in accordance with Reference 5 and incorporated into the Final Status Report.

The data points are then located on a scaled drawing and transferred to the survey unit. Professional judgment (biased) surveys will be performed to supplement the random survey data, but will not be combined with the statistical data. Judgmental survey data will be compared directly to the release criteria.

The number of data points is determined by calculating the relative shift (Δ/σ) from the DCGL value, the lower bound of the gray region (LBGR), and the standard deviation of the contaminant in the survey unit (Δ/σ = DCGL-LBGR/σ). The standard deviation is estimated to be 17dpm/100cm^2 based on characterization surveys of similar building surfaces. The LBGR is set at one-half the release limit. The relative shift is calculated as 2.95. For survey planning, the number of data points (n = 20) in the survey unit was obtained from Table 5.5, Reference 5.

2.5 The Decision Rule

A decision rule relates the concentration of residual radioactivity in the survey unit to the release criterion so that decisions can be made based on the results of the final status survey. Reference 6, DOE Order 5400.5, Radiation Protection of the Public and the Environment, offers generic release criteria for building surfaces. Table 1 lists these permissible surface contamination guidelines which were adapted from NRC Regulatory Guide 1.86. Tritium at the Mound facility is an exception. For tritium, 10,000 dpm/100cm^2 was selected based on technical information presented in Reference 4.

Table 1

Allowable Total Residual Surface Contamination (dpm/100cm^2)*				
Radionuclides*		**Average***	**Maximum***	**Removable***
Group 1	Transuranics, I-125, I129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231	**100**	**300**	**20**
Group 2	Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232	**1,000**	**3,000**	**200**
Group 3	U-Natural, U-235, U-238 and associated decay products, alpha emitters	**5,000**	**15,000**	**1,000**
Group 4	Beta-gamma emitters (Radionuclides with decay modes other than alpha emission or spontaneous fission) except for Sr-90 and others noted above	**5,000**	**15,000**	**1,000**
Tritium		**N/A**	**N/A**	**10,000**

* Note: Refer to DOE Order 5400.5, Radiation Protection of the Public and the Environment, for specific information on surface contamination guidelines and additional notes.

The average activity levels shown in Table 1 assumes that the residual contamination is uniformly distributed across the survey unit and are designated $DCGL_W$ in this plan. Biased measurements will be taken in non-impacted areas and compared directly to the release criteria to supplement the statistical data. The maximum activity shown in Table 1 represents the $DCGL_{EMC}$. Since Pu-238 is the major contaminant of concern, Group 1 limits are appropriate for alpha measurements. Group 4 limits are used for beta/gamma measurements.

If the average of the measurements is above the $DCGL_W$, the survey unit will not meet the release criterion. If the average surface activity within each survey unit is below the $DCGL_W$ and the maximum activity is less than the $DCGL_W$, then it will be accepted as the Final Status Survey and no further survey action is required.

If the average of the residual activity in the survey unit is less than the $DCGL_W$, but some areas are greater than the $DCGL_W$, the Sign test will be used to determine if the release criteria have been met. Each measured value, when subtracted from the DCGL, will yield a positive or negative number. If the sum of the positive signs (S+) is greater than the Critical Value (Table I.3, Reference 5), then the null hypothesis is rejected and survey unit passes. The power of the Sign test is given in Reference 5, I.9.1. A prospective power curve constructed using MARSSIM Power 2000 software demonstrates sufficient power exists at the LBGR to detect residual contamination (Attachment 1). A retrospective power curve will be used to test the assumptions made in this survey plan.

The decision rule for the elevated measurement comparison will be a two-stage process. In the first stage, areas will be flagged as potentially elevated if the direct measurement or scanning measurement indicates concentrations above the $DCGL_w$. If the elevated activity can not be attributed to naturally occurring radioisotopes, the area will be remediated, and resurveyed in accordance with Reference 5.

2.6 The Limits on Decision Errors

A Type I error is made when the null hypotheses, H_0, is rejected when it is true. A Type II error is made when the null hypotheses is not rejected when it is false. The error rates are expressed as the probability that a survey unit passes when it should fail (α) or fails when it should pass (β). Because the measurement variability is expected to be small at the DCGL, the α =0.05 and β = 0.01 for this survey.

The concentration range between the Lower Bound of the Gray Region (LBGR) and the DCGL defines the gray region of residual radioactivity concentration in which the consequences of Type II decision errors are relatively minor. The statistical test uses the LBGR to define the level that, above which, false positive rates greater than that specified by the limits on decision errors are accepted. The LBGR is limited by the variability exhibited by the measurements and the decision errors chosen. Because the detection limits expected by the direct field measurements are low relative to the $DCGL_w$, it is estimated that an LBGR equal to one-half of the $DCGL_w$ can be achieved.

2.7 Optimizing the Design

The DQO process is neither static nor sequential. As new information is gathered it will be incorporated into the planning process. In order to facilitate this process, a Survey Plan Form (SPF) is developed for field use to direct the specific details required by the overall survey plan. The SPF will specify the types of samples to be collected and the locations and analysis to be performed. It will define the specific instruments to be used for the survey and the location and type of surveys required. The SPF will specify the Quality Control (QC) requirements of the survey as required by Reference 3. Additional information and comments can be added to clarify or enhance the survey/sample process. The SPF is reviewed and approved prior to beginning the survey and is subsequently reviewed and approved after all data is collected to ensure completeness and accuracy. Data from initial survey efforts may result in altering area classifications. Additional SPF's may be required to complete the final status survey process for a survey unit.

It is critical to the DQO process that the survey units are isolated from the potential for recontamination or disturbances that could lead to invalidating the survey results. Access shall be restricted to all areas where surveys have been completed until such time as the survey unit is released.

2.8 Final Status Survey Report

When all of the DQO's are satisfied, a report of the final status of the building is prepared and submitted for review. This report called a Final Status Survey (FSS) will summarize and document the MARSSIM survey and the final status of the building. The FSS report will be transmitted to the Mound 2000 Core Team for review and approval prior to proceeding with building demolition.

3.0 References

1. CH2MHill, EC&AS Department, White Paper: *Building 50 Structural History and Process History Summary Background Document*, July 2003
2. Work Plan, *Mound 2000 Approach*, DOE/MEMP, 1995
3. MARSSIM Implementing Procedures, *Field Quality Control for Building Contamination Surveys*, MD-80046, Op 402
4. DOE, 1991, *Recommended Tritium Surface Contamination Release Guides,* DOE, EH, 0201T, March, 1991; Mound Tritium Committee, Appendix A, Health-Based Risk Assessment for Unconditional Release of Items Contaminated with Tritium
5. NUREG 1575, Rev 1, Aug 2000, *Multi-Agency Radiation Survey and Site Investigation Manual*, (MARSSIM)
6. DOE Order 5400.5, *Radiation Protection of the Public and the Environment*

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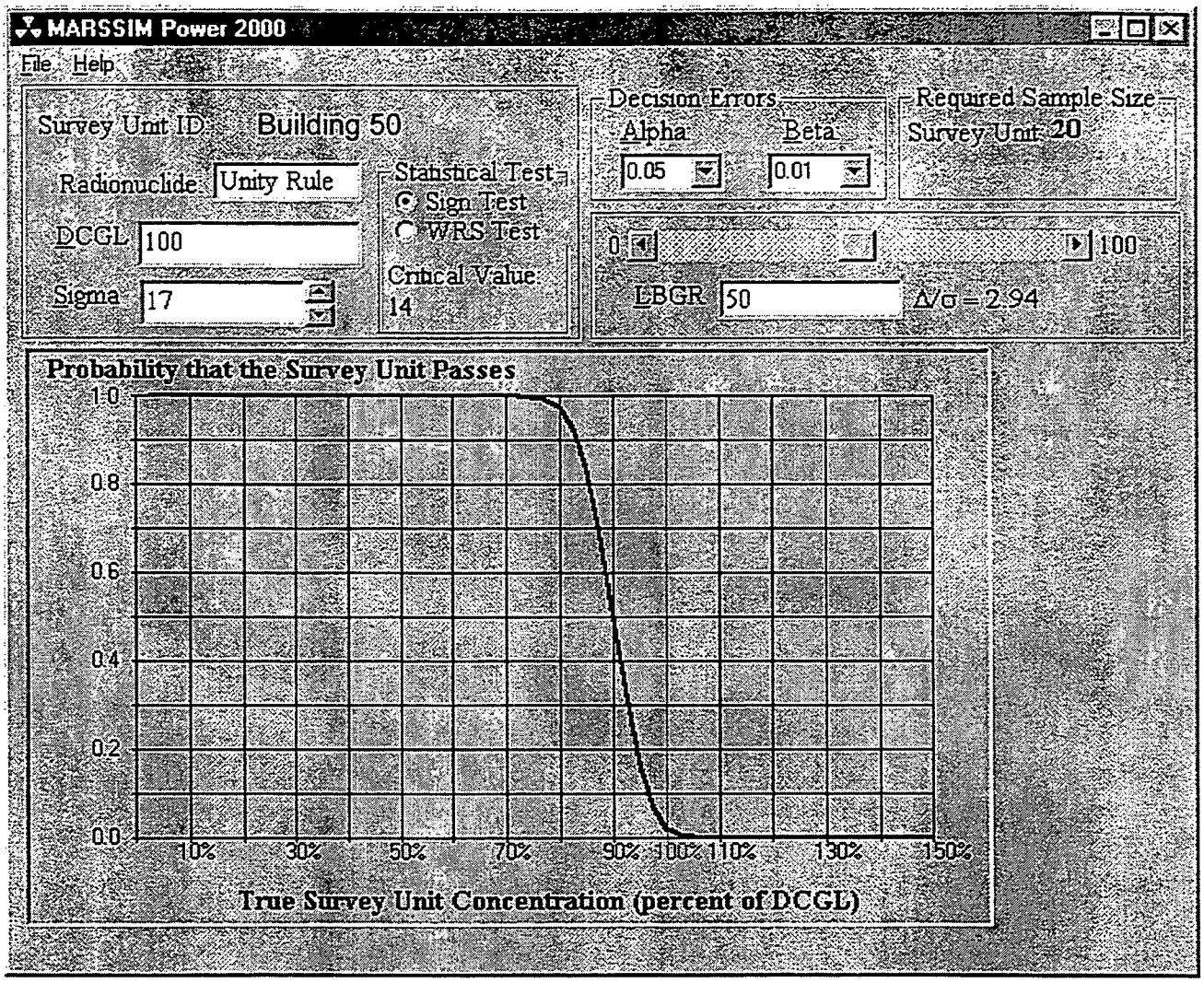
Sign Test Prospective Power Curve



MARSSIM Power 2000 software developed by Dr. Carl Gogolak, DOE/EML is provided on the Health Physics Society Decommissioning website (http://www.serversolutions.com/decomm_sec/index.htm) and endorsed by the Oak Ridge Institute for Science and Education (ORISE).

SURVEY PLAN FORM

SPF NUMBER	50-01	DATE OF REQUEST	September 25, 2003
TYPE OF SP	☐ FSS ☒ CHARACTERIZATION ☐ REFERENCE ☐ OTHER:		
AREA/LOCATION	Building 50		
PURPOSE	The purpose of this SPF is to characterize Building 50 to support decisions on final disposition.		
SURVEY UNIT	(See Attachment 1)	SURVEY UNIT	N/A
SURVEY UNIT	N/A	SURVEY UNIT	N/A
SURVEY UNIT	N/A	SURVEY UNIT	N/A
SURVEY UNIT	N/A	SURVEY UNIT	N/A

SAMPLE TYPE

☐ SURFACE SOIL SAMPLE:

☐ SUB-SURFACE SOIL SAMPLE:

☒ SEDIMENT SAMPLE: See specific sediment sampling instructions on page 2.

☐ Rubbelized Material:

☐ OTHER:

SURVEY TYPE

SURFACE SCAN	☐ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE	L-2350	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Scan surface at a rate of 1" per second at a distance of not more than ¼" from surface
		PROBE TYPE	43-37 Floor Probe or 43-68 Hand Probe		
STATIC MEASURE-MENT	☒ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE	L-2350	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Perform 2 minute counts at specified locations not more than ¼" from surface
		PROBE TYPE	43-68 Hand Probe		
STATIC MEASURE-MENT	☐ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE		COUNT TIME & DETECTOR DISTANCE FROM SURFACE	
		PROBE TYPE			
DOSE RATE MEASURE-MENT	☐ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE		DETECTOR DISTANCE FROM SURFACE	
		PROBE TYPE			

OTHER SURVEY TYPES OR COMMENTS

All surveys shall be performed and documented in accordance with Mound Radiological Control procedures.

Rad Con shall document all discrepancies from the above sampling and surveying instructions on the Radiological Survey Data Sheet (RSDS).

Perform sediment sampling and surface scan surveys prior to performing static measurements.

Ensure the surfaces of interest in the survey unit are dry and free of loose debris or other material that may obscure alpha measurement.

SPF NUMBER	50-01	DATE OF REQUEST	September 25, 2003

SPECIFIC SAMPLING / SURVEY INSTRUCTIONS

Safety Considerations

1. Obtain assistance from the responsible building custodian for access to upper walls, ceilings, roof, etc. Exercise extreme caution when performing surveys from ladders or scaffolds. Follow appropriate site safety procedures when accessing areas requiring fall protection measures.
2. Ensure ventilation units are de-energized prior to attempting to collect a sample. Obtain approval and assistance from the responsible building custodian to dismantle any equipment for sample collection.

Sediment Samples

1. Collect approximately 250ml of debris/water from each accessible ventilation unit opening, floor drain, sump a any other area where debris has accumulated.
2. If insufficient material is present at these sample locations, obtain a representative smear of the location.
3. Document sample information and description of material on Attachment 1.
4. Label sample container with sample number, date and time of collection, and location in accordance with Mou procedures.
5. Perform a static alpha and beta measurement at each sediment sample location.
6. Show sample location and static measurement results on the RSDS map.
7. Submit sediment/water samples to laboratory for gamma spectroscopy analysis. Submit smears for gross alpha and beta analysis.
8. Additional intrusive samples may be collected in areas of elevated activity as determined by the MARSSIM Engineer.

Surface Scan Measurements using a Ludlum 2350 with 43-37 alpha Floor probe

1. Set the Ludlum 2350-1 datalogger to alarm at 75dpm/100cm^2 in the ratemeter mode.
2. Scan at least 50% of the surface in Class 2 Survey Units using a serpentine method with rows spaced one pr width apart.
3. Scan at least 10% of the surface in Class 3 Survey Units using the professional judgment of the surveyor.
4. Perform a 30 second integrated count at every location where an alarm is obtained. In addition, obtain a 30 sec integrated count at any point where an audible or visual indication of elevated activity is observed at twice background rate.
5. Record the location of the area scanned on the RSDS map and document the results of any integrated counts.

Surface Scan Measurements using a Ludlum 2350 with 43-68 alpha Hand probe

1. Scan at least 10% of the surface in Class 3 Survey Units using the professional judgment of the surveyor.
2. Using the audible output of instrument, stop and pause for approximately ten (10) seconds if one pop (click) is heard. If one pop (click) is heard during pause, perform an integrated count for two (2) minutes. Otherwise, if no pop heard during pause, continue scan.
3. Record the location of the area scanned on the RSDS map and document the results of any integrated counts.

Data Point Location

1. Locate the data points in each survey unit using the coordinates shown in Attachment 3.
2. Mark each data point with tape or other non-permanent marking.
3. Document locations on the appropriate RSDS Map.

Continued Next Page

Specific Survey and Sampling Instructions (continued)

Static Measurements Using L 2350 with 43-68 (alpha/beta) probe

1. Perform an integrated alpha and beta measurement at each data point in each Survey Unit.
2. Perform at least 20 integrated alpha and beta measurements on ceilings, crawl spaces, and horizontal structural surfaces where, in the judgement of the surveyor, a potential exists for residual contamination.
3. Record location, material type, and results on RSDS map in accordance with Mound Rad Con procedures.
4. Document gross activity for each location (No "<" values). Record instrument background at survey location.

Loose Surface Contamination

1. Obtain a smear of 100cm^2 at each survey point identified above.
2. Count each smear for alpha, beta, and H^3. H^3 analysis is not required for building external surfaces.
3. Record location and results on RSDS map in accordance with Mound Rad Con procedures.

Quality Control

1. QC measurements will be performed by re-surveying 16 data points. Data points selected for resurvey should include the highest and lowest readings in the data set.
2. Sediment samples or smears with measured activity above the MDA may be resubmitted for replicate analysis. Ensure alpha and beta smear results are obtained before performing H^3 analysis.
3. Record location, material, and results on RSDS in accordance with Mound Rad Con procedures.

APPROVAL SIGNATURES			
MARISSM Engineer	R. Case	DATE	September 25, 2003
Technical Reviewer	DOODY	DATE	10/4/03
Rad Con Manager	D. Staples	DATE	Oct 8, 2003
SP CLOSE-OUT SIGNATURES			
MARISSM Engineer		DATE	
Technical Reviewer		DATE	
Rad Con Manager		DATE	

COMMENTS

SPF 50 –01
Attachment 1
Building 50 Survey Units

Survey Unit	Room	Class	Area (Sq.Ft.)	Scan %	Floor	Walls
1	101-106	3	1120	10	X	
2	123-128	3	3060	10	X	
3	119-122	3	1080	10	X	
4	107	2	168	50	X	
5	108	2	192	50	X	
6	109/110	2	192	50	X	
7	111	2	650	50	X	
8	112	2	832	50	X	
9	113	2	390	50	X	
10	114	2	648	50	X	
11	114A	2	749	50	X	
12	115/116/117	2	1105	50	X	
13	118 South	2	790	50	X	
14	118 North	2	790	50	X	
15	129	2	288	50	X	
16	107 Walls	3	416	10		X
17	108 Walls	3	448	10		X
18	109 Walls	3	320	10		X
19	110 Walls	3	352	10		X
20	111 Walls	3	816	10		X
21	112 Walls	3	920	10		X
22	113 Walls	3	656	10		X
23	114 Walls	3	1296	10		X
24	114A Walls	3	1088	10		X
25	115,116,117 Walls	3	1272	10		X
26	118 Walls	3	2688	10		X
27	201	3	2250	10	X	
28	202,206	2	640	50	X	
29	203	2	240	50	X	
30	204	2	650	50	X	
31	201Walls	3	1520	10		X
32	202 Walls	3	808	10		X
33	203 Walls	3	544	10		X
34	204 Walls	3	1104	10		X
35	205,206 Walls	3	464	10		X
36	Exterior Walls	J	10080	J		X
37	Roof	J	12152	J	X	

Sample Data Collection Sheet
Attachment 2

Sample Number	Sample Date	Sample Time	Sample Volume /Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
50-01-									
50-01-									
50-01-									
50-01-									
50-01-									
50-01-									
50-01-									
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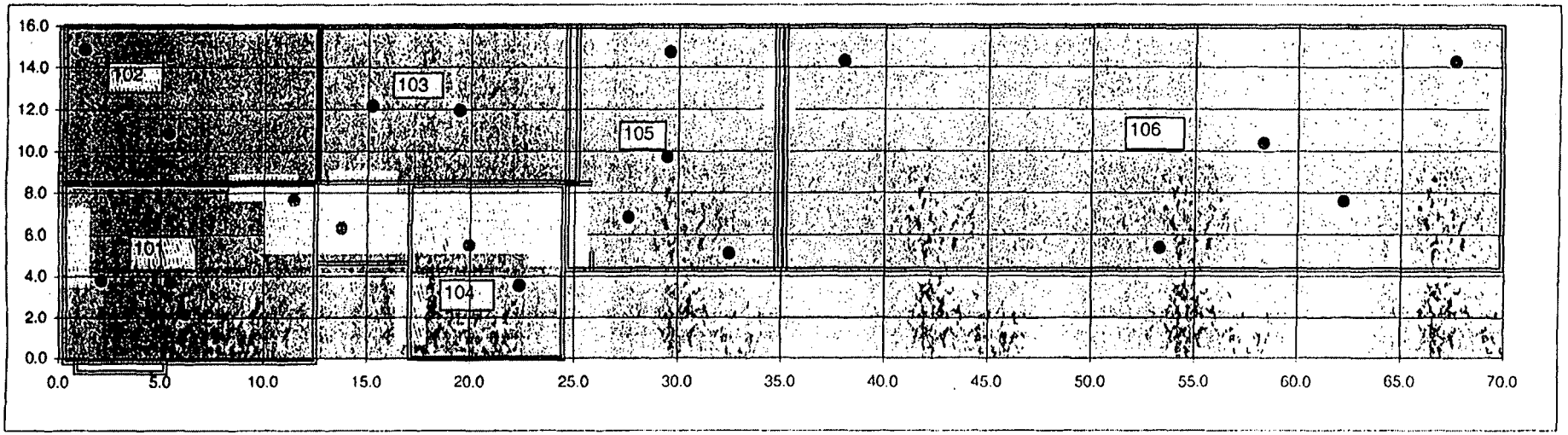
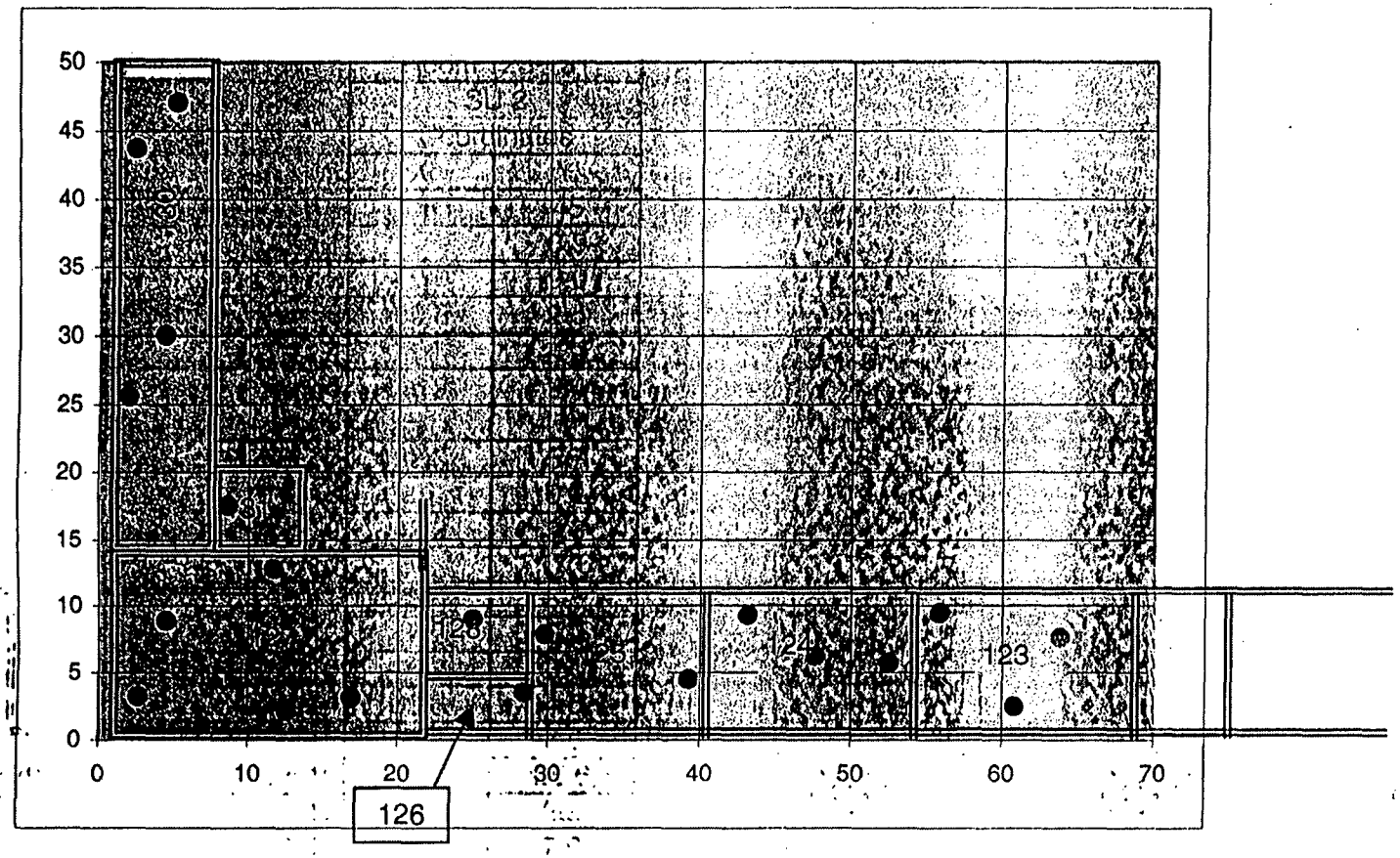
SPF 50-01
Attachment 3

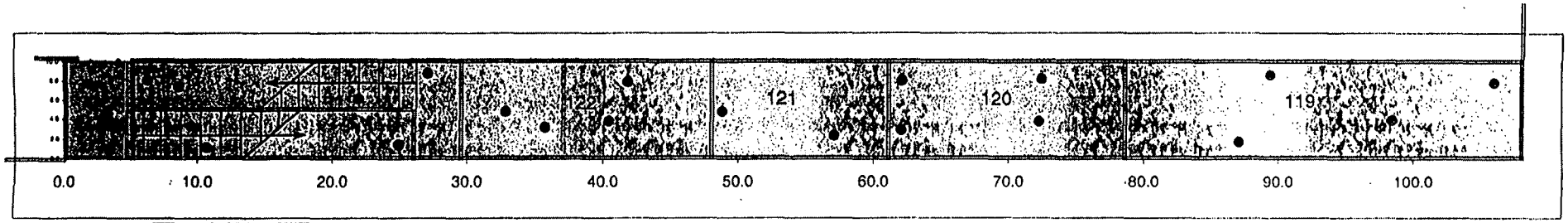


	Room 101-106	
	SU 1 Coordinates	
	X	Y
	70	16
1	29.5	9.7
2	6.2	2.2
3	1.3	14.8
4	27.6	6.8
5	29.6	14.7
6	19.5	11.9
7	32.5	5.1
8	5.4	10.8
9	5.5	3.7
10	13.8	6.3
11	2.1	3.8
12	11.5	7.6
13	53.3	5.4
14	62.2	7.6
15	67.6	14.2
16	15.2	12.2
17	58.3	10.4
18	22.4	3.6
19	38.0	14.3
20	20.0	5.5

G1 of 50

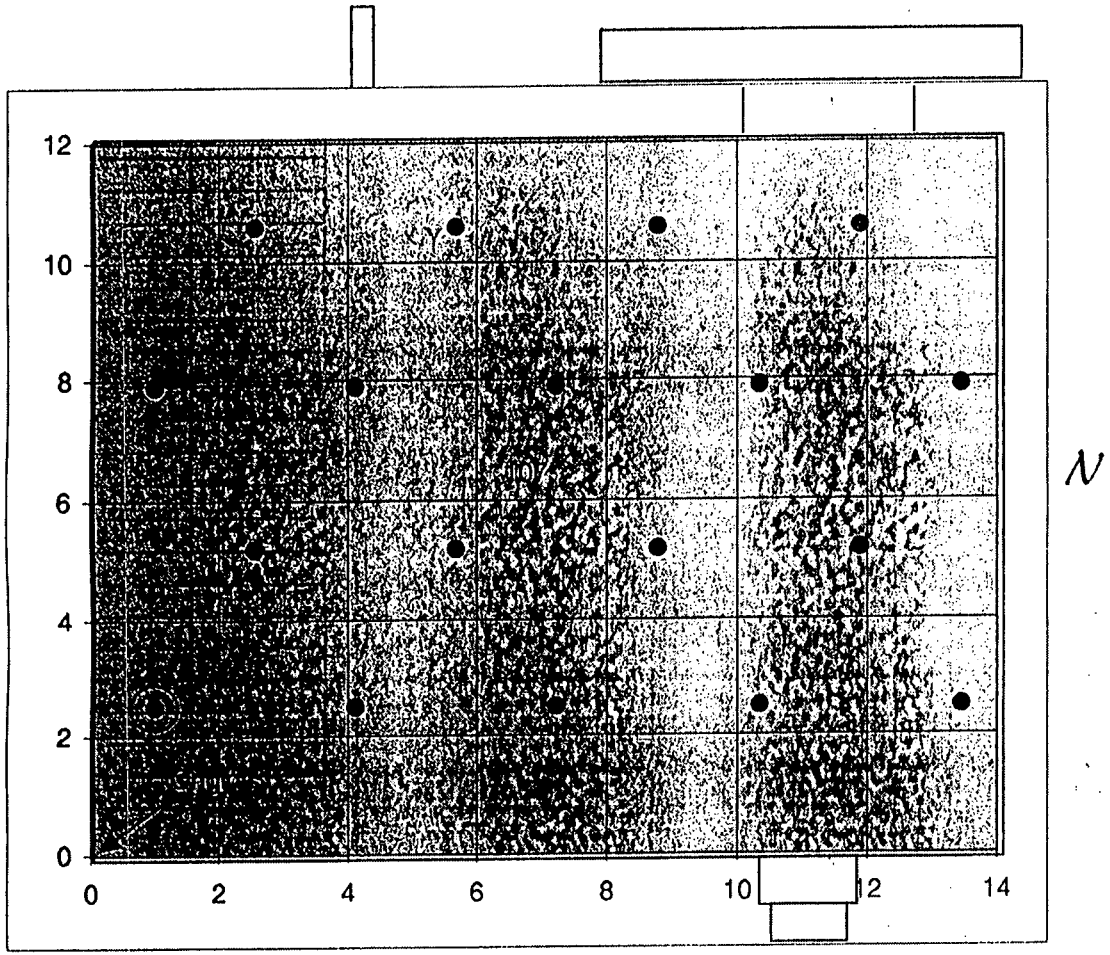


	Room 123-131	
	SU 2	
	Coordinates	
	X'	Y'
	68	45
1	4.5	8.9
2	25.0	9.0
3	60.8	2.5
4	2.4	43.7
5	55.9	9.4
6	5.1	47.1
7	52.5	5.7
8	2.7	3.2
9	43.2	9.3
10	8.7	17.6
11	28.4	3.5
12	47.7	6.2
13	16.9	3.1
14	39.3	4.5
15	63.8	7.6
16	2.0	25.6
17	12.6	2.2
18	29.8	7.9
19	4.4	30.0
20	11.7	12.8



	Room 119- Stairs	
	SU 3	
	Coordinates	
	108	10
1	24.9	1.4
2	35.8	3.1
3	72.4	8.2
4	27.1	8.8
5	106.0	7.8
6	6.3	8.1
7	57.1	2.3
8	32.9	4.8
9	10.7	1.1
10	40.4	3.8
11	72.2	3.8
12	62.1	2.9
13	89.4	8.6
14	8.6	7.4
15	98.4	3.9
16	41.8	7.9
17	62.1	8.0
18	21.9	6.1
19	87.1	1.7
20	48.8	4.8

G18 of 50

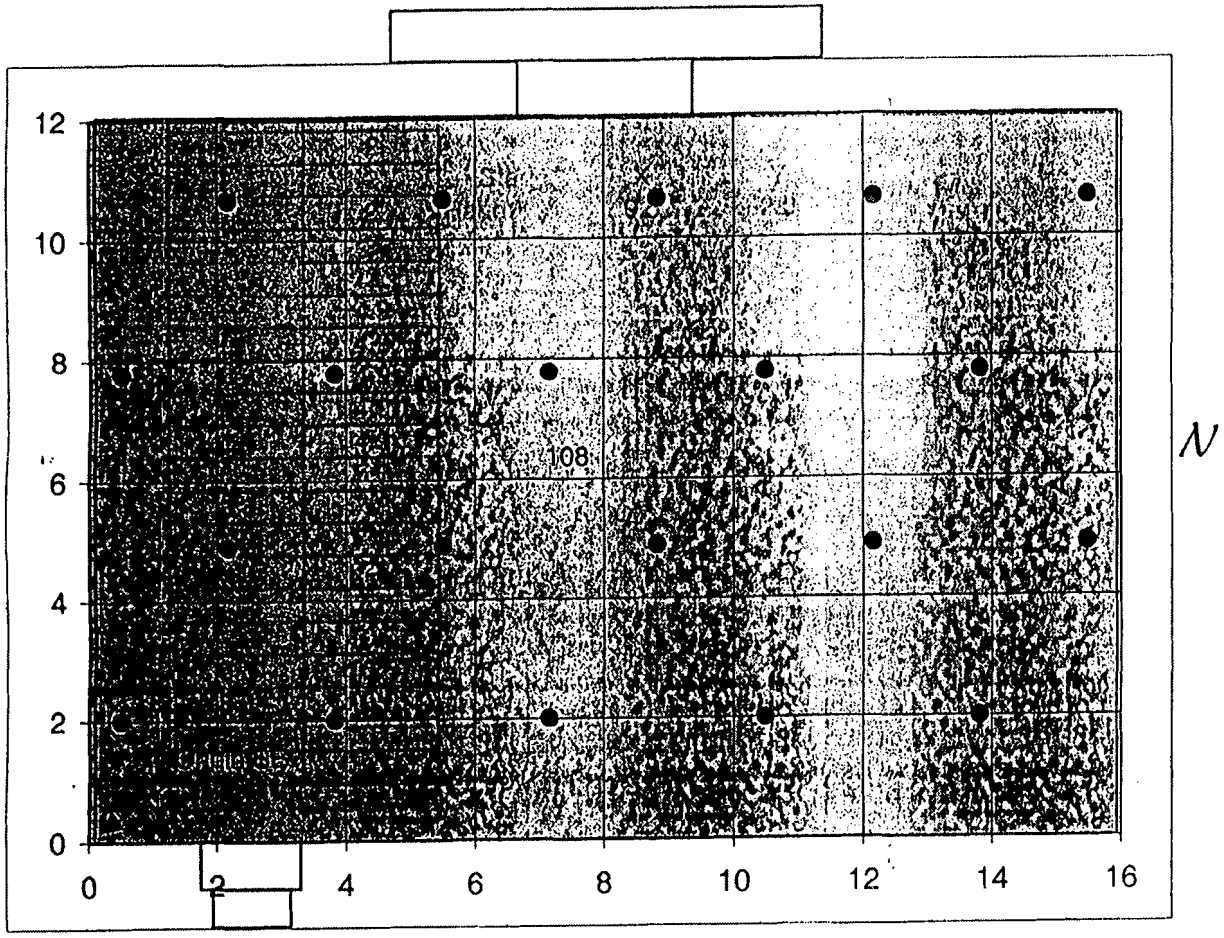


	Room 107	
	SU 4 Coordinates	
	X	Y
	14	12
1	1	2.5
2	4.1	2.5
3	7.2	2.5
4	10.3	2.5
5	13.5	2.5
6	2.6	5.2
7	5.7	5.2
8	8.8	5.2
9	11.9	5.2
10	15.0	5.2
11	1.0	7.9
12	4.1	7.9
13	7.2	7.9
14	10.3	7.9
15	13.5	7.9
16	2.6	10.6
17	5.7	10.6
18	8.8	10.6
19	11.9	10.6
20	15.0	10.6

Area	L	L'
168	3.1ft	2.7ft
Start	X	Y
Rand X:Y	1.0	2.5

Grid 50

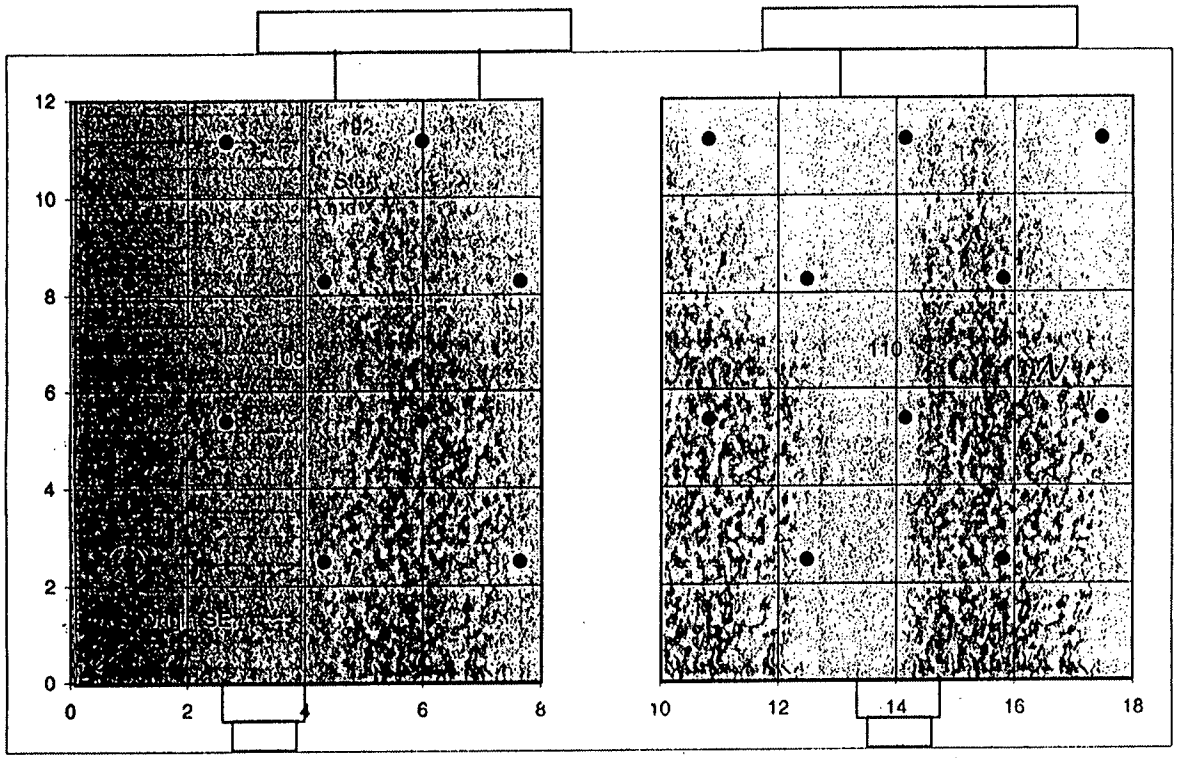
SPF 50-01
Attachment 3



	Room 108	
	SU 5 Coordinates	
	X	Y
	16	12
1	0.5	2
2	3.8	2
3	7.2	2
4	10.5	2
5	13.8	2
6	2.2	4.9
7	5.5	4.9
8	8.8	4.9
9	12.2	4.9
10	15.5	4.9
11	0.5	7.8
12	3.8	7.8
13	7.2	7.8
14	10.5	7.8
15	13.8	7.8
16	2.2	10.6
17	5.5	10.6
18	8.8	10.6
19	12.2	10.6
20	15.5	10.6

Area	L	L'
192	3.3ft	2.9ft
Start	X	Y
Rand X:Y	0.5	2.0

Page 50

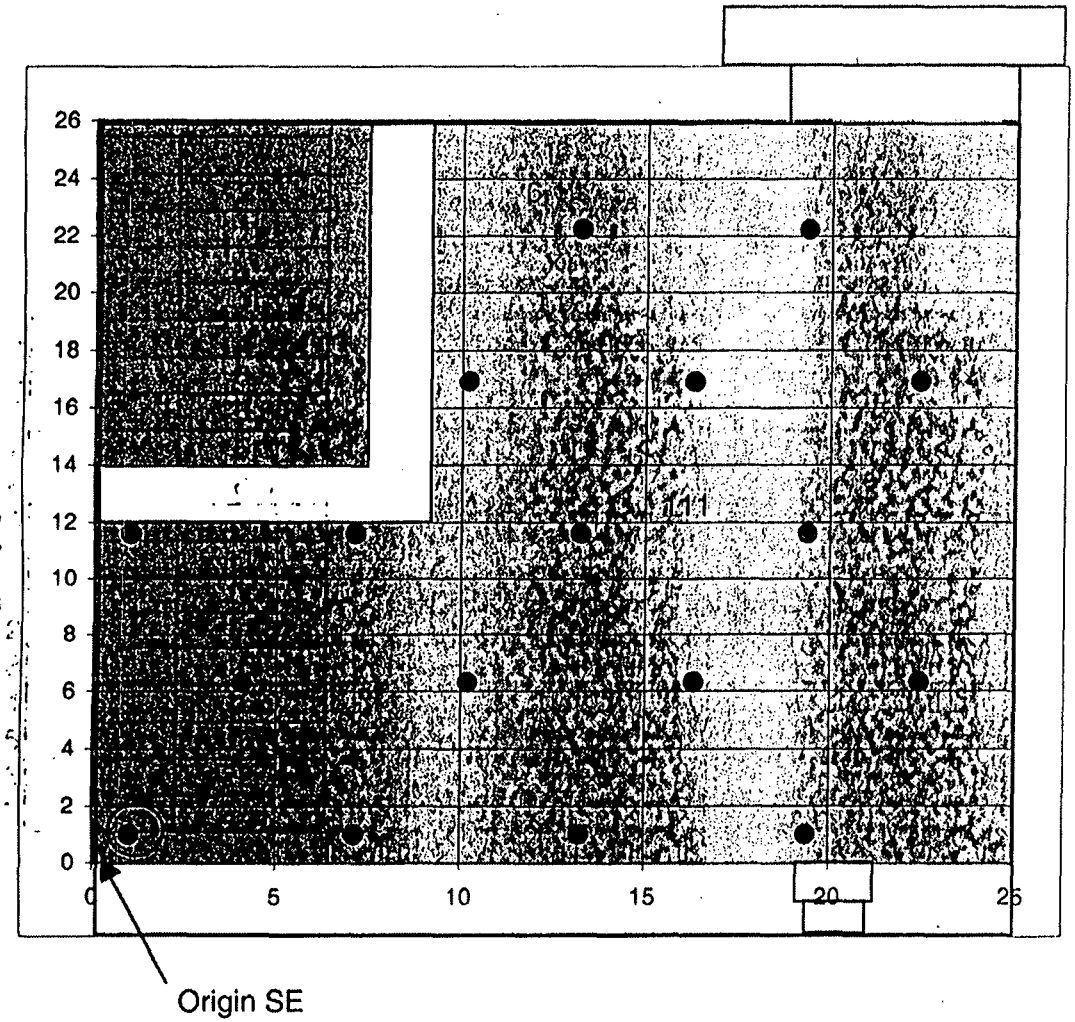


	Room 109, 110	
	SU 3 Coordinates	
	X	Y
	16	12
1	1	2.5
2	4.3	2.5
3	7.7	2.5
4	12.5	2.5
5	15.8	2.5
6	2.7	5.4
7	6.0	5.4
8	10.8	5.4
9	14.2	5.4
10	17.5	5.4
11	1.0	8.3
12	4.3	8.3
13	7.7	8.3
14	12.5	8.3
15	15.8	8.3
16	2.7	11.1
17	6.0	11.1
18	10.8	11.1
19	14.2	11.1
20	17.5	11.1

Area	L	L'
192	3.3ft	2.9ft
Start	X	Y
Rand X:Y	1.0	2.5

G21b 50

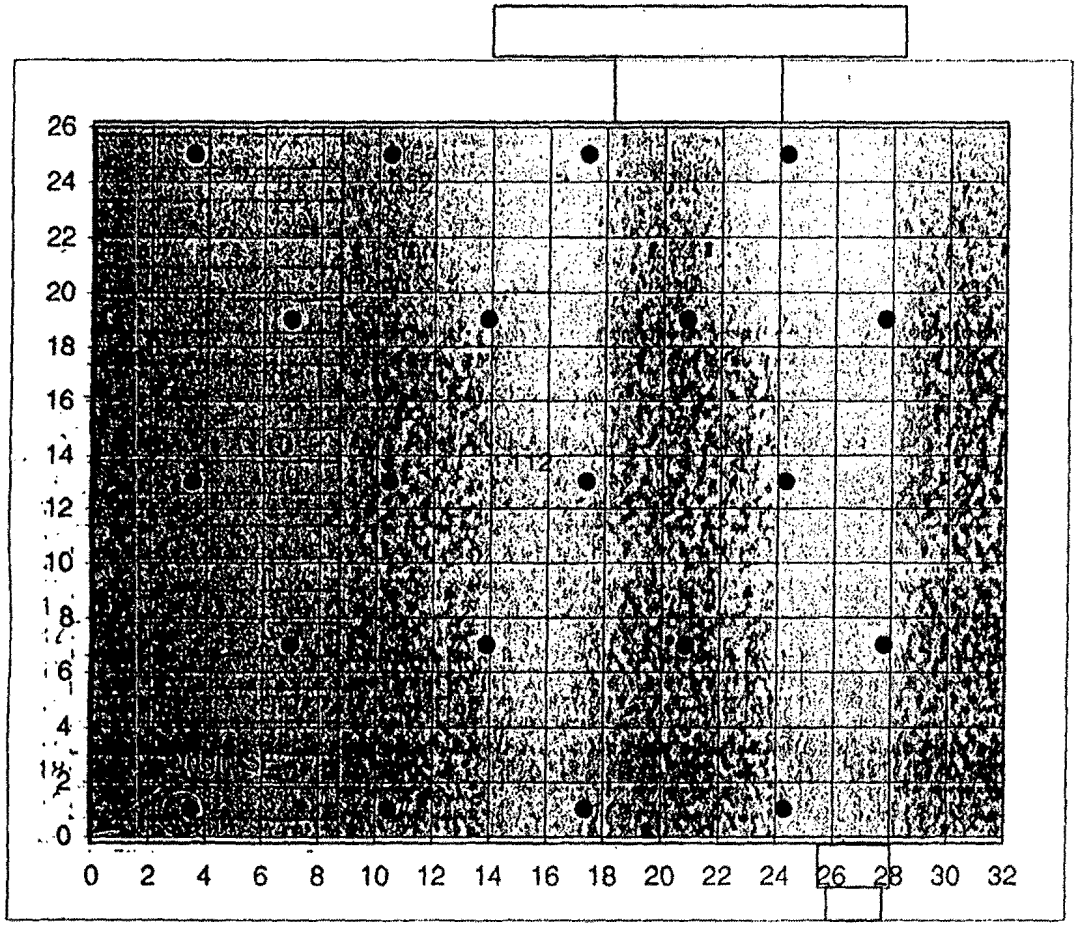
SPF 50-01
Attachment 3



	Room 111	
	SU 7 Coordinates	
	X	Y
	25	26
1	1	1
2	7.1	1
3	13.3	1
4	19.4	1
5	4.1	6.3
6	10.2	6.3
7	16.3	6.3
8	22.4	6.3
9	1.0	11.6
10	7.1	11.6
11	13.3	11.6
12	19.4	11.6
13	10.2	16.9
14	16.3	16.9
15	22.4	16.9
16	13.3	22.2
17	19.4	22.2

Area	L	L'
650	6.1ft	5.3ft
Start	X	Y
Rand X:Y	1.0	1.0

G22 of 50

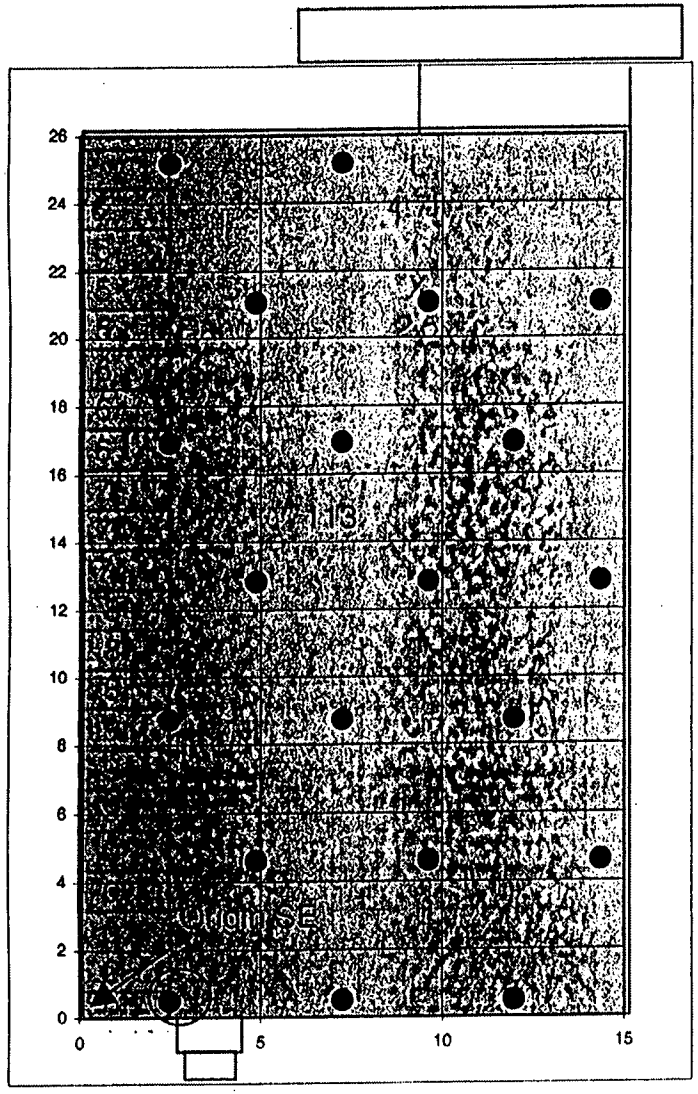


	Room 112	
	SU 8 Coordinates	
	X	Y
	32	26
1	3.5	1
2	10.4	1
3	17.4	1
4	24.3	1
5	7.0	7.0
6	13.9	7.0
7	20.8	7.0
N 8	27.8	7.0
9	3.5	13.0
10	10.4	13.0
11	17.4	13.0
12	24.3	13.0
13	7.0	19.0
14	13.9	19.0
15	20.8	19.0
16	27.8	19.0
17	3.5	25.0
18	10.4	25.0
19	17.4	25.0
20	24.3	25.0

Area	L	L'
832	6.9ft	6.ft
Start	X	Y
Rand X:Y	3.5	1.0

Page 50

SPF 50-01
Attachment 3

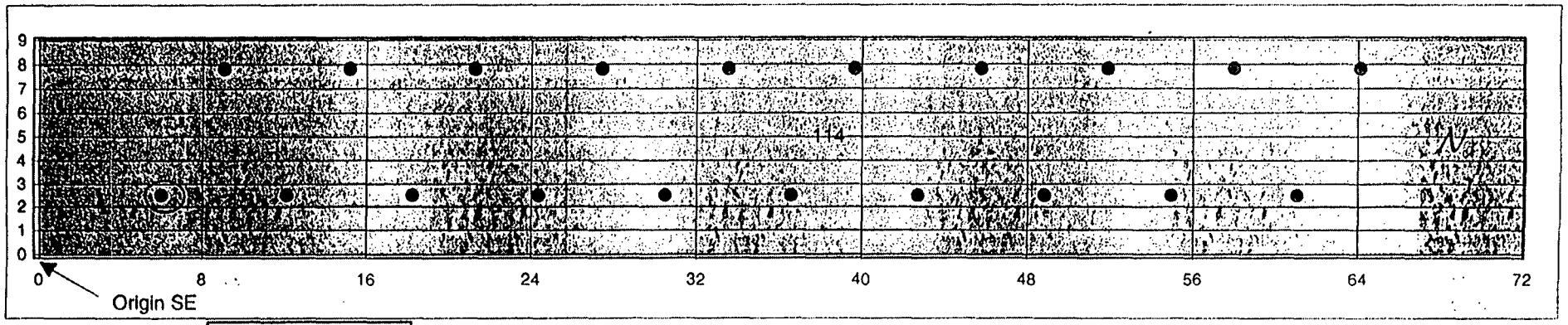


N

	Room 113	
	SU 9 Coordinates	
	X	Y
	15	26
1	2.5	0.5
2	7.2	0.5
3	12.0	0.5
4	4.9	4.6
5	9.6	4.6
6	14.4	4.6
7	2.5	8.7
8	7.2	8.7
9	12.0	8.7
10	4.9	12.8
11	9.6	12.8
12	14.4	12.8
13	2.5	16.9
14	7.2	16.9
15	12.0	16.9
16	4.9	21.0
17	9.6	21.0
18	14.4	21.0
19	2.5	25.2
20	7.2	25.2

Area	L	L'
390	4.7ft	4.1ft
Start	X	Y
Rand X:Y	2.5	0.5

G-24d 50



	Room 114	
	SU 10 Coordinates	
	X	Y
	72	9
1	6.0	2.5
2	12.1	2.5
3	18.2	2.5
4	24.3	2.5
5	30.5	2.5
6	36.6	2.5
7	42.7	2.5
8	48.8	2.5
9	54.9	2.5
10	61.0	2.5
11	9.1	7.8
12	15.2	7.8
13	21.3	7.8
14	27.4	7.8
15	33.5	7.8
16	39.6	7.8
17	45.8	7.8
18	51.9	7.8
19	58.0	7.8
20	64.1	7.8

	A	L	L'
	648	6.116649	5.297018
Start			
RandX:Y		6.0	2.5

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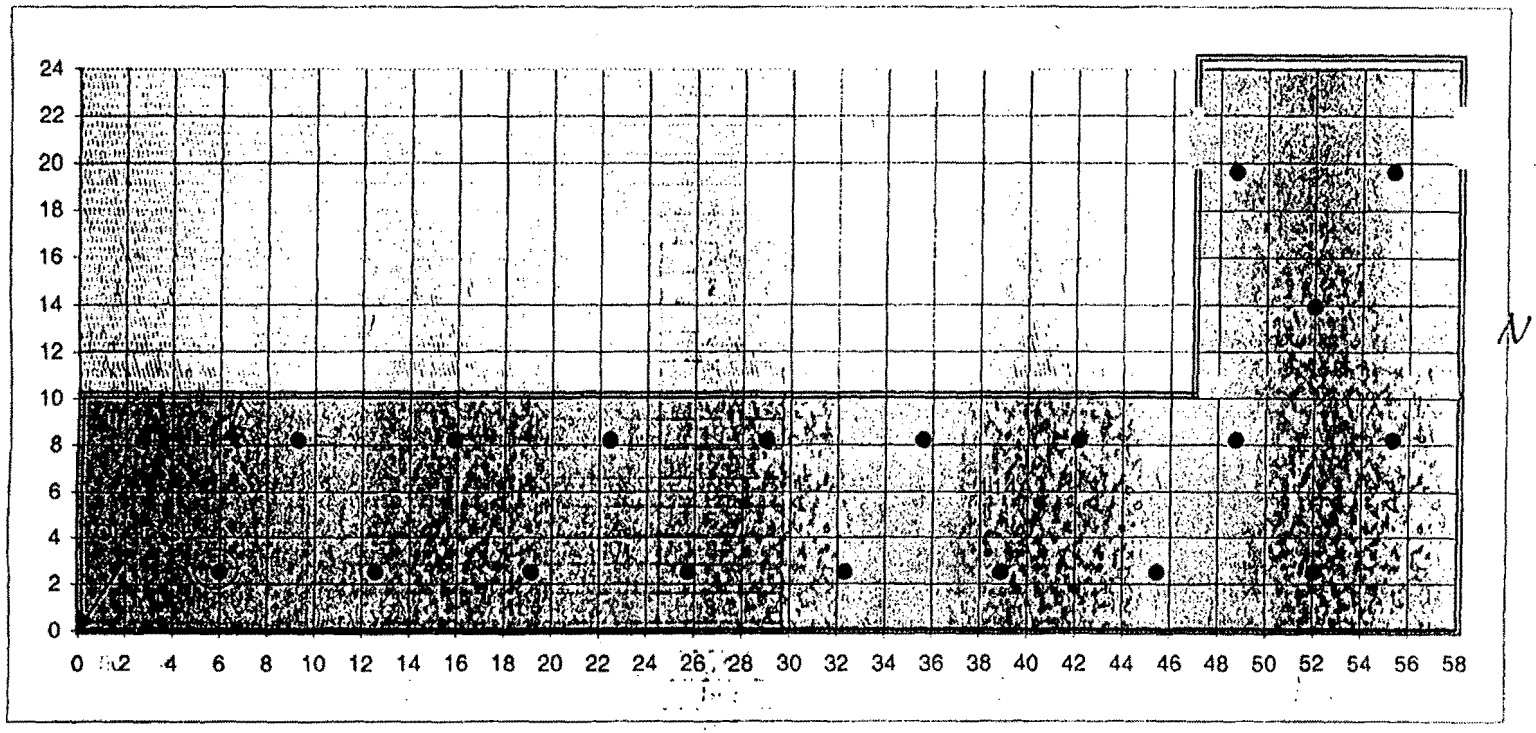
SPF 50-01
Attachment 3

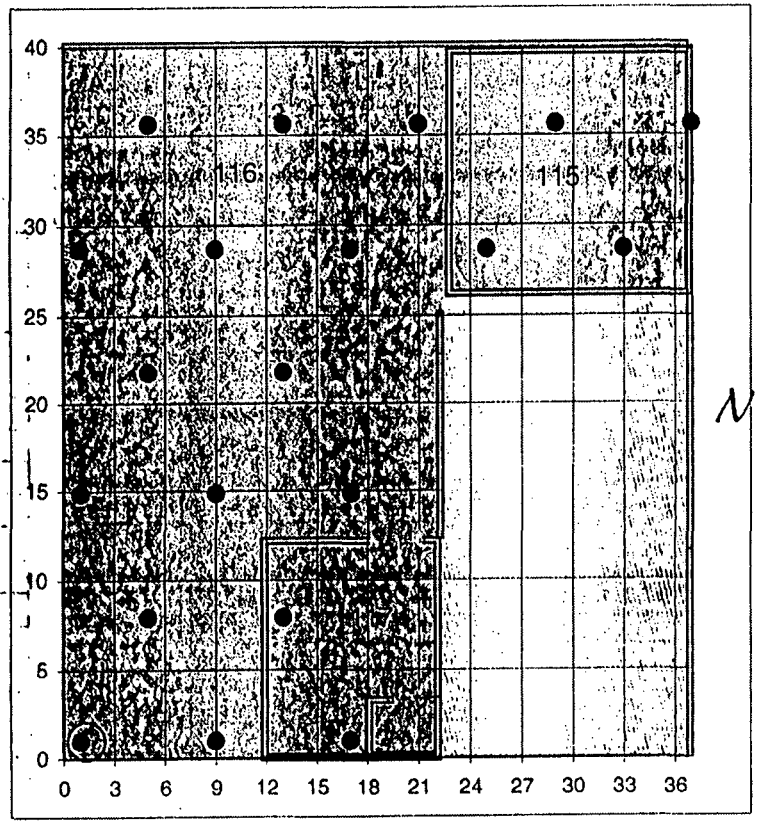


	Room 114A	
	SU 10 Coordinates	
	X	Y
	58	10
1	6.0	2.5
2	12.6	2.5
3	19.2	2.5
4	25.7	2.5
5	32.3	2.5
6	38.9	2.5
7	45.5	2.5
8	52.0	2.5
9	52.0	13.9
10	55.3	19.6
11	9.3	8.2
12	15.9	8.2
13	22.4	8.2
14	29.0	8.2
15	35.6	8.2
16	42.2	8.2
17	48.7	8.2
18	55.3	8.2
19	48.7	19.6
20	2.7	8.2

A	L	L'
749	6.576078	5.694884

Start		
Rand X:Y	5.9	2.5

G2667 50

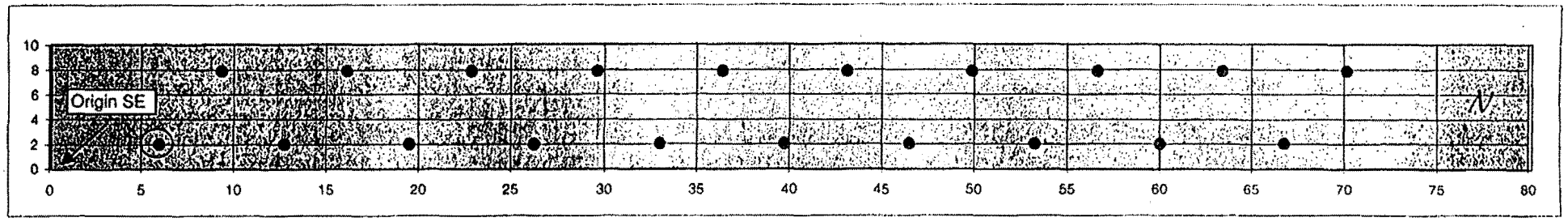


	SU 12 Coordinates	
	X	Y
	37	40
1	1.0	1.0
2	9.0	1.0
3	17.0	1.0
4	5.0	7.9
5	13.0	7.9
6	25.0	28.7
7	1.0	14.8
8	9.0	14.8
9	17.0	14.8
10	5.0	21.8
11	13.0	21.8
12	1.0	28.7
13	9.0	28.7
14	17.0	28.7
15	5.0	35.6
16	13.0	35.6
17	21.0	35.6
18	33.0	28.7
19	29.0	35.6
20	36.9	35.6

A	L	L'
1105	7.987432	6.917116
Start	X	Y
Rand X:Y	1	1

G276 50

SPF 50-01
Attachment 3

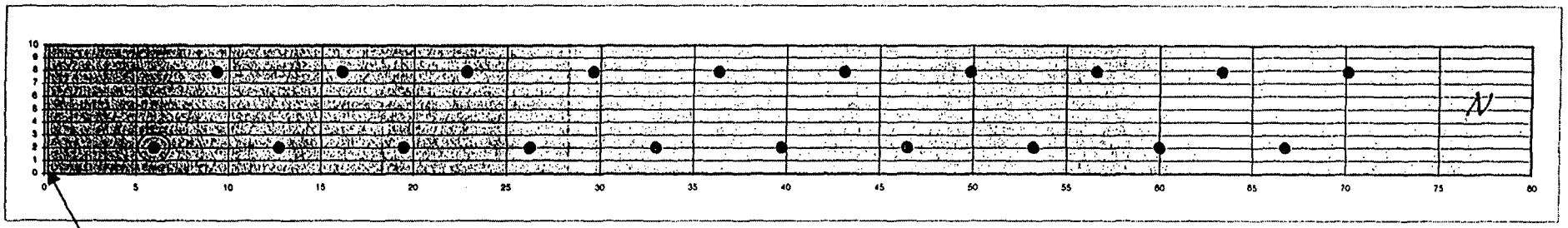


	Room 118 South	
	SU 13 Coordinates	
	X	Y
	79.0	10.0
1	6.0	2.0
2	12.8	2.0
3	19.5	2.0
4	26.3	2.0
5	33.0	2.0
6	39.8	2.0
7	46.5	2.0
8	53.3	2.0
9	60.0	2.0
10	66.8	2.0
11	9.4	7.8
12	16.1	7.8
13	22.9	7.8
14	29.6	7.8
15	36.4	7.8
16	43.1	7.8
17	49.9	7.8
18	56.7	7.8
19	63.4	7.8
20	70.2	7.8

A	L	L'
790	6.753666	5.848675

Start	X	Y
Rand X:Y	6	2

G280 50



Origin SE
Begin @ 79'
from SU 13
Origin

Room 118 North		
SU 15 Coordinates		
	X	Y
	79.0	10.0
1	6.0	2.0
2	12.8	2.0
3	19.5	2.0
4	26.3	2.0
5	33.0	2.0
6	39.8	2.0
7	46.5	2.0
8	53.3	2.0
9	60.0	2.0
10	66.8	2.0
11	9.4	7.8
12	16.1	7.8
13	22.9	7.8
14	29.6	7.8
15	36.4	7.8
16	43.1	7.8
17	49.9	7.8
18	56.7	7.8
19	63.4	7.8
20	70.2	7.8

A	L	L'
790	6.75	5.85

Start	X	Y
Rand X:Y	6	2

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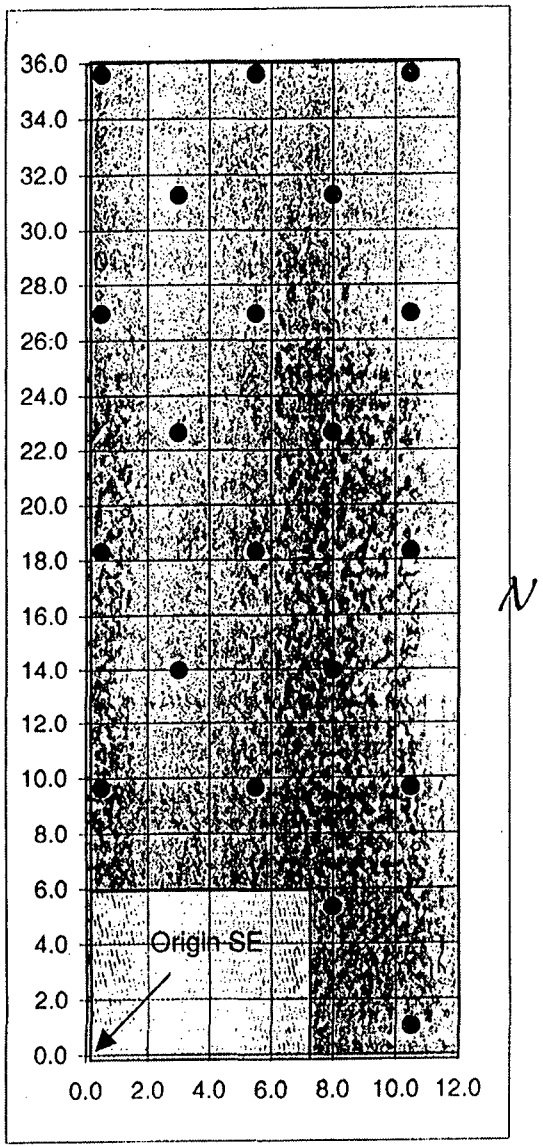
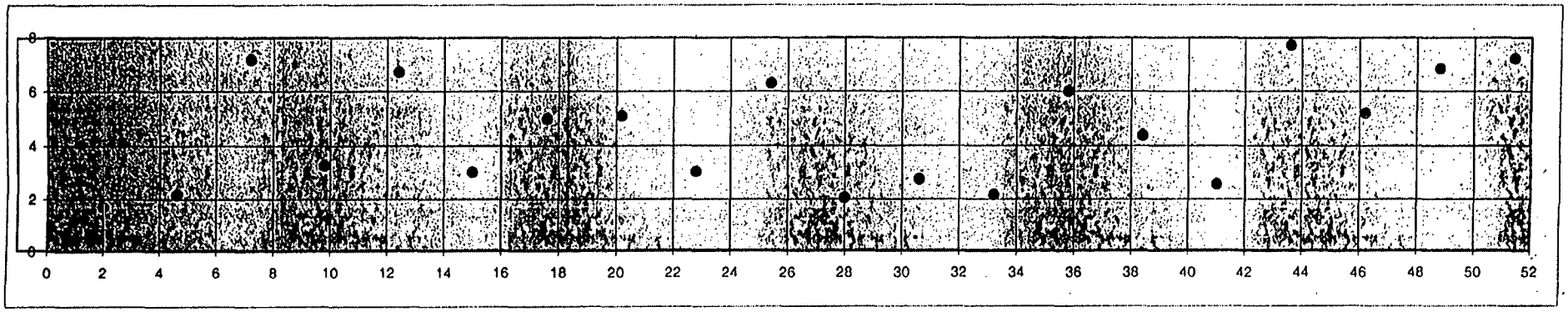
SPF 50-01
Attachment 3



	Room 129	
	SU 15 Coordinates	
	X"	Y'
	24	12
1	5.5	35.6
2	10.5	1.0
3	8.0	5.3
4	10.5	27.0
5	0.5	9.6
6	5.5	9.6
7	10.5	9.6
8	3.0	14.0
9	8.0	14.0
10	3.0	31.3
11	0.5	18.3
12	5.5	18.3
13	10.5	18.3
14	3.0	22.6
15	8.0	22.6
16	8.0	31.3
17	0.5	26.9
18	5.5	26.9
19	0.5	35.6
20	10.5	35.6

	A	L	L'
	288	4.077766	3.531345
Start		X	Y
Rand X:Y		0.493022	1.024102

G3064 50

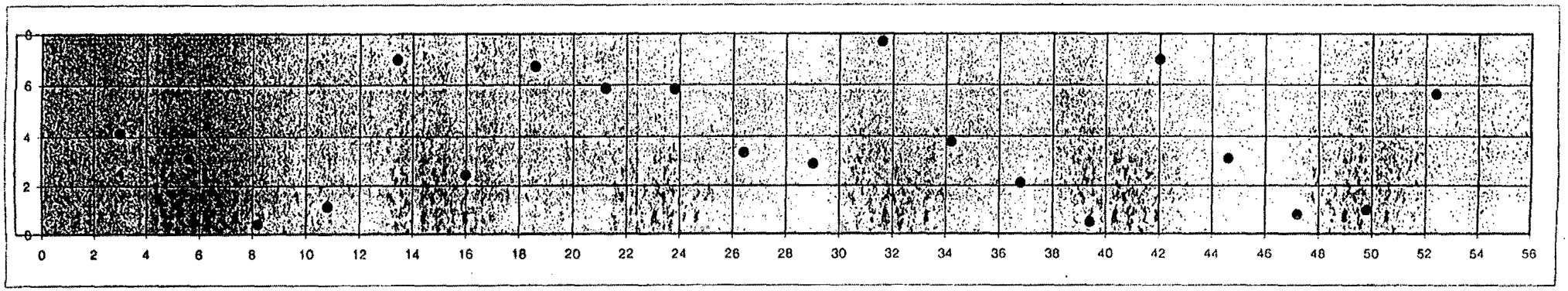


L = 52ft
W = 8ft

	Room 107 Walls SU 16 Coordinates	
	X	Y
1	2	1.69931
2	4.6	2.155126
3	7.2	7.185579
4	9.8	3.262094
5	12.4	6.717983
6	15	3.002879
7	17.6	4.966846
8	20.2	5.089638
9	22.8	3.024193
10	25.4	6.294303
11	28	2.041446
12	30.6	2.729708
13	33.2	2.149303
14	35.8	5.992329
15	38.4	4.352394
16	41	2.549435
17	43.6	7.693257
18	46.2	5.172299
19	48.8	6.835712
20	51.4	7.219632

G3/96 50

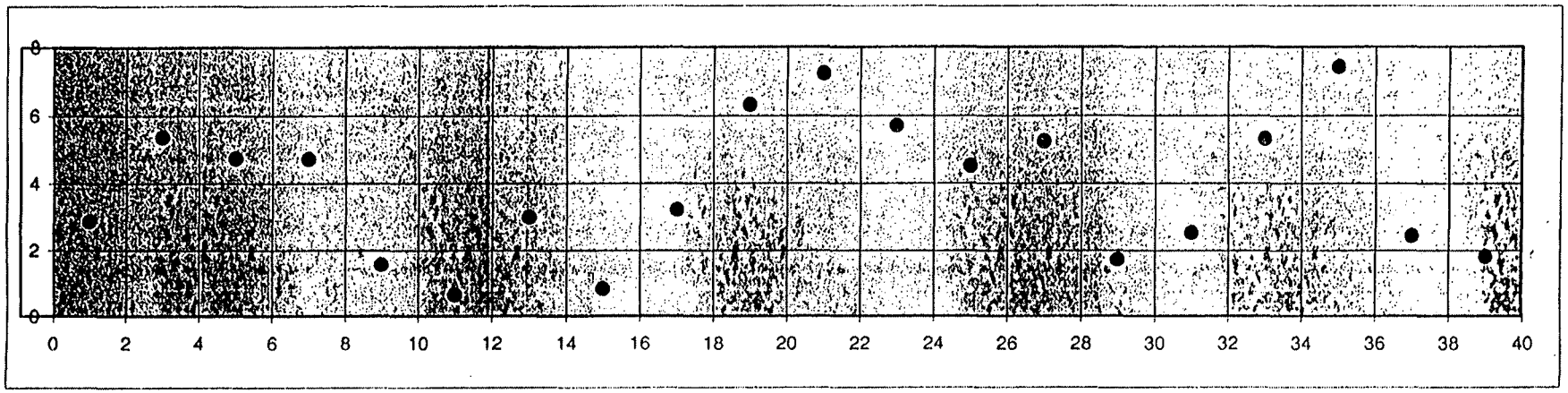
SPF 50-01
Attachment 3



L = 56ft
W = 8ft

Room 108 Walls

	SU 17 Coordinates	
	X'	Y'
1	3	4.117021
2	5.6	3.105054
3	8.2	0.424338
4	10.8	1.11407
5	13.4	6.972074
6	16	2.426333
7	18.6	6.708497
8	21.2	5.841781
9	23.8	5.823608
10	26.4	3.343162
11	29	2.883412
12	31.6	7.68171
13	34.2	3.760147
14	36.8	2.092536
15	39.4	0.490916
16	42	6.977845
17	44.6	3.106718
18	47.2	0.770519
19	49.8	0.95346
20	52.4	5.621671



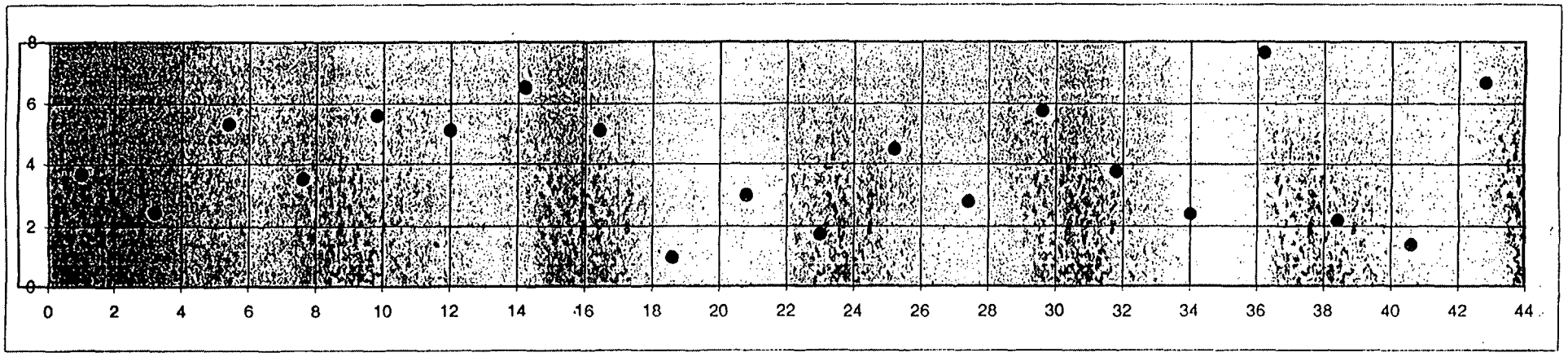
L = 40ft
W = 8ft

Room 109 Walls
SU 18 Coordinates

	X	Y
1	1	2.858534
2	3	5.35455
3	5	4.728135
4	7	4.70745
5	9	1.554112
6	11	0.620027
7	13	2.980461
8	15	0.801702
9	17	3.209105
10	19	6.311937
11	21	7.228184
12	23	5.688505
13	25	4.497662
14	27	5.226354
15	29	1.717221
16	31	2.521495
17	33	5.29373
18	35	7.416835
19	37	2.424205
20	39	1.811747

G336 80

SPF 50-01
Attachment 3



L = 44ft
W = 8ft

Room 110 Walls
SU 19 Coordinates

	X	Y
1	1	3.690085
2	3.2	2.452257
3	5.4	5.310441
4	7.6	3.528346
5	9.8	5.581042
6	12	5.102211
7	14.2	6.501518
8	16.4	5.095943
9	18.6	0.951566
10	20.8	3.018841
11	23	1.72801
12	25.2	4.472164
13	27.4	2.809904
14	29.6	5.75441
15	31.8	3.747145
16	34	2.403619
17	36.2	7.635119
18	38.4	2.191192
19	40.6	1.384479
20	42.8	6.656145

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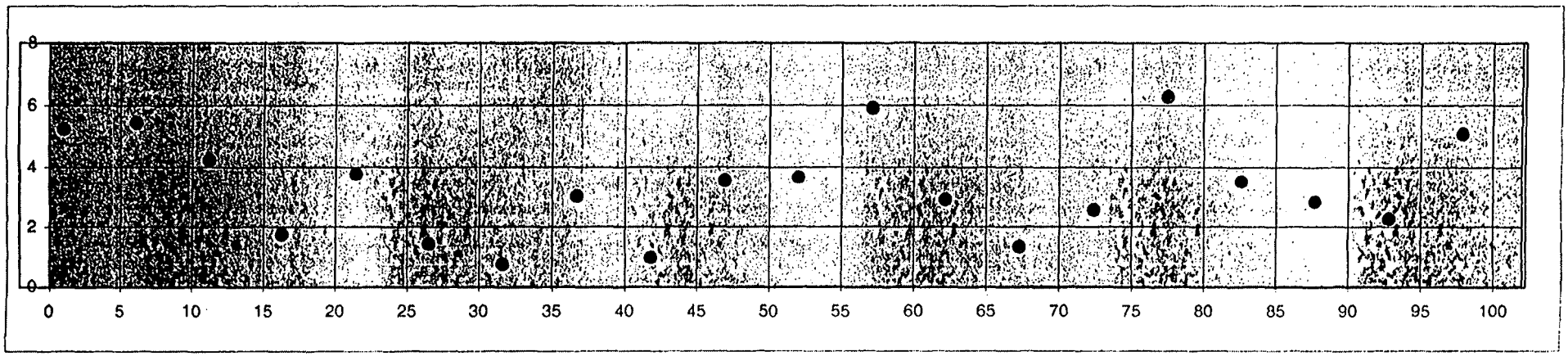


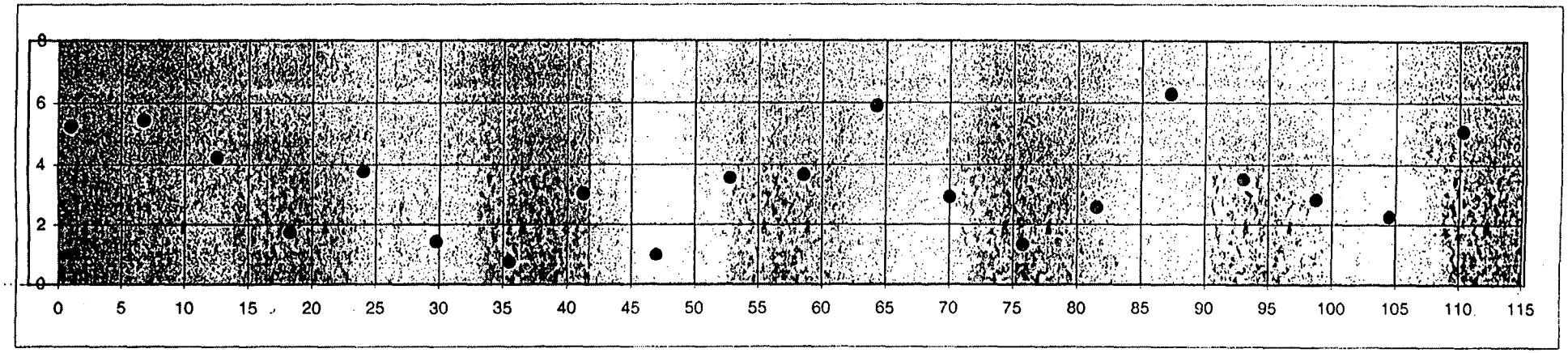
L = 102ft
W = 8ft

Room 111 Walls
SU 20 Coordinates

	X	Y
1	1	5.239323
2	6.1	5.433514
3	11.2	4.227681
4	16.3	1.745858
5	21.4	3.757635
6	26.5	1.421347
7	31.6	0.734887
8	36.7	3.016319
9	41.8	0.963023
10	46.9	3.53711
11	52	3.647307
12	57.1	5.896061
13	62.2	2.906387
14	67.3	1.322153
15	72.4	2.556621
16	77.5	6.266756
17	82.6	3.502813
18	87.7	2.815249
19	92.8	2.254291
20	97.9	5.078459

G35d 50

SPF 50-01
Attachment 3

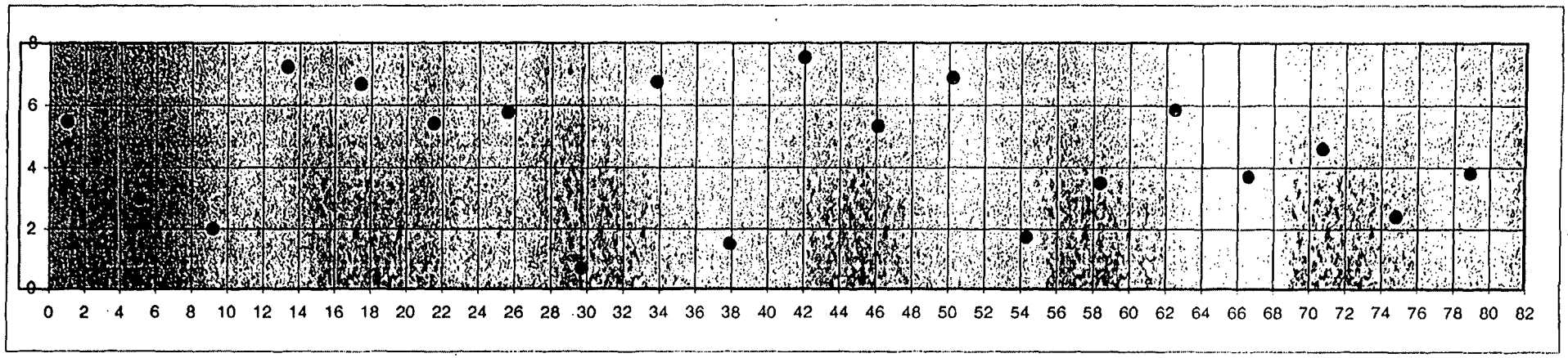


L = 115ft
W = 8ft

Room 112 Walls
SU 21 Coordinates

	X	Y
1	1	5.239323
2	6.75	5.433514
3	12.5	4.227681
4	18.25	1.745858
5	24	3.757635
6	29.75	1.421347
7	35.5	0.734887
8	41.25	3.016319
9	47	0.963023
10	52.75	3.53711
11	58.5	3.647307
12	64.25	5.896061
13	70	2.906387
14	75.75	1.322153
15	81.5	2.556621
16	87.25	6.266756
17	93	3.502813
18	98.75	2.815249
19	104.5	2.254291
20	110.25	5.078459

G36 of 50



L = 82ft
W = 8ft

	Room 113 Walls	
	SU 22 Coordinates	
	X	Y
1	1	5.475032
2	5.1	2.991988
3	9.2	2.002805
4	13.3	7.242134
5	17.4	6.684016
6	21.5	5.410863
7	25.6	5.773646
8	29.7	0.669286
9	33.8	6.745527
10	37.9	1.507569
11	42	7.521395
12	46.1	5.314854
13	50.2	6.875068
14	54.3	1.729538
15	58.4	3.487644
16	62.5	5.844009
17	66.6	3.699308
18	70.7	4.590236
19	74.8	2.401601
20	78.9	3.809366

G37d 50

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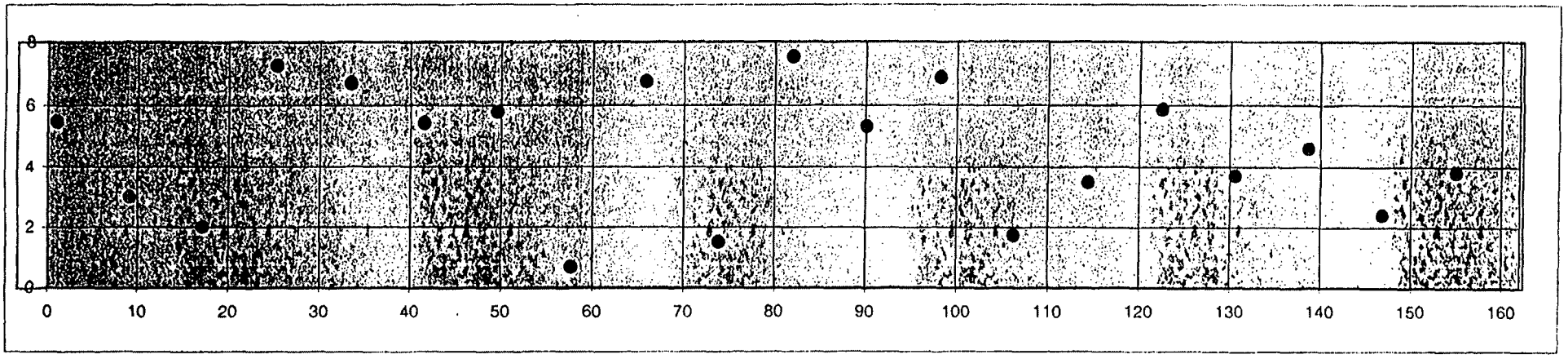
Attachment 3



L = 162ft
W = 8ft

	Room 114 Walls	
	SU 23 Coordinates	
	X	Y
1	1	5.475032
2	9.1	2.991988
3	17.2	2.002805
4	25.3	7.242134
5	33.4	6.684016
6	41.5	5.410863
7	49.6	5.773646
8	57.7	0.669286
9	65.8	6.745527
10	73.9	1.507569
11	82	7.521395
12	90.1	5.314854
13	98.2	6.875068
14	106.3	1.729538
15	114.4	3.487644
16	122.5	5.844009
17	130.6	3.699308
18	138.7	4.590236
19	146.8	2.401601
20	154.9	3.809366

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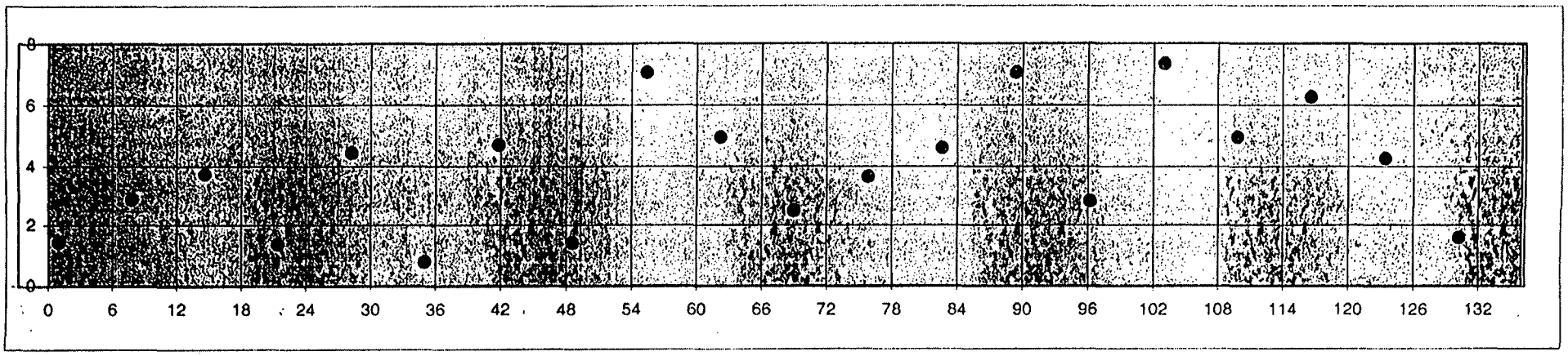

L = 136ft
W = 8ft

Room 114A Walls
SU 24 Coordinates

	X	Y
1	1	1.424168
2	7.8	2.844724
3	14.6	3.723416
4	21.4	1.357371
5	28.2	4.434484
6	35	0.755422
7	41.8	4.689513
8	48.6	1.40244
9	55.4	7.054603
10	62.2	4.949474
11	69	2.474082
12	75.8	3.650433
13	82.6	4.594784
14	89.4	7.060086
15	96.2	2.798662
16	103	7.347853
17	109.8	4.952304
18	116.6	6.263575
19	123.4	4.258618
20	130.2	1.58026

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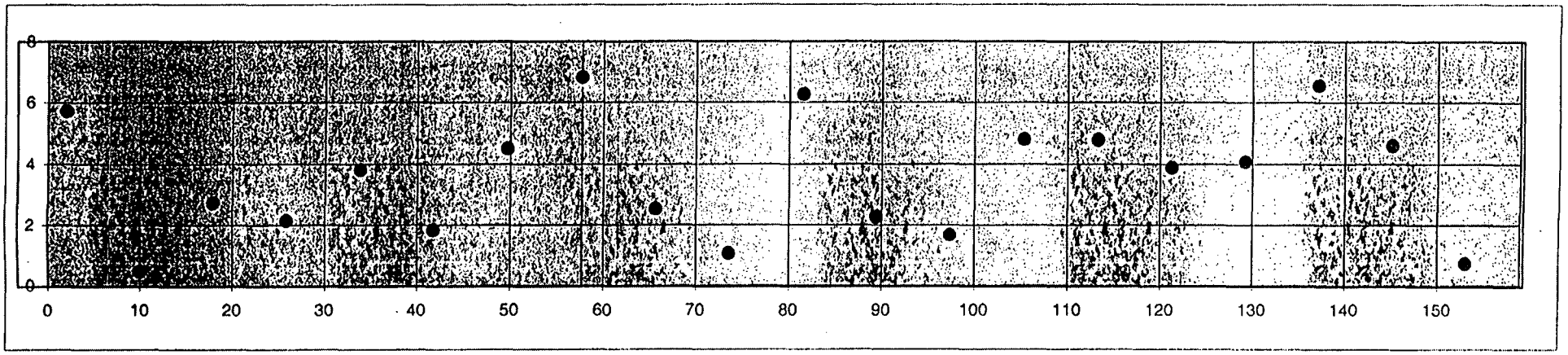
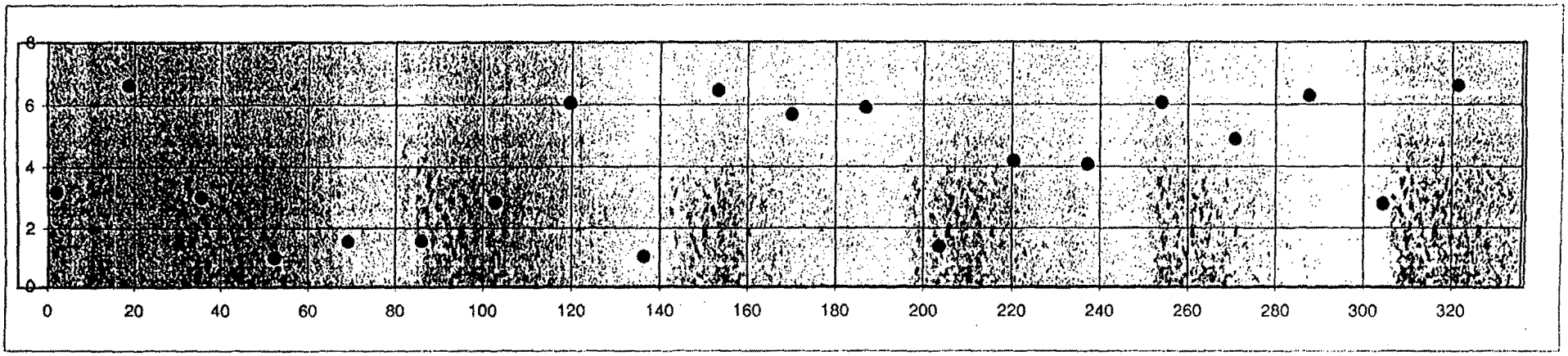
SPF 50-01
Attachment 3



L = 159ft
W = 8ft

oom 115, 116, 117 Wa
SU 25 Coordinates

	X	Y
1	2	5.705794
2	9.95	0.461973
3	17.9	2.725634
4	25.85	2.146636
5	33.8	3.802478
6	41.75	1.82902
7	49.7	4.494565
8	57.65	6.809168
9	65.6	2.525949
10	73.55	1.03987
11	81.5	6.250337
12	89.45	2.253943
13	97.4	1.664505
14	105.35	4.794938
15	113.3	4.776926
16	121.25	3.876832
17	129.2	4.060366
18	137.15	6.549527
19	145.1	4.593323
20	153.05	0.712353



L = 336ft
W = 8ft

Room 118 Walls
SU 25 Coordinates

	X	Y
1	2	3.181144
2	18.8	6.615347
3	35.6	3.011433
4	52.4	0.969334
5	69.2	1.524064
6	86	1.525827
7	102.8	2.839259
8	119.6	6.050637
9	136.4	0.99753
10	153.2	6.43641
11	170	5.673984
12	186.8	5.888571
13	203.6	1.34757
14	220.4	4.17171
15	237.2	4.051356
16	254	6.056734
17	270.8	4.870847
18	287.6	6.278086
19	304.4	2.777406
20	321.2	6.598258

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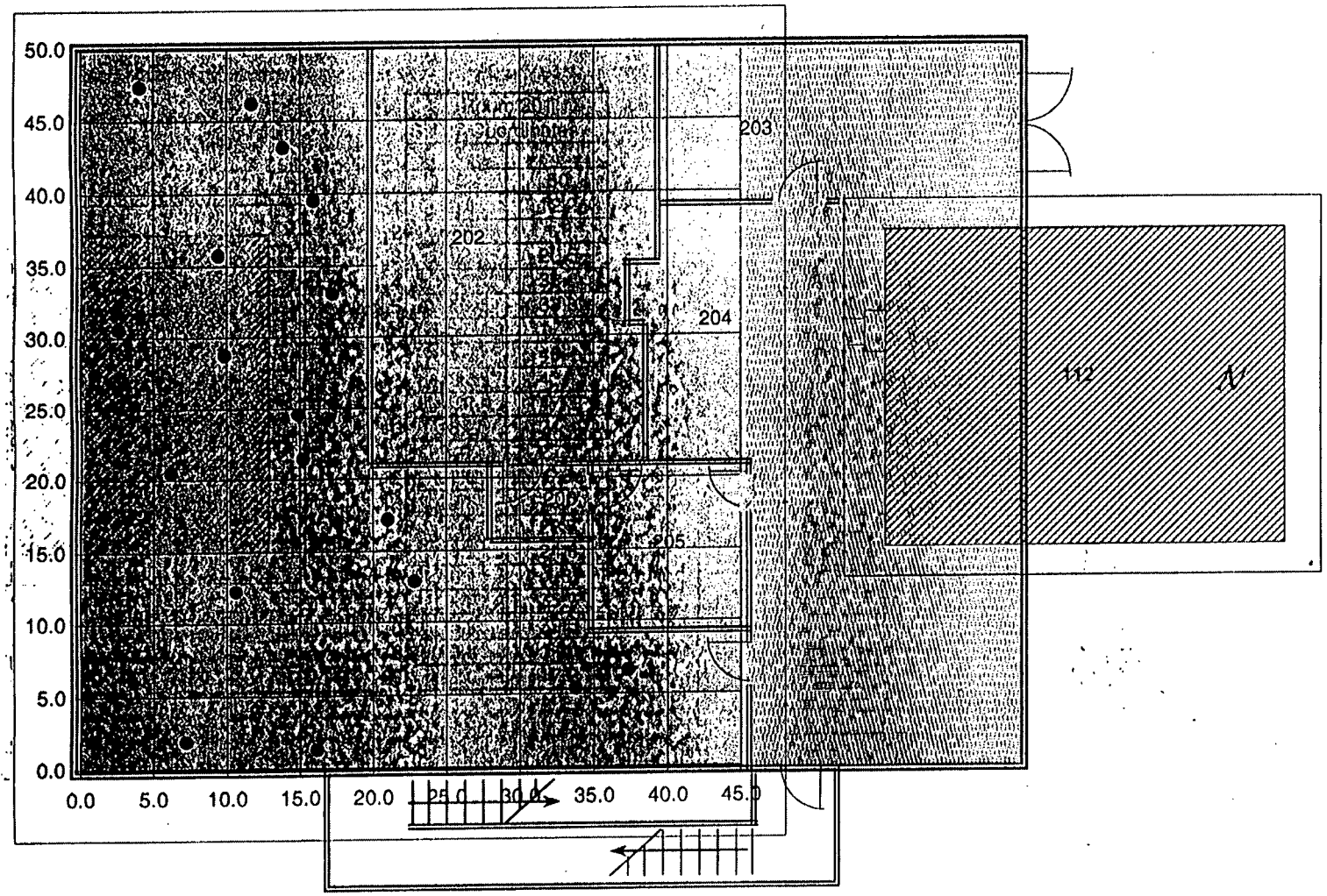
Attachment 3



	Room 201	
	SU 27 Coordinates	
	X	Y
	45	50
1	10.6	12.2
2	7.2	1.9
3	6.2	20.5
4	17.2	33.0
5	2.6	30.5
6	1.7	17.5
7	11.7	46.2
8	13.8	43.1
9	4.1	47.3
10	15.2	21.4
11	1.0	27.5
12	37.3	6.6
13	22.8	12.9
14	9.9	28.7
15	14.9	24.6
16	16.1	1.3
17	9.4	35.7
18	15.9	39.5
19	33.8	5.4
20	21.0	17.2

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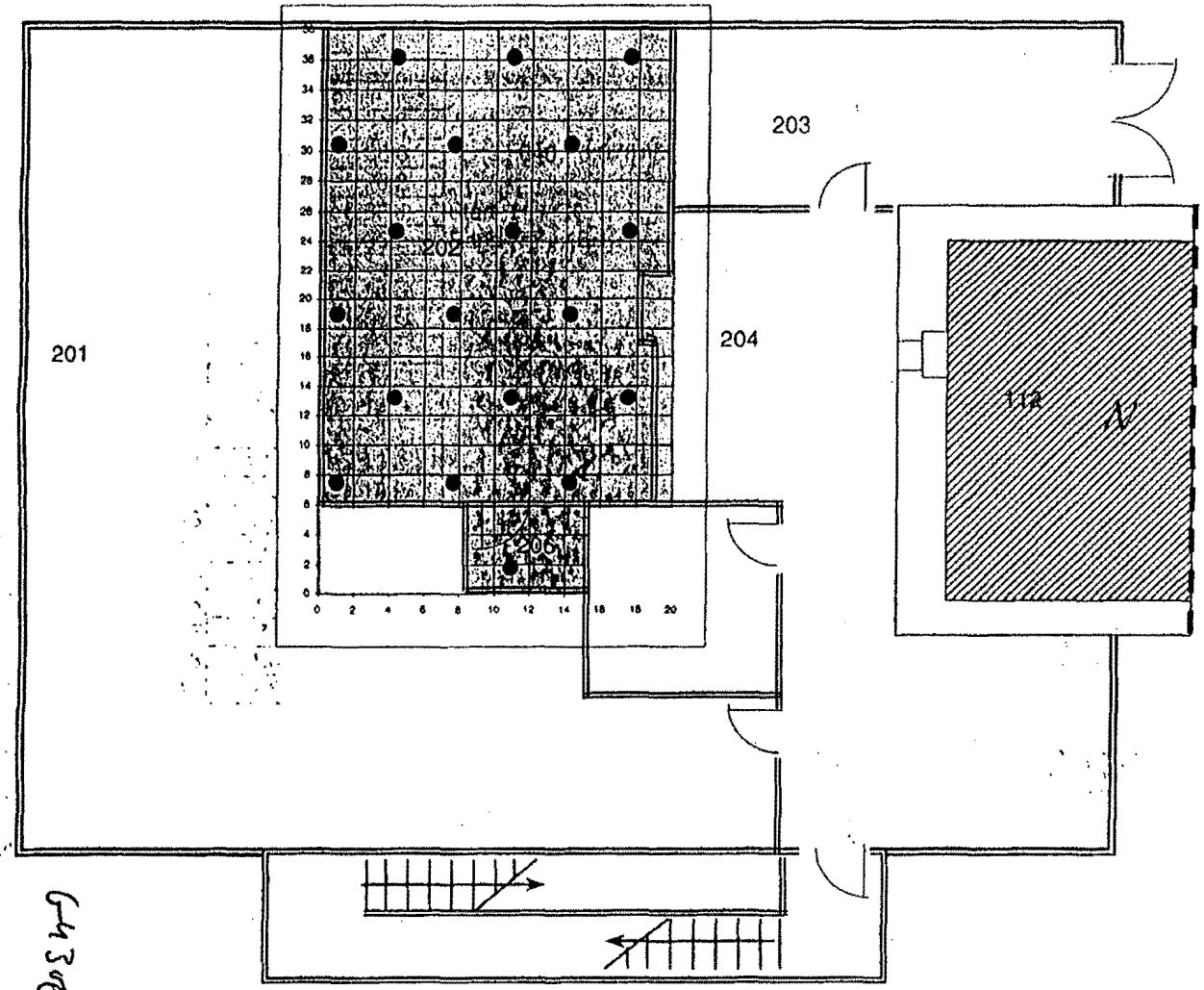
Attachment 3



	Room 202/206	
	SU 28 Coordinates	
	X	Y
	20.0	38.0
1	4.3	36.2
2	14.2	30.4
3	10.9	36.2
4	10.9	1.7
5	17.6	36.2
6	1.0	7.5
7	7.6	7.5
8	14.2	7.5
9	4.3	13.2
10	10.9	13.2
11	17.6	13.2
12	1.0	18.9
13	7.6	18.9
14	14.2	18.9
15	4.3	24.7
16	10.9	24.7
17	17.6	24.7
18	1.0	30.4
19	7.6	30.4

A	L	L'
640	6.078775	5.264219
Start	X	Y
Rand X:Y	5.121217	6.577915

G4306 50

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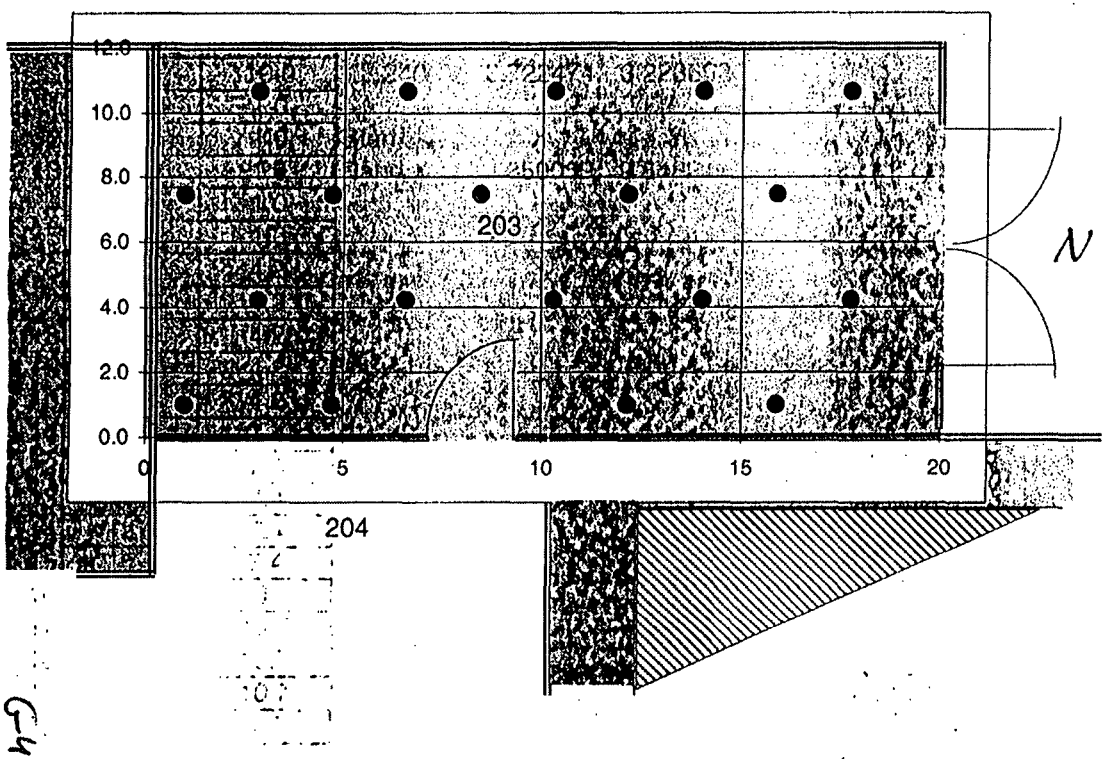
Attachment 3



	Room 203				
	SU 29 Coordinates				
	X	Y	A	L	L'
	24.0	10.0	240	3.722474	3.223663
1	1.0	1.0			
2	4.7	1.0	Start	X	Y
3	8.4	1.0	Rand X:Y	3.350059	9.848211
4	12.2	1.0			
5	15.9	1.0			
6	2.9	4.2			
7	6.6	4.2			
8	10.3	4.2			
9	14.0	4.2			
10	17.8	4.2			
11	1.0	7.4			
12	4.7	7.4			
13	8.4	7.4			
14	12.2	7.4			
15	15.9	7.4			
16	2.9	10.7			
17	6.6	10.7			
18	10.3	10.7			
19	14.0	10.7			
20	17.8	10.7			

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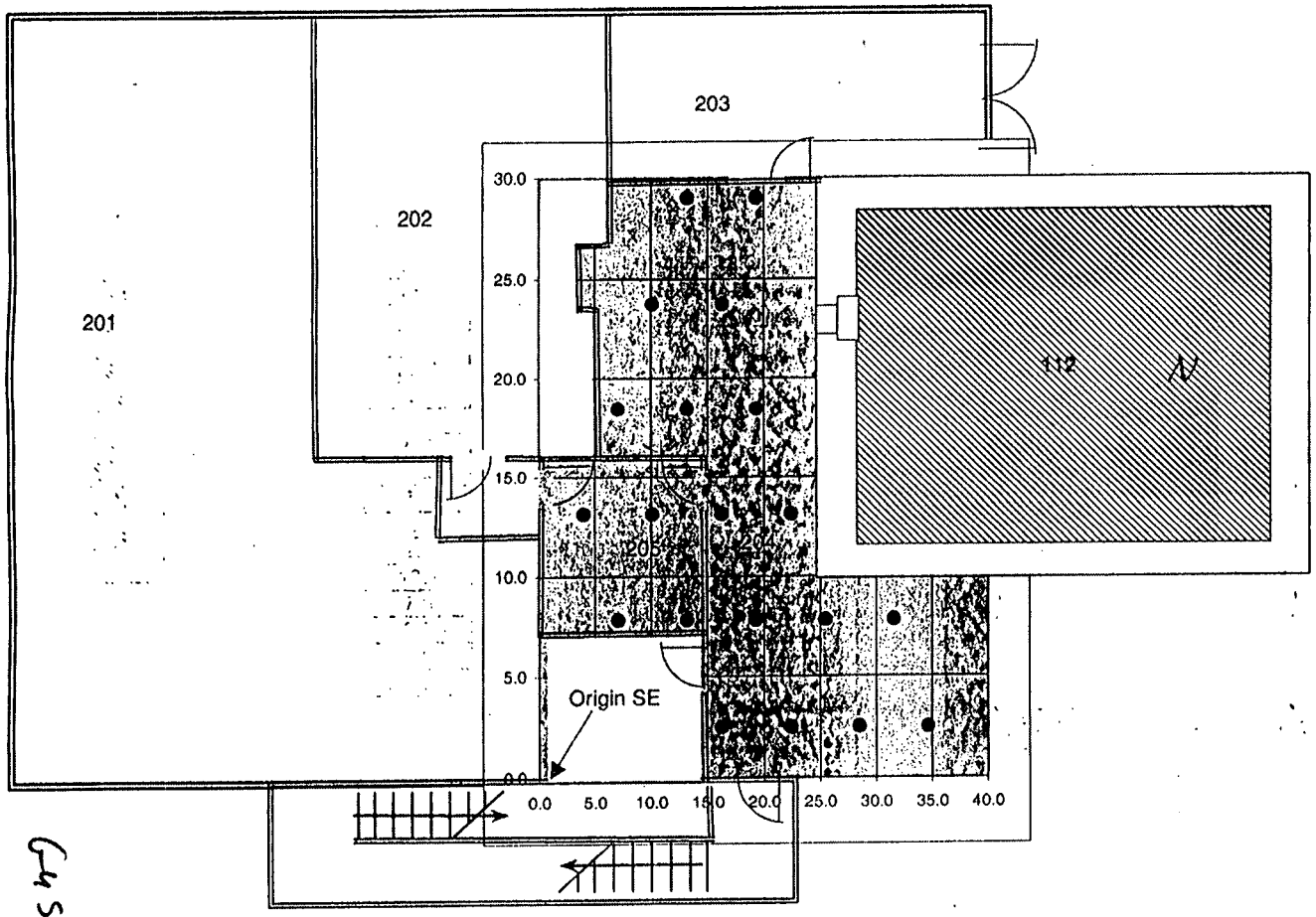

	Room 204	
	SU 30 Coordinates	
	X	Y
	21	31
1	4.0	13.1
2	7.1	7.8
3	7.1	18.4
4	10.1	23.7
5	10.1	13.1
6	13.2	7.8
7	13.2	18.4
8	13.2	29.0
9	16.3	2.5
10	16.3	13.1
11	16.3	23.7
12	19.3	29.0
13	19.3	7.8
14	19.3	18.4
15	22.4	2.5
16	22.4	13.1
17	25.4	7.8
18	28.5	2.5
19	31.6	7.8
20	34.6	2.5

A	L	L'
650	6.126081	5.305186
Start	X	Y
Rand X:Y	4.0	2.5

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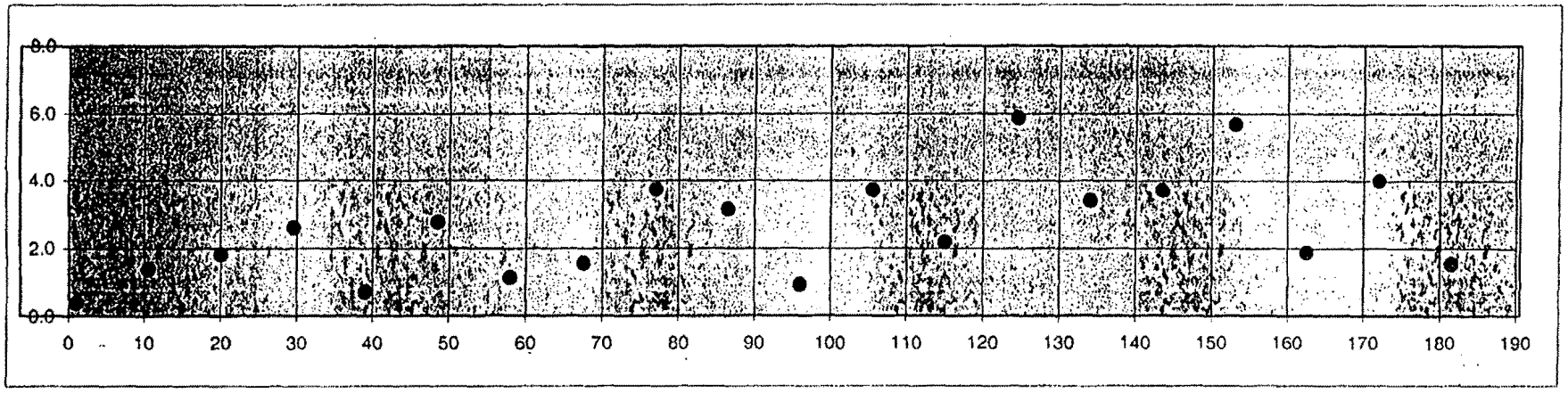
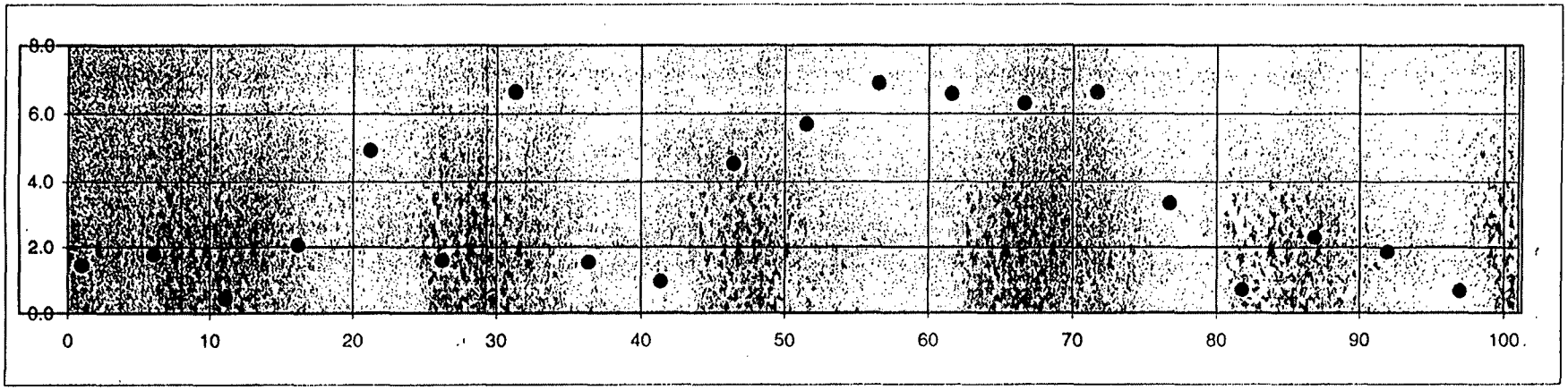
Attachment 3



L = 190ft
W = 8ft

	Room 201 Walls	
	SU 31 Coordinates	
	X	Y
1	1	0.4
2	10.5	1.4
3	20	1.8
4	29.5	2.6
5	39	0.7
6	48.5	2.8
7	58	1.1
8	67.5	1.6
9	77	3.7
10	86.5	3.1
11	96	0.9
12	105.5	3.7
13	115	2.2
14	124.5	5.9
15	134	3.4
16	143.5	3.7
17	153	5.7
18	162.5	1.9
19	172	4.0
20	181.5	1.5



L = 101ft
W = 8ft

	Room 202 Walls SU 32 Coordinates	
	X	Y
1	1	1.4
2	6.05	1.8
3	11.1	0.4
4	16.15	2.1
5	21.2	4.9
6	26.25	1.6
7	31.3	6.6
8	36.35	1.5
9	41.4	0.9
10	46.45	4.5
11	51.5	5.7
12	56.55	6.9
13	61.6	6.6
14	66.65	6.3
15	71.7	6.6
16	76.75	3.4
17	81.8	0.7
18	86.85	2.3
19	91.9	1.8
20	96.95	0.6

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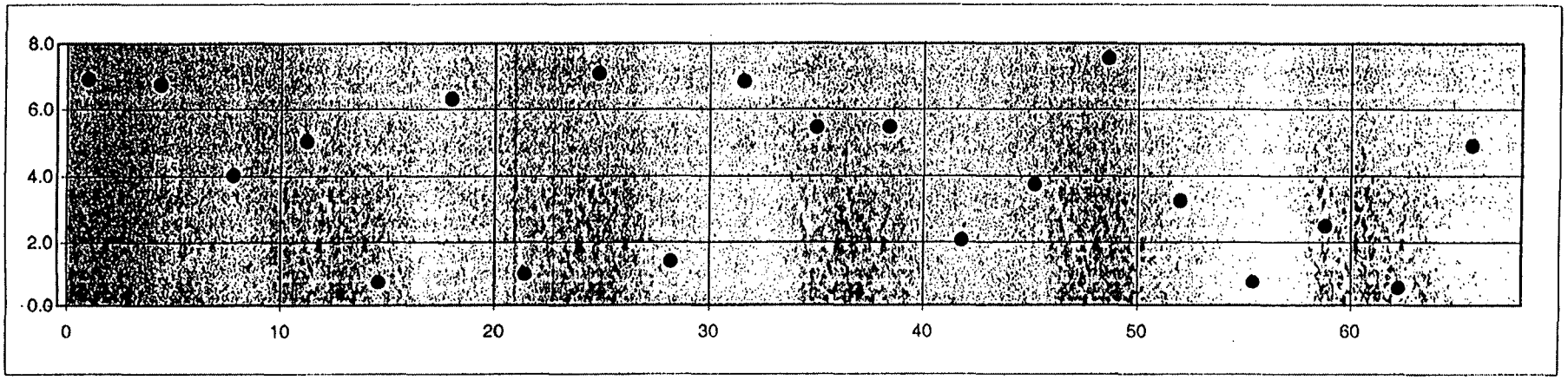
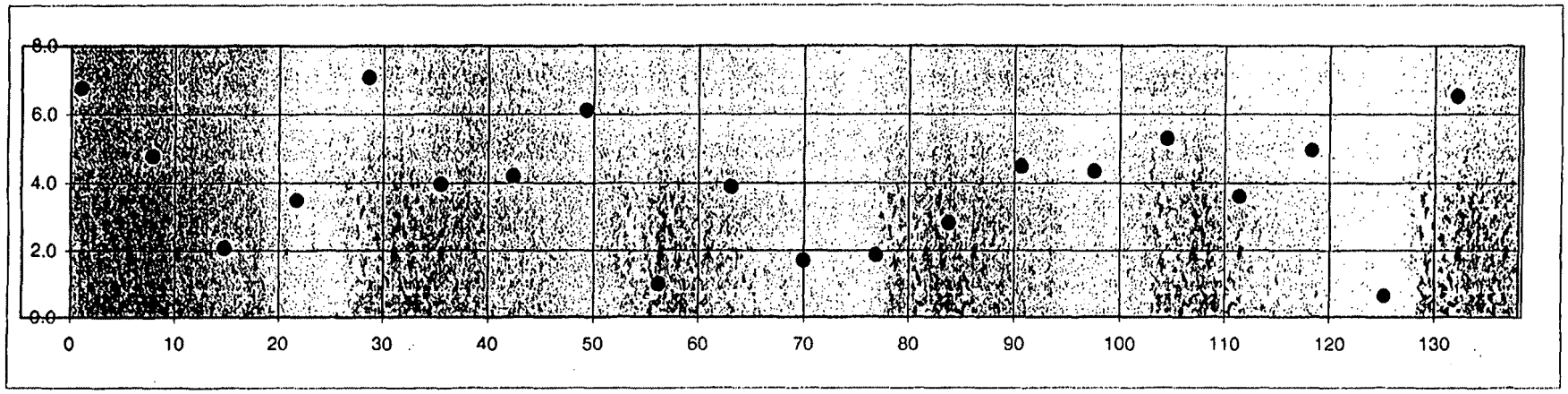
Attachment 3



L = 68ft
W = 8ft

	Room 203 Walls SU 33 Coordinates	
	X	Y
1	1	6.9
2	4.4	6.7
3	7.8	4.0
4	11.2	5.0
5	14.6	0.7
6	18	6.3
7	21.4	1.0
8	24.8	7.1
9	28.2	1.4
10	31.6	6.8
11	35	5.4
12	38.4	5.5
13	41.8	2.1
14	45.2	3.7
15	48.6	7.5
16	52	3.3
17	55.4	0.7
18	58.8	2.5
19	62.2	0.6
20	65.6	4.9



L = 138ft
W = 8ft

	Room 204 Walls	
	SU 34 Coordinates	
	X	Y
1	1	6.8
2	7.9	4.8
3	14.8	2.1
4	21.7	3.5
5	28.6	7.1
6	35.5	4.0
7	42.4	4.2
8	49.3	6.1
9	56.2	1.0
10	63.1	3.9
11	70	1.7
12	76.9	1.9
13	83.8	2.8
14	90.7	4.5
15	97.6	4.3
16	104.5	5.3
17	111.4	3.6
18	118.3	5.0
19	125.2	0.7
20	132.1	6.5

Graph 50

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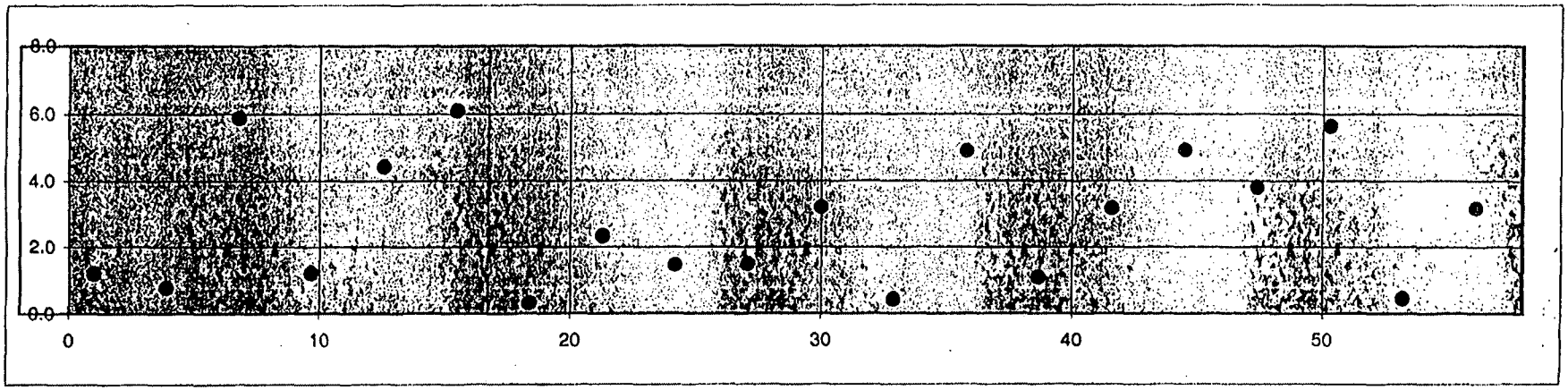
Attachment 3



L = 58ft
W = 8ft

	Room 205/206 Walls SU 35 Coordinates	
	X	Y
1	1	1.2
2	3.9	0.8
3	6.8	5.9
4	9.7	1.2
5	12.6	4.4
6	15.5	6.1
7	18.4	0.3
8	21.3	2.3
9	24.2	1.4
10	27.1	1.5
11	30	3.2
12	32.9	0.4
13	35.8	4.9
14	38.7	1.1
15	41.6	3.2
16	44.5	4.9
17	47.4	3.8
18	50.3	5.6
19	53.2	0.4
20	56.1	3.2

Appendix H

Radon Information

Radon level is not applicable for open air demolitions.

Appendix I

Asbestos Information

From: Christopher Ahlquist
To: Darnell, Val; Kramer, Donald
Date: 10/13/03 5:48PM
Subject: Building 50

Don/Val -

For Building 50 asbestos and lead paint concerns, the following is provided for your use:

Asbestos

Previous asbestos surveys for Building 50 were completed in 1989 and 1993. These surveys were intended to identify all reasonably accessible asbestos-containing materials within the building for the purposes of identifying damaged material and managing asbestos in place. Asbestos pipe insulation, transite cement pipes, tank insulation, and floor tiles were previously identified.

During September of 2003, Mr. Christopher Ahlquist, an Industrial Hygienist with CH2M Hill Mound, Inc., performed a comprehensive walk-through survey of all areas of Building 50 in order to identify all asbestos-containing materials prior to demolition of the facility. Mr. Ahlquist is an Ohio Department of Health Certified Asbestos Hazard Evaluation Specialist as required by State regulations for individuals assessing asbestos-containing materials. 420 linear feet of pipe insulation and 20 square feet of associated debris, 15 square feet of transite cement board table top, 22 fire rated doors, 19 application points of fire-stop putty, 460 square feet of sheet vinyl flooring, 95 linear feet of transite cement pipe, and 30 square feet of tank insulation were identified as requiring removal prior to demolition. These materials will be removed by a licensed asbestos hazard abatement contractor under contract to CH2M Hill Mound in accordance with NESHAP requirements prior to commencement of demolition activities.

The asphalt roofing is assumed to contain asbestos, but as a Nonfriable Category I material in accordance with NESHAP it will remain in place during demolition and be disposed of as construction waste. One variety of floor tile within the building was found to be asbestos-containing, but it is also classified as a Category I Nonfriable and need not be removed.

Lead

Previous lead surveys or sampling data for Buildings 50 indicated that selective tested surfaces of process equipment contained lead paint. Lead bricks (approximately 10) were noted and the Mound Waste Management Project will be contacted for proper safe disposition of these items prior to demolition. Since the building is scheduled for imminent demolition, painted surfaces will be tested for lead content as planned work indicates the need for such testing in order to avoid worker exposure to lead.

Although untested paint coatings must be assumed to contain lead, the observed condition of the untested paint indicates that there are currently no lead paint hazards within the buildings. No further action would be necessary to protect worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings will be tested to verify the absence of lead. Since the building is scheduled for demolition, these restrictions have been incorporated into work plans for which disturbance of paint is a possibility.

In accordance with guidance from Mound Waste Management, paint coatings should not result in a hazardous waste issue during the course of normal demolition by heavy-duty means.

These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

Let me know if I can be of further assistance,

Chris Ahlquist

Date: September 26, 2003

From: Christopher Ahlquist
BOSS Project Team, Safety & Health

To: Steve Davis
BOSS Project Team, Engineering

Re: Building 50: Asbestos-Containing Materials

During September of 2003, Mr. Christopher Ahlquist, an Industrial Hygienist with CH2M Hill Mound, Inc. (CH2M), completed a survey of Building 50 at the Mound site in Miamisburg, Ohio for purpose of identifying asbestos-containing materials contained therein. Mr. Ahlquist is an Ohio Department of Health Certified Asbestos Hazard Evaluation Specialist as required by Ohio Department of Health regulations. During the course of the survey, Mr. Ahlquist reviewed previous survey reports and sampling data and collected additional bulk samples of materials found within Building 50 as necessary in order to determine the asbestos content of said materials. A room-by-room inspection of all accessible spaces was then conducted in order to prepare an inventory of the location and approximate quantities of identified asbestos-containing materials. Eight (8) distinct types of materials were found to contain greater than one percent (>1%) asbestos content which defines a material as asbestos-containing by EPA and OSHA regulations. Additionally, fire rated doors were assumed to contain asbestos. No asphalt roofing materials were sampled during the course of this survey, and all such materials should be assumed to contain asbestos until analysis indicates otherwise.

Sample Method

During CH2M's survey bulk samples were collected utilizing sampling methods and protocol specified in the EPA's Asbestos Hazard Emergency Response Act (AHERA). Each sample was collected and placed in a clean, sealable hard-shell container and labeled with a unique sample identification number. Pertinent information was recorded on a Bulk Sample Data Sheet including sample identification number, date of inspection, name of inspector, building name, a brief description and location of the sample, and the type of material sampled (e.g., preformed-block pipe insulation, aircell-paper pipe insulation, etc.).

Analysis of Samples

The samples were submitted to DataChem Laboratories of Cincinnati, Ohio and analyzed for asbestos content by PLM and dispersion staining (Method Reference: 40 CFR Part 763, Volume 47, No. 103, May 27, 1982 pg. 23376). This analytical method, which the EPA currently recommends for the determination of asbestos in bulk samples of suspect materials, can be used for qualitative identification of six morphologically different types

of asbestos fibers: chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite asbestos. The method specifies that the asbestos content in a bulk sample shall be estimated and reported as a finite percentage (rounded to the nearest percentage) within the range of 0 to 100. The result of the bulk sample analysis is reported in a standard written laboratory report. This report includes the client name, the project number, the laboratory identification number, the sample number assigned to the bulk sample upon receipt at the laboratory, and the field number assigned to the bulk sample upon collection at the site. If the bulk sample contains more than one distinct layer of material, each layer is analyzed separately. The composition of the bulk sample is reported in percentages of asbestos (i.e., cellulose, fiberglass, or other) components. The results of the sample analyses can be found on the laboratory reports.

The analyzing laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is the agency sponsored by the National Institute of Standards and Technology providing EPA accreditation of laboratories analyzing bulk samples for asbestos content.

Conclusions

The locations of asbestos-containing materials identified, material descriptions, quantities, and other pertinent information can be found on *Table: Inventory of Asbestos-Containing Materials* attached with this report. Nine (9) different materials (each represented by a unique assigned homogeneous area number) were identified through analysis or assumption to be asbestos-containing (>1%) per EPA and OSHA definition. Since the building is scheduled for demolition, the EPA regulates activities related to asbestos-containing materials identified within or on the structure. The EPA will have to be notified in writing on the proper forms and all asbestos-containing materials (with the possible exception of Category I nonfriable roofing) removed before demolition can occur. Removal activities must be accomplished by properly trained individuals employing appropriate work methods and engineering controls.

Please call with any questions or concerns.

Respectfully,

Christopher Ahlquist
Industrial Hygienist

TABLE: INVENTORY OF ASBESTOS-CONTAINING MATERIALS
BUILDING 50
SEPTEMBER 26, 2003

Location of ACM	Material Description	Homo-geneous Area No.	Type ACM	Material Quantity (approx.)
Room 127, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	2 ftgs
Room 127, table	Transite panel table top, gray	3	Misc.	15 sf
Room 127 Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	10 ftgs*
Room 127 Pipe Chase, floor	Pipe insulation debris	1	TSI	10 sf*
Room 129, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	27 ftgs
Room 129, doors	Fire-rated door lining	4	Misc.	2 count
Room 129 Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	25 ftgs*
Room 129 Pipe Chase, floor	Pipe insulation debris	1	TSI	5 sf*
Room 125 Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	10 ftgs*
Room 125 Pipe Chase, floor	Pipe insulation debris	1	TSI	5 sf*
Corridor 118, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	70 ftgs
Corridor 118, pipe	No drip tape	2	TSI	40 lf**
Corridor 118, doors	Fire-rated door lining	4	Misc.	3 count
Corridor 118, wall penetrations	Fire stop putty, taupe	5	Misc.	5 count
Room 122 Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	2 ftgs*
Room 120, pipe	No drip tape	2	TSI	5 lf
Room 120, loose material	Fire stop putty, taupe	5	Misc.	1 count
Room 119, pipe	No drip tape	2	TSI	2 lf
Room 119, doors	Fire-rated door lining	4	Misc.	2 count

TABLE: INVENTORY OF ASBESTOS-CONTAINING MATERIALS
BUILDING 50
SEPTEMBER 26, 2003

Location of ACM	Material Description	Homo-geneous Area No.	Type ACM	Material Quantity (approx.)
East Stairwell, doors	Fire-rated door lining	4	Misc.	2 count
Room 117, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	2 ftgs
Room 117, pipe	No drip tape	2	TSI	4 lf
Room 117 Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	6 ftgs*
Room 116, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	20 ftgs
Room 116, pipe	No drip tape	2	TSI	5 lf
Room 116, floor	Vinyl flooring, brown	6	Misc.	290 sf
Room 115, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	7 ftgs
Room 115, floor	Vinyl flooring, brown	6	Misc.	12 sf
Corridor 114, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	25 ftgs
Corridor 114, doors	Fire-rated door lining	4	Misc.	4 count
Corridor 114, pipe	Transite pipe, 8" diameter	7	Misc.	55 lf
Room 113, pipe	No drip tape	2	TSI	7 lf
Room 112, pipe fitting	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	1 ftg
Room 112, pipe	No drip tape	2	TSI	10 lf
Room 112, pipe ends	Fire stop putty, taupe	5	Misc.	2 count
Room 111, pipe	No drip tape	2	TSI	12 lf
Room 111, penetrations	Fire stop putty, taupe	5	Misc.	9 count
Corridor 114A, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	30 ftgs

TABLE: INVENTORY OF ASBESTOS-CONTAINING MATERIALS
BUILDING 50
SEPTEMBER 26, 2003

Location of ACM	Material Description	Homo-geneous Area No.	Type ACM	Material Quantity (approx.)
Corridor 114A, pipe	Transite pipe, 8" diameter	7	Misc.	40 lf
Room 108, pipe	No drip tape	2	TSI	12 lf
Room 108, floor	Vinyl flooring, brown	6	Misc.	160 sf
Room 107, penetrations	Fire stop putty, taupe	5	Misc.	2 count
Room 106, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	23 ftgs
Room 106, pipe	No drip tape	2	TSI	10 lf
Room 106, tank	Tank insulation	8	TSI	30 sf
Room 105 East Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	3 ftgs*
Room 105 West Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	11 ftgs*
Room 103, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	3 ftgs
Room 101, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	5 ftgs
Outdoors on Ground, doors	Fire-rated door lining	4	Misc.	4 count
Penthouse Room 201, pipe fitting	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	1 ftg
Penthouse Room 201, doors	Fire-rated door lining	4	Misc.	2 count
Penthouse Room 201, loose stock	Flange gaskets, grey	9	Misc.	1 pile
Penthouse Room 202, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	17 ftgs
Penthouse Room 202, pipe	"Danger: Asbestos" stickers	—	—	5 count
Penthouse Room 203, doors	Fire-rated door lining	4	Misc.	2 count
Penthouse Room 204, door	Fire-rated door lining	4	Misc.	1 count

 5706

TABLE: INVENTORY OF ASBESTOS-CONTAINING MATERIALS
BUILDING 50
SEPTEMBER 26, 2003

Location of ACM	Material Description	Homo-geneous Area No.	Type ACM	Material Quantity (approx.)
Penthouse Room 205, pipe fitting	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	1 ftg
Penthouse Room 205 Pipe Chase, pipe fittings	Cementitious fitting insulation between sections of fiberglass pipe insulation	1	TSI	9 ftgs***

Notes:

TSI = Thermal Systems Insulation
Misc. = Miscellaneous Material
lf = Linear feet
sf = Square feet
ftg = Fitting

*Material not currently accessible to remove - access must be made by contractor.
**Some of this material may be concealed beneath rubber, tape, or fiberglass.
***This space was inaccessible at time of inspection - contractor must access space and verify.

Appendix J

Lead Information

From: Christopher Ahlquist
To: Darnell, Val; Kramer, Donald
Date: 10/13/03 5:48PM
Subject: Building 50

Don/Val -

For Building 50 asbestos and lead paint concerns, the following is provided for your use:

Asbestos

Previous asbestos surveys for Building 50 were completed in 1989 and 1993. These surveys were intended to identify all reasonably accessible asbestos-containing materials within the building for the purposes of identifying damaged material and managing asbestos in place. Asbestos pipe insulation, transite cement pipes, tank insulation, and floor tiles were previously identified.

During September of 2003, Mr. Christopher Ahlquist, an Industrial Hygienist with CH2M Hill Mound, Inc., performed a comprehensive walk-through survey of all areas of Building 50 in order to identify all asbestos-containing materials prior to demolition of the facility. Mr. Ahlquist is an Ohio Department of Health Certified Asbestos Hazard Evaluation Specialist as required by State regulations for individuals assessing asbestos-containing materials. 420 linear feet of pipe insulation and 20 square feet of associated debris, 15 square feet of transite cement board table top, 22 fire rated doors, 19 application points of fire-stop putty, 460 square feet of sheet vinyl flooring, 95 linear feet of transite cement pipe, and 30 square feet of tank insulation were identified as requiring removal prior to demolition. These materials will be removed by a licensed asbestos hazard abatement contractor under contract to CH2M Hill Mound in accordance with NESHAP requirements prior to commencement of demolition activities.

The asphalt roofing is assumed to contain asbestos, but as a Nonfriable Category I material in accordance with NESHAP it will remain in place during demolition and be disposed of as construction waste. One variety of floor tile within the building was found to be asbestos-containing, but it is also classified as a Category I Nonfriable and need not be removed.

Lead

Previous lead surveys or sampling data for Buildings 50 indicated that selective tested surfaces of process equipment contained lead paint. Lead bricks (approximately 10) were noted and the Mound Waste Management Project will be contacted for proper safe disposition of these items prior to demolition. Since the building is scheduled for imminent demolition, painted surfaces will be tested for lead content as planned work indicates the need for such testing in order to avoid worker exposure to lead.

Although untested paint coatings must be assumed to contain lead, the observed condition of the untested paint indicates that there are currently no lead paint hazards within the buildings. No further action would be necessary to protect worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings will be tested to verify the absence of lead. Since the building is scheduled for demolition, these restrictions have been incorporated into work plans for which disturbance of paint is a possibility.

In accordance with guidance from Mound Waste Management, paint coatings should not result in a hazardous waste issue during the course of normal demolition by heavy-duty means.

These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

Let me know if I can be of further assistance,

Chris Ahlquist

Appendix K

Chemical Information

A list of chemicals known to have been in Building 50 is provided.

Applicable pages of CY2001 Emergency and Hazardous Chemical Inventory Report (dated March 2002) are also provided.

Chemicals and Products Previously Used or Stored in Building 50

15-50W motor oil
3 in 1 Oil
704 Diff. Oil
901 A. Hardner
960 Hardner
Above Floor Finish
acetone
acetylene gas
AIR COM OIL
Ajax cleaner
alcohol
Ancocide 4020
Ancocide 4070
Ancool 3310
argon
argon (UHP)
argon ultra pure
argon, liquid
argon/helium
argon/hydrogen
argon/nitrogen
argon/oxygen
butane fuel
Calibrating gas
CHEM GLAZE
Chem Glaze Wash Primer
chlorodifluoromethane
COMPRES OIL
Compressed Air
Contact adhesive
Cove base adhesive
Degreaser
Dessiate
dichlorodifluoromethane
Dowtherm SR-1, Coolant
Duo Seal Pump Oil
Durapot 801
Duropot 801 Act
EDTA Disodium
EPLO LUX SOLVENT
ethanol
ethyl alcohol
Floor cleaner
Freon Genetron 22
Glass cleaner
Grease (Apiezon) H
Grease (Apiezon) L
HE 200 VAC OIL
helium
helium (UHP)
helium/nitrogen
Iron Stone Acrylic Seal
Ivory soap
laquer thinner
Liquid Wrench
Liquid Wrench, perchlorethylene
Lube oil
Lubricant sealant
Magic Cutting Fluid
Met-All Alum. Polish
mineral spirits
NABC
nitrogen
nitrogen, liquid
nitrogen/oxygen
Noxon (Metal Polish)
Nuto H 68
oil
oil 15W-40 motor
oil refrigeration
oil, pump
oil, vacuum pump
oxygen
oxygen/helium
Paint
Paint silathane
paint thinner
PCB capacitors > 500 ppm
PCB oil > 500 ppm
PCB transformer > 500 ppm
Pipe joint lube
PMQ cleaner
Polish Met-All Alum.
Polish, furniture
pump oil
pump oil 704
Rescor 780 activator
Rescor 780 base
RTV *102
Silicone sealant
Sodium bicarbonate
Stokes V-Lube

Stripper Professional #237
Sure Bet Plus
Tap Magic Cutting Fluid
tetrafluoroethane
TFE spray
Tracit-600 A
Tracit-600 Hardening Cement
Varian TA-Oil
VCI-238
Wax stripper
WD-40
Window Shine Cleaner
Wire rope lube
zink bromide, water waste
zink bromide, water, absorbed in Fluorco

Ohio State Emergency Response Commission
c/o Ohio EPA, Lazarus Government Center
P. O. Box 1049, 122 South Front St.
Columbus, OH 43216-1049

STAPLE

Emergency and Hazardous Chemical Inventory Form

4.1 Facility Name: U. S. DOE - MOUND PLANT
City: MIAMISBURG
County: MONTGOMERY
Exact Street Location (no Box #'s): 1 MOUND ROAD
Zip Code: 45342

4.2 For Filing Date: 03/01/02
4.3 [ ] Check here if form and FACILITY MAP are Confidential and print "CONFIDENTIAL FORM" here: _____
4.4 [ ] Check if Revision
4.5 [x] I Have Attached a Facility Map

K 387

5.0	Chemical Description									Hazard Class					Location of Chemicals						Amount			
	CAS REGISTRY NO.	SPECIFIC CHEMICAL NAME	PURE	MIXTURE	COMPONENTS	EHS CHEMICAL	SOLID	LIQUID	GAS	TRADE SECRET	ACUTE	CHRONIC	FIRE	REACTIVE	RELEASE OF PRESSURE	B, T, OR A BUILDING, TANK OR AREA NO.	DIVISION OR ROOM LETTER	FLOOR	STORAGE TYPE CODE	PRESSURE & TEMPERATURE CONDITIONS	LOCATION CONFIDENTIAL	MAXIMUM	AVERAGE	UNITS	NO. OF DAYS ON SITE
1	[redacted]	argon	[redacted]						[redacted]		[redacted]				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	argon	[redacted]						[redacted]		[redacted]				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]
3	[redacted]	argon	[redacted]						[redacted]		[redacted]				[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]
4	7440-37-1	argon	X						X		X				X	B-50	115	1	L	2,4		02	01	C	365
5	7440-37-1	argon	X						X		X				X	B-50	116	1	L	2,4		01	01	C	365

CERTIFICATION *(READ AND SIGN AFTER COMPLETING ALL SECTIONS)*

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN PAGES ONE THROUGH 27, AND THAT BASED ON MY INQUIRY OF THOSE RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THAT THE INFORMATION IS TRUE, ACCURATE, AND COMPLETE.

Richard Provencher, Director, USDOE, MEMP
NAME AND OFFICIAL TITLE OF OWNER OR OWNERS AUTHORIZED REPRESENTATIVE

SIGNATURE

2/27/02
DATE SIGNED

Ohio State Emergency Response Commission
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1	7440-37-1	argon		X					X		X				X	B-50	116	1	L	2,4		01	01	C	365
2	7440-37-1	argon		X					X		X				X	B-50	204	2	L	2,4		02	02	C	365
3	7440-37-1	argon	X						X		X				X	B-50	dock	1	L	2,4		02	02	C	365
4	7440-37-1	argon		X					X		X				X	B-50	dock	1	L	2,4		02	02	C	365
5																									

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	[redacted]	[redacted]	[redacted]																					
2	7782-37-9	nitrogen		X					X		X				X	B-50	115	1	L	2,4		01	01	C	365
3	7782-37-9	nitrogen		X					X		X				X	B-50	116	1	L	2,4		01	01	C	365
4	7782-37-9	nitrogen		X					X		X				X	B-50	204	2	L	2,4		01	01	C	365
	[redacted]	[redacted]	[redacted]																					

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SIGNATURE

2/27/02
DATE SIGNED

EPA 0317 Revised 5/3/89

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	~~7440-37-1~~	~~argon~~	~~X~~					~~X~~	~~X~~		~~X~~				~~X~~	~~T18~~			~~A~~	~~2,7~~		~~04~~	~~04~~	~~C~~	~~365~~
	~~7440-37-1~~	~~argon~~	~~X~~					~~X~~	~~X~~		~~X~~				~~X~~	~~T18~~			~~A~~	~~2,7~~		~~04~~	~~04~~	~~C~~	~~365~~
3	7440-37-1	argon	X					X	X		X				X	T18			A	2,7		04	04	C	365
4																									
5																									

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Richard Provencher, Director, USDOE, MEMP

2/27/02

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	CAS REGISTRY NO.	SPECIFIC CHEMICAL NAME	PURE	MIXTURE	COMPONENTS	EHS CHEMICAL	SOLID	LIQUID	GAS	TRADE SECRET	ACUTE	CHRONIC	FIRE	REACTIVE	RELEASE OF PRESSURE	B, T, OR A BUILDING, TANK OR AREA NO.	DIVISION OR ROOM LETTER	FLOOR	STORAGE TYPE CODE	PRESSURE & TEMPERATURE CONDITIONS	LOCATION-CONFIDENTIAL	MAXIMUM	AVERAGE	UNITS	NO. OF DAYS ON SITE
[redacted]	[redacted]	[redacted]	[redacted]																						
2	7782-37-9	nitrogen	X					X	X		X				X	T10			A	2,7		04	04	C	365
3	7782-37-9	nitrogen	X					X	X		X				X	T04			A	2,7		04	04	C	365
[redacted]	[redacted]	[redacted]	[redacted]																						

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SIGNATURE

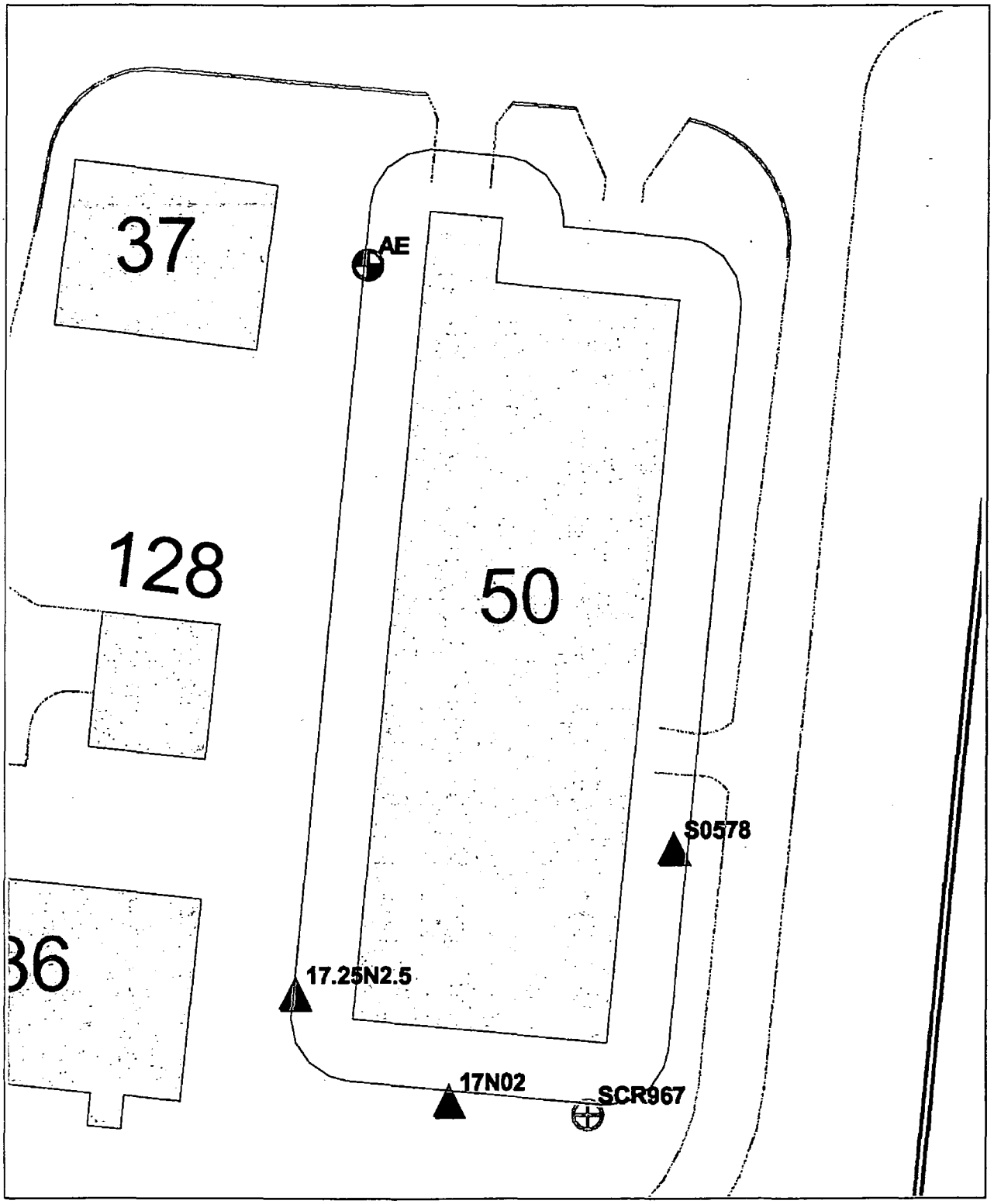
2/27/02 — DATE SIGNED

EPA 0317 Revised 5/3/89

Appendix L

Soil Sampling, Vicinity

Historic Sample Locations within 15 feet of Building 50



Sample Detect
Sample Nondetect

25 0 25 50 75 100 Feet

△ surface sample
⊕ borehole

N
W E
S

MOUND
Environmental Restoration Geographic Information System

05/01/03

L 1 of 25

Building 50 Detects

Location_n	Sample_i	Collection_	Value_name	Measured_value	Value_un	Detecti	Chem	Start	End_	Lab	Data	Project_	Comments
AE	RAE306	19940413	1,1,2-Trichloro-1,2,2-Trifluoroet	3.0000	UG/KG		ORV	18.0	24.0	J	J	04-2768	
AE	RAE306	19940413	Aluminum	15400.0000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Aluminum	12300.0000	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE305	19940413	Arsenic	14.6000	MG/KG		INOR	0.0	6.0			04-2768	2
AE	RAE306	19940413	Arsenic	10.7000	MG/KG		INOR	18.0	24.0			04-2768	2
AE	RAE306	19940413	Barium	109.0000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Barium	82.5000	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE305	19940413	Benzo(a)anthracene	350.0000	UG/KG		ORSV	0.0	6.0	J	J	04-2768	
AE	RAE305	19940413	Benzo(a)pyrene	430.0000	UG/KG		ORSV	0.0	6.0		J	04-2768	3 1
AE	RAE305	19940413	Benzo(b)fluoranthene	430.0000	UG/KG		ORSV	0.0	6.0		J	04-2768	
AE	RAE305	19940413	Benzo(g,h,i)perylene	260.0000	UG/KG		ORSV	0.0	6.0	J	J	04-2768	
AE	RAE305	19940413	Benzo(k)fluoranthene	490.0000	UG/KG		ORSV	0.0	6.0		J	04-2768	
AE	RAE305	19940413	Benzoic Acid	120.0000	UG/KG		ORSV	0.0	6.0	J	J	04-2768	
AE	RAE306	19940413	Benzoic Acid	70.0000	UG/KG		ORSV	18.0	24.0	J	J	04-2768	
AE	RAE306	19940413	Beryllium	0.7100	MG/KG		INOR	18.0	24.0			04-2768	1
AE	RAE305	19940413	Beryllium	0.6900	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE305	19940413	Bis(2-ethylhexyl)phthalate	46.0000	UG/KG		ORSV	0.0	6.0	J	J	04-2768	
AE	RAE306	19940413	Calcium	34000.0000	MG/KG		INOR	18.0	24.0	*		04-2768	
AE	RAE305	19940413	Calcium	13800.0000	MG/KG		INOR	0.0	6.0	*		04-2768	
AE	RAE305	19940413	Cesium-137	0.6810	PCI/G		RAD	0.0	6.0		J	04-2768	12
AE	RAE305	19940413	Chloride	203.0000	MG/KG		ANIO	0.0	6.0		J	04-2768	
AE	RAE306	19940413	Chloride	86.8000	MG/KG		ANIO	18.0	24.0		J	04-2768	
AE	RAE305	19940413	Chromium	22.3000	MG/KG		INOR	0.0	6.0			04-2768	2
AE	RAE306	19940413	Chromium	20.3000	MG/KG		INOR	18.0	24.0			04-2768	2
AE	RAE305	19940413	Chrysene	610.0000	UG/KG		ORSV	0.0	6.0		J	04-2768	
AE	RAE305	19940413	Cobalt	11.1000	MG/KG		INOR	0.0	6.0	B		04-2768	
AE	RAE306	19940413	Cobalt	9.2000	MG/KG		INOR	18.0	24.0	B		04-2768	
AE	RAE306	19940413	Copper	21.8000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Copper	18.2000	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE306	19940413	Dichloromethane (Methylene C	8.0000	UG/KG		ORV	18.0	24.0		J	04-2768	
AE	RAE305	19940413	Dichloromethane (Methylene C	4.0000	UG/KG		ORV	0.0	6.0	J	J	04-2768	
AE	RAE305	19940413	Fluoranthene	810.0000	UG/KG		ORSV	0.0	6.0		J	04-2768	

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Location_n	Sample_i	Collection_	Value_name	Measured_value	Value_un	Detecti	Chem	Start	End_	Lab	Data	Project_	Comments
AE	RAE306	19940413	Fluoride	1.9000	MG/KG		ANIO	18.0	24.0			04-2768	
AE	RAE305	19940413	Fluoride	1.9000	MG/KG		ANIO	0.0	6.0			04-2768	
AE	RAE305	19940413	Indeno(1,2,3-cd)pyrene	270.0000	UG/KG		ORSV	0.0	6.0	J	J	04-2768	
AE	RAE306	19940413	Iron	27000.0000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Iron	21300.0000	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE305	19940413	Lead	88.3000	MG/KG		INOR	0.0	6.0			04-2768	2
AE	RAE306	19940413	Lead	17.6000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE306	19940413	Magnesium	23400.0000	MG/KG		INOR	18.0	24.0	*		04-2768	
AE	RAE305	19940413	Magnesium	7020.0000	MG/KG		INOR	0.0	6.0	*		04-2768	
AE	RAE306	19940413	Manganese	505.0000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Manganese	444.0000	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE306	19940413	Nickel	25.5000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Nickel	18.4000	MG/KG		INOR	0.0	6.0			04-2768	
AE	RAE305	19940413	Nitrate/Nitrite	11.1000	MG/KG		ANIO	0.0	6.0			04-2768	
AE	RAE306	19940413	Nitrate/Nitrite	6.7000	MG/KG		ANIO	18.0	24.0			04-2768	
AE	RAE305	19940413	Phenanthrene	250.0000	UG/KG		ORSV	0.0	6.0	J	J	04-2768	
AE	RAE305	19940413	Plutonium-238	34.0000	PCI/G		RAD	0.0	6.0			04-2768	12
AE	RAE303	19940413	Plutonium-238	8.1700	PCI/G		RAD	0.0	2.0			04-2768	12
AE	RAE304	19940413	Plutonium-238	5.3300	PCI/G		RAD	2.0	12.0		J	04-2768	2
S0578	2879	19831001	Plutonium-238	1.0500	PCI/G	0.0100	RAD	0.0	0.0			RSS	2
AE	RAE303	19940413	Plutonium-239/240	0.0361	PCI/G		RAD	0.0	2.0			04-2768	
AE	RAE304	19940413	Plutonium-239/240	0.0293	PCI/G		RAD	2.0	12.0		J	04-2768	
AE	RAE303	19940413	Plutonium-242	0.0085	PCI/G		RAD	0.0	2.0			04-2768	
AE	RAE306	19940413	Potassium	1260.0000	MG/KG		INOR	18.0	24.0			04-2768	
AE	RAE305	19940413	Potassium	1160.0000	MG/KG		INOR	0.0	6.0	B		04-2768	
AE	RAE305	19940413	Potassium-40	16.3000	PCI/G		RAD	0.0	6.0		J	04-2768	1
AE	RAE306	19940413	Potassium-40	14.6000	PCI/G		RAD	18.0	24.0		J	04-2768	1
AE	RAE305	19940413	Pyrene	700.0000	UG/KG		ORSV	0.0	6.0		J	04-2768	
AE	RAE305	19940413	Radium-226	2.5300	PCI/G		RAD	0.0	6.0			04-2768	123
AE	RAE306	19940413	Radium-226	2.3000	PCI/G		RAD	18.0	24.0			04-2768	123
AE	RAE305	19940413	Sodium	811.0000	MG/KG		INOR	0.0	6.0	B	J	04-2768	2
AE	RAE303	19940413	Thorium-228	1.3200	PCI/G		RAD	0.0	2.0		J	04-2768	1
AE	RAE303	19940413	Thorium-230	1.4700	PCI/G		RAD	0.0	2.0	CJ	J	04-2768	1
AE	RAE303	19940413	Thorium-232	1.3700	PCI/G		RAD	0.0	2.0		J	04-2768	1

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Location_n	Sample_i	Collection_	Value_name	Measured_value	Value_un	Detecti	Chem	Start	End_	Lab	Data	Project_	Comments
17N02	17N02	19940922	Total Aromatic Hydrocarbons	1185029.0000	IC		GENE	0.0	1.5			2680	
17.25N2.5	17.25N2.5	19941011	Total Aromatic Hydrocarbons	20990.0000	IC		GENE	0.0	1.5			2680	
17N02	17N02	19940922	Total C5 TO C11 Petroleum Hy	2268265.0000	IC		GENE	0.0	1.5			2680	
17.25N2.5	17.25N2.5	19941011	Total C5 TO C11 Petroleum Hy	27830.0000	IC		GENE	0.0	1.5			2680	
17N02	17N02	19940922	Total Halogenated Hydrocarbo	9752.0000	IC		GENE	0.0	1.5			2680	
17N02	17N02	19940922	Total Semivolatile Hydrocarbon	5925.0000	IC		GENE	0.0	1.5			2680	
AE	RAE303	19940413	Uranium-234	0.7730	PCI/G		RAD	0.0	2.0			04-2768	
AE	RAE303	19940413	Uranium-235	0.0689	PCI/G		RAD	0.0	2.0			04-2768	
AE	RAE303	19940413	Uranium-238	0.8510	PCI/G		RAD	0.0	2.0			04-2768	1
AE	RAE306	19940413	Vanadium	29.8000	MG/KG		INOR	18.0	24.0			04-2768	2
AE	RAE305	19940413	Vanadium	26.6000	MG/KG		INOR	0.0	6.0			04-2768	2
AE	RAE305	19940413	Zinc	328.0000	MG/KG		INOR	0.0	6.0	*		04-2768	2
AE	RAE306	19940413	Zinc	80.1000	MG/KG		INOR	18.0	24.0	*		04-2768	

*Comments

1 Exceeds the 10-6 Risk-Based Guide Value
2 Exceeds the OU9 Soil Background Value
3 Exceeds screening level
5 Exceeds MCL
6 Exceeds the Guide Value based on the hazard index

Lab and data qualifiers are defined on the pages immediately following the non-detects table in this appendix.
Comparison values for results with comments are provided on the "Comparisons for Soil Analytical Results" table at the end of this appendix.

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Building 50 Non-Detects

Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE306	19940413	1,1,1-Trichloroethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,1,1-Trichloroethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,1,2,2-Tetrachloroethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,1,2,2-Tetrachloroethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,1,2-Trichloro-1,2,2-Trifluoroet	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	1,1,2-Trichloroethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,1,2-Trichloroethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,1-Dichloroethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,1-Dichloroethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,1-Dichloroethene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,1-Dichloroethene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,2,4-Trichlorobenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,2,4-Trichlorobenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,2-Dichlorobenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,2-Dichlorobenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,2-Dichloroethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,2-Dichloroethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,2-Dichloroethene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,2-Dichloroethene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,2-Dichloropropane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,2-Dichloropropane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,2-Diethylbenzene	25.0000	UG/KG	25.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	1,2-Diethylbenzene	26.0000	UG/KG	26.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	1,3-cis-Dichloropropene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,3-cis-Dichloropropene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,3-Dichlorobenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,3-Dichlorobenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,3-trans-Dichloropropene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,3-trans-Dichloropropene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1,4-Dichlorobenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	1,4-Dichlorobenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	1-chloro-4-phenoxybenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil

Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE305	19940413	1-chloro-4-phenoxybenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,2'-oxybis(1-chloropropane)	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,2'-oxybis(1-chloropropane)	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,4,5-Trichlorophenol	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,4,5-Trichlorophenol	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,4,6-Trichlorophenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,4,6-Trichlorophenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,4-Dichlorophenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,4-Dichlorophenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,4-Dimethylphenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,4-Dimethylphenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,4-Dinitrophenol	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,4-Dinitrophenol	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,4-Dinitrotoluene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,4-Dinitrotoluene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2,6-Dinitrotoluene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2,6-Dinitrotoluene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Benzyl-4-Chlorophenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2-Benzyl-4-Chlorophenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Butanone	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	2-Butanone	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	2-Chloronaphthalene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2-Chloronaphthalene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Chlorophenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2-Chlorophenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Hexanone	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	2-Hexanone	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	2-Methylnaphthalene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2-Methylnaphthalene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Methylphenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2-Methylphenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Nitroaniline	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	2-Nitroaniline	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	2-Nitrophenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil

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Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE305	19940413	2-Nitrophenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	3,3'-Dichlorobenzidine	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	3,3'-Dichlorobenzidine	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	3-Nitroaniline	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	3-Nitroaniline	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4,4'-DDD	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4,4'-DDD	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	4,4'-DDE	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4,4'-DDE	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	4,4'-DDT	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4,4'-DDT	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	4,6-Dinitro-o-Cresol	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4,6-Dinitro-o-Cresol	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4-Bromophenyl-phenyl Ether	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4-Bromophenyl-phenyl Ether	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4-Chloro-3-methylphenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4-Chloro-3-methylphenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4-Chloroaniline	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4-Chloroaniline	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4-Methyl-2-pentanone	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	4-Methyl-2-pentanone	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	4-Methylphenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4-Methylphenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4-Nitroaniline	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4-Nitroaniline	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	4-Nitrophenol	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	4-Nitrophenol	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Acenaphthene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Acenaphthene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Acenaphthylene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Acenaphthylene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Acetone	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Acetone	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Acetonitrile	125.0000	UG/KG	125.0000	ORVO	18.0	24.0	U	U	04-2768	Soil

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Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE305	19940413	Acetonitrile	128.0000	UG/KG	128.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Acrylonitrile	125.0000	UG/KG	125.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Acrylonitrile	128.0000	UG/KG	128.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aldrin	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aldrin	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Alpha Chlordane	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Alpha Chlordane	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Alpha-BHC	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Alpha-BHC	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Americium-241	0.0862	PCI/G	0.0862	RAD	18.0	24.0	ND	U	04-2768	Soil
AE	RAE305	19940413	Americium-241	0.1130	PCI/G	0.1130	RAD	0.0	6.0	ND	U	04-2768	Soil
AE	RAE306	19940413	Anthracene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Anthracene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Antimony	0.7700	MG/KG	0.7700	INORG	18.0	24.0	UN	UJ	04-2768	Soil
AE	RAE305	19940413	Antimony	0.7900	MG/KG	0.7900	INORG	0.0	6.0	UN	UJ	04-2768	Soil
AE	RAE306	19940413	Aroclor-1016	8.1000	UG/KG	8.1000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1016	33.0000	UG/KG	33.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aroclor-1221	16.0000	UG/KG	16.0000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1221	66.0000	UG/KG	66.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aroclor-1232	8.1000	UG/KG	8.1000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1232	33.0000	UG/KG	33.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aroclor-1242	8.1000	UG/KG	8.1000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1242	33.0000	UG/KG	33.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aroclor-1248	8.1000	UG/KG	8.1000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1248	33.0000	UG/KG	33.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aroclor-1254	8.1000	UG/KG	8.1000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1254	33.0000	UG/KG	33.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Aroclor-1260	8.1000	UG/KG	8.1000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Aroclor-1260	33.0000	UG/KG	33.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Benzene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Benzene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Benzo(a)anthracene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Benzo(a)pyrene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Benzo(b)fluoranthene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil

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Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE306	19940413	Benzo(g,h,i)perylene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Benzo(k)fluoranthene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Benzyl Alcohol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Benzyl Alcohol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Beta-BHC	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Beta-BHC	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Bis(2-chloroethoxy)methane	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Bis(2-chloroethoxy)methane	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Bis(2-chloroethyl)ether	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Bis(2-chloroethyl)ether	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Bis(2-ethylhexyl)phthalate	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Bismuth	6.4000	MG/KG	6.4000	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Bismuth	6.5000	MG/KG	6.5000	INORG	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Bismuth-207	0.0258	PCI/G	0.0258	RAD	18.0	24.0	ND	U	04-2768	Soil
AE	RAE305	19940413	Bismuth-207	0.0267	PCI/G	0.0267	RAD	0.0	6.0	ND	U	04-2768	Soil
AE	RAE306	19940413	Bismuth-210	0.0285	PCI/G	0.0285	RAD	18.0	24.0	ND	U	04-2768	Soil
AE	RAE305	19940413	Bismuth-210	0.0326	PCI/G	0.0326	RAD	0.0	6.0	ND	U	04-2768	Soil
AE	RAE306	19940413	Bromodichloromethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Bromodichloromethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Bromoform	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Bromoform	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Bromomethane	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Bromomethane	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Butyl Benzyl Phthalate	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Butyl Benzyl Phthalate	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Cadmium	0.5700	MG/KG	0.5700	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Cadmium	0.5900	MG/KG	0.5900	INORG	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Carbazole	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Carbazole	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Carbon Disulfide	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Carbon Disulfide	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Carbon Tetrachloride	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Carbon Tetrachloride	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Cesium-137	0.0297	PCI/G	0.0297	RAD	18.0	24.0	ND	U	04-2768	Soil

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Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE306	19940413	Chlorobenzene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Chlorobenzene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Chloroethane	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Chloroethane	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Chloroform	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Chloroform	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Chloromethane	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Chloromethane	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Chrysene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Cobalt-60	0.0311	PCI/G	0.0311	RAD	18.0	24.0	ND	U	04-2768	Soil
AE	RAE305	19940413	Cobalt-60	0.0339	PCI/G	0.0339	RAD	0.0	6.0	ND	U	04-2768	Soil
AE	RAE306	19940413	Cyanide	0.6200	MG/KG	0.6200	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Cyanide	0.6400	MG/KG	0.6400	INORG	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Delta-BHC	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Delta-BHC	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Dibenz(a,h)anthracene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Dibenz(a,h)anthracene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Dibenzofuran	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Dibenzofuran	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Dibromochloromethane	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Dibromochloromethane	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Dieldrin	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Dieldrin	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Diethyl Phthalate	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Diethyl Phthalate	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Dimethyl Phthalate	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Dimethyl Phthalate	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Di-n-butyl Phthalate	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Di-n-butyl Phthalate	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Di-n-octyl Phthalate	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Di-n-octyl Phthalate	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Endosulfan I	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Endosulfan I	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Endosulfan II	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil

Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE305	19940413	Endosulfan II	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Endosulfan Sulfate	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Endosulfan Sulfate	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Endrin	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Endrin	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Endrin Aldehyde	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Endrin Aldehyde	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Endrin Ketone	0.8100	UG/KG	0.8100	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Endrin Ketone	3.3000	UG/KG	3.3000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Ethylbenzene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Ethylbenzene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Fluoranthene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Fluorene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Fluorene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Gamma Chlordane	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Gamma Chlordane	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Gamma-BHC (Lindane)	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Gamma-BHC (Lindane)	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Heptachlor	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Heptachlor	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Heptachlor Epoxide	0.4200	UG/KG	0.4200	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Heptachlor Epoxide	1.7000	UG/KG	1.7000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Hexachlorobenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Hexachlorobenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U-	UJ	04-2768	Soil
AE	RAE306	19940413	Hexachlorobutadiene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Hexachlorobutadiene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Hexachlorocyclopentadiene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Hexachlorocyclopentadiene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Hexachloroethane	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Hexachloroethane	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Hexane	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Hexane	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Indeno(1,2,3-cd)pyrene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Iodomethane	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil

Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE305	19940413	Iodomethane	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Isophorone	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Isophorone	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Mercury	0.1200	MG/KG	0.1200	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Mercury	0.1300	MG/KG	0.1300	INORG	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Methoxychlor	4.2000	UG/KG	4.2000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Methoxychlor	17.0000	UG/KG	17.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Naphthalene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Naphthalene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Nitrobenzene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Nitrobenzene	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	N-Nitroso-di-n-propylamine	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	N-Nitroso-di-n-propylamine	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	N-Nitrosodiphenylamine	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	N-Nitrosodiphenylamine	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Pentachlorophenol	1000.0000	UG/KG	1000.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Pentachlorophenol	1100.0000	UG/KG	1100.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Phenanthrene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Phenol	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Phenol	430.0000	UG/KG	430.0000	ORSV	0.0	6.0	U	UJ	04-2768	Soil
SCR967	9311043	19931103	Plutonium-238	3.0000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
SCR967	9311083	19931105	Plutonium-238	11.0000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
SCR967	9311036	19931102	Plutonium-238	14.0000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
SCR967	9311045	19931103	Plutonium-238	19.0000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
17.25N2.5	17.25N2.5	19941011	Plutonium-238	20.0000	PCI/G	20.0000	RAD	0.0	1.5		U	2680	Soil
AE	RAE306	19940413	Plutonium-238	21.0000	PCI/G		RAD	18.0	24.0	U		04-2768	Soil
AE	RAE304	19940413	Plutonium-242	0.0038	PCI/G	0.0038	RAD	2.0	12.0	ND	UJ	04-2768	Soil
AE	RAE306	19940413	Pyrene	420.0000	UG/KG	420.0000	ORSV	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Selenium	1.1000	MG/KG	1.1000	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Selenium	1.2000	MG/KG	1.2000	INORG	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Silver	1.2000	MG/KG	1.2000	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Silver	1.2000	MG/KG	1.2000	INORG	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Sodium	471.0000	MG/KG	471.0000	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Strontium-90	0.8590	PCI/G	0.8590	RAD	0.0	6.0	ND/	U	04-2768	Soil

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Location_n	Sample_id	Collection_	Value_name	Measured_v	Value_	Detection_l	Chem_	Start	End_	Lab	Data	Project_c	Media
AE	RAE306	19940413	Strontium-90	1.1200	PCI/G	1.1200	RAD	18.0	24.0	ND/	U	04-2768	Soil
AE	RAE306	19940413	Styrene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Styrene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Sulfate	31.2000	MG/KG	31.2000	ANION	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Sulfate	31.9000	MG/KG	31.9000	ANION	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Tetrachloroethene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Tetrachloroethene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Thallium	0.9000	MG/KG	0.9000	INORG	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Thallium	0.9200	MG/KG	0.9200	INORG	0.0	6.0	U	U	04-2768	Soil
SCR967	9311083	19931105	Thorium-232	0.4000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
SCR967	9311036	19931102	Thorium-232	0.5000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
SCR967	9311043	19931103	Thorium-232	0.7000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
SCR967	9311045	19931103	Thorium-232	0.9000	PCI/G		RAD	0.0	0.0	U		SCRDAT	Soil
17.25N2.5	17.25N2.5	19941011	Thorium-232	1.0000	PCI/G	1.0000	RAD	0.0	1.5		U	2680	Soil
AE	RAE306	19940413	Thorium-232	1.7000	PCI/G		RAD	18.0	24.0	U		04-2768	Soil
AE	RAE305	19940413	Thorium-232	1.7000	PCI/G		RAD	0.0	6.0	U		04-2768	Soil
S0578	2879	19831001	Thorium-232	2.0000	PCI/G	2.0000	RAD	0.0	0.0	U		RSS	Soil
AE	RAE306	19940413	Toluene	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Toluene	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE306	19940413	Toxaphene	42.0000	UG/KG	42.0000	ORPP	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Toxaphene	170.0000	UG/KG	170.0000	ORPP	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Trichloroethylene (TCE)	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Trichloroethylene (TCE)	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil
AE	RAE301	19940413	Tritium	0.1360	PCI/G	0.1360	RAD	0.0	12.0	ND	U	04-2768	Soil
AE	RAE302	19940413	Tritium	0.1590	PCI/G	0.1590	RAD	12.0	24.0	ND	U	04-2768	Soil
AE	RAE306	19940413	Vinyl Acetate	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Vinyl Acetate	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Vinyl Chloride	12.0000	UG/KG	12.0000	ORVO	18.0	24.0	U	U	04-2768	Soil
AE	RAE305	19940413	Vinyl Chloride	13.0000	UG/KG	13.0000	ORVO	0.0	6.0	U	U	04-2768	Soil
AE	RAE306	19940413	Xylenes, Total	6.0000	UG/KG	6.0000	ORVO	18.0	24.0	U	UJ	04-2768	Soil
AE	RAE305	19940413	Xylenes, Total	6.0000	UG/KG	6.0000	ORVO	0.0	6.0	U	UJ	04-2768	Soil

Lab and data qualifiers are defined on the pages immediately following the non-detects table in this appendix.

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LABORATORY DATA QUALIFIERS (LABQUAL)

The following qualifiers will be applied to the organic analysis results by the laboratory in accordance with CLP SOW direction:

ORGANICS

U	Indicates compound was analyzed for but not detected. The associated sample quantitation limit will be the CRQL, corrected for dilution and for percent moisture.
J	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) assuming a 1:1 response, 2) when the qualitative data indicated the presence of a compound that meets the volatile, semivolatile, and pesticide/Aroclor identification criteria, and the result is less than the CRQL but greater than zero.
N	Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where identification is based on a mass spectral library search.
P	Used for pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns.
C	Applies to pesticide results where the identification has been confirmed by GC/MS.
B	Used when the analyte is found in the associated blank as well as in the sample. This flag must be used for a TIC as well as for a positively identified target compound.
E	Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
D	Identifies all compounds identified in an analysis at a secondary dilution factor.
A	Indicates that a TIC is a suspected aldol-condensation product.

INORGANICS

B	Indicates that the reported value was obtained from a reading that was less than the CRDL but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates that the analyte was analyzed for but not detected.
E	Indicates the reported value is estimated because of the presence of interferences.
M	Duplicate injection precision was not met.
N	Spiked sample recovery not within control limits.
S	Reported value was determined by the Method of Standard Additions (MSA).
W	Post-digestion spike for Furnace AA analysis is out of control limits, while sample absorbency is less than 50% of spike absorbency.
•	Duplicate analysis not within control limits.
+	Correlation coefficient for the MSA is less than 0.995.

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DATA QUALIFIER CODES (DATAQUAL)

ORGANICS AND INORGANICS

U	The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
J	The associated numerical value is an estimated quantity.
R	The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification.
N	Presumptive evidence of the presence of the material.
NJ	Presumptive evidence of the presence of the material at an estimated quantity.
UJ	The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

SUB-QUALIFIER CODES

ORGANICS

D	Duplicates
B	Qualified due to blank
C	Qualified due to calibration
H	Holding time exceeded
K	Qualified due to surrogate recovery
L	Qualified due to Laboratory Control Sample
S	Qualified due to matrix spike recovery
I	Qualified due to internal standard
N	Tentative identification (only for TICs)
P	Pesticide/PCB results have >25 percent difference on two different columns
+	Positive bias (added after subqualifier)
-	Negative bias (added after subqualifier)

INORGANICS

D	Duplicates
B	Qualified due to blank
C	Qualified due to calibration
H	Holding time exceeded
L	Qualified due to Laboratory Control Sample
S	Qualified due to matrix spike recovery
I	Qualified due to interference
+	Positive bias (added after subqualifier)
-	Negative bias (added after subqualifier)
Examples of final qualification might be J-C, UJ-S(+), UJ-BC(-), etc.	

The subqualifiers have been included to clarify any reports you may use. The subqualifiers have been captured when it was included in the electronic data submitted by the contractor. Most of the data in MEIMS does not include them.

The above data was extracted from the OU9 Site Wide Quality Assurance Project Plan, pages 9-16 and Appendix H page 3-1. It was updated from the Methods Compendium.

Comparisons for Soil Analytical Results

10^{-6} Risk-Based Guideline Values			
79-00-5	1,1,2-Trichloroethane	1.90E+00	MG/KG
79-34-5	1,1,2,2-Tetrachloroethane	8.90E-01	MG/KG
75-35-4	1,1-Dichloroethene	1.20E-01	MG/KG
107-06-2	1,2-Dichloroethane	7.60E-01	MG/KG
78-87-5	1,2-Dichloropropane	4.38E+01	MG/KG
118-96-7	2,4,6-Trinitrotoluene	1.91E+02	MG/KG
72-55-9	4,4'-DDE	9.00E+00	MG/KG
50-29-3	4,4'-DDT	9.00E+00	MG/KG
309-00-2	Aldrin	1.80E-01	MG/KG
5103-71-9	Alpha Chlordane	8.50E+00	MG/KG
12672-29-6	Aroclor-1248	3.85E-01	MG/KG
11096-82-5	Aroclor-1260	3.85E-01	MG/KG
7440-38-2	Arsenic	1.20E+03	MG/KG
71-43-2	Benzene	1.45E+00	MG/KG
56-55-3	Benzo(a)anthracene	4.10E+00	MG/KG
50-32-8	Benzo(a)pyrene	4.10E-01	MG/KG
205-99-2	Benzo(b)fluoranthene	4.10E+00	MG/KG
207-08-9	Benzo(k)fluoranthene	4.10E+01	MG/KG
7440-41-7	Beryllium	7.00E-01	MG/KG
319-85-7	Beta-BHC	1.65E+00	MG/KG
117-81-7	Bis(2-ethylhexyl)phthalate	2.15E+02	MG/KG
75-27-4	Bromodichloromethane	4.80E+01	MG/KG
75-25-2	Bromoform	3.75E+02	MG/KG
7440-43-9	Cadmium	1.00E+04	MG/KG
56-23-5	Carbon Tetrachloride	5.38E-01	MG/KG
67-66-3	Chloroform	5.20E-01	MG/KG
74-87-3	Chloromethane	2.71E+00	MG/KG
7440-47-3	Chromium	1.50E+03	MG/KG
218-01-9	Chrysene	4.10E+02	MG/KG
53-70-3	Dibenz(a,h)anthracene	4.10E-01	MG/KG
124-48-1	Dibromochloromethane	3.55E+01	MG/KG
75-09-2	Dichloromethane	2.03E+01	MG/KG
60-57-1	Dieldrin	1.85E-01	MG/KG
5103-74-2	Gamma Chlordane	8.50E+00	MG/KG
58-89-9	Gamma-BHC (Lindane)	2.30E+00	MG/KG
76-44-8	Heptachlor	0.66	MG/KG
1024-57-3	Heptachlor Epoxide	0.33	MG/KG
193-39-5	Indeno(1,2,3-cd)pyrene	4.10E+00	MG/KG
78-59-1	Isophorone	3.15E+03	MG/KG
86-30-6	N-Nitrosodiphenylamine	6.00E+02	MG/KG
87-86-5	Pentachlorophenol	2.50E+01	MG/KG
121-82-4	RDX	2.70E+01	MG/KG
127-18-4	Tetrachloroethene	1.87E+01	MG/KG
79-01-6	Trichloroethene	5.09E+00	MG/KG
75-01-4	Vinyl Chloride	4.10E-01	MG/KG
7440-41-7	1,1,1,2-Tetrachloroethane	1.10E-02	MG/L
7440-38-2	1,1,2,2-Tetrachloroethane	1.40E-03	MG/L

14952-40-0	Actinium-227	4.50E-01	PCI/G
14596-10-2	Americium-241	6.30E+00	PCI/G
13982-38-2	Bismuth-207	1.60E-01	PCI/G
10045-97-3	Cesium-137	3.40E-01	PCI/G
10198-40-0	Cobalt-60	7.00E-02	PCI/G
14255-04-0	Lead-210	6.20E-01	PCI/G
13981-16-3	Plutonium-238	6.10E+00	PCI/G
15117-48-3	Plutonium-239	6.00E+00	PCI/G
PU239/240	Plutonium-240	6.00E+00	PCI/G
13982-10-0	Plutonium-242	6.33E+00	PCI/G
13966-00-2	Potassium-40	1.42E+00	PCI/G
14331-85-2	Protactinium-231	3.90E-01	PCI/G
13982-63-3	Radium-226	9.00E-02	PCI/G
10098-97-2	Strontium-90	9.40E+00	PCI/G
14274-82-9	Thorium-228	1.10E-01	PCI/G
14269-63-7	Thorium-230	9.00E-02	PCI/G
7440-29-1	Thorium-232	7.00E-02	PCI/G
10028-17-8	Tritium	2.35E+04	PCI/G
13968-55-3	Uranium-233	9.68E-01	PCI/G
13966-29-5	Uranium-234	1.05E+01	PCI/G
15117-96-1	Uranium-235	1.60E+00	PCI/G
7440-61-1	Uranium-238+D	1.00E-01	PCI/G
14596-10-2	Americium-241	4.90E-01	PCI/L
14331-79-4	Bismuth-210	2.20E+01	PCI/L
15262-20-1	Radium-228	3.30E-01	PCI/L
13967-73-2	Strontium-85	1.10E+02	PCI/L
10098-97-2	Strontium-90	3.90E+00	PCI/L
15623-47-9	Thorium-227	4.00E+00	PCI/L
14274-82-9	Thorium-228	6.90E-01	PCI/L
14269-63-7	Thorium-230	1.20E-01	PCI/L
7440-29-1	Thorium-232	3.10E-01	PCI/L
7440-61-1	Uranium-238	1.10E-01	PCI/L
OU9 Soil Background Value			
72-54-8	4,4'-DDD	4.2	MG/KG
72-55-9	4,4'-DDE	4.3	MG/KG
50-29-3	4,4'-DDT	13	MG/KG
309-00-2	Aldrin	ND	MG/KG
5103-71-9	Alpha Chlordane	ND	MG/KG
319-84-6	Alpha-BHC	ND	MG/KG
7429-90-5	Aluminum	19000	MG/KG
14596-10-2	Americium-241	ND	MG/KG
12672-29-6	Aroclor-1248	ND	MG/KG
11097-69-1	Aroclor-1254	58	MG/KG
11096-82-5	Aroclor-1260	ND	MG/KG
7440-38-2	Arsenic	8.6	MG/KG
7440-39-3	Barium	180	MG/KG
7440-41-7	Beryllium	1.3	MG/KG
319-85-7	Beta-BHC	ND	MG/KG
7440-69-9	Bismuth	ND	MG/KG

13982-38-2	Bismuth-207	ND	MG/KG
14331-79-4	Bismuth-210m	ND	MG/KG
7440-43-9	Cadmium	2.1	MG/KG
7440-70-2	Calcium	310000	MG/KG
7440-47-3	Chromium	20	MG/KG
7440-48-4	Cobalt	19	MG/KG
7440-50-8	Copper	26	MG/KG
57-12-5	Cyanide	ND	MG/KG
60-57-1	Dieldrin	ND	MG/KG
959-98-8	Endosulfan I	ND	MG/KG
1031-07-8	Endosulfan Sulfate	ND	MG/KG
72-20-8	Endrin	ND	MG/KG
7421-93-4	Endrin Aldehyde	ND	MG/KG
53494-70-5	Endrin Ketone	ND	MG/KG
5103-74-2	Gamma Chlordane	ND	MG/KG
58-89-9	Gamma-BHC (Lindane)	ND	MG/KG
76-44-8	Heptachlor	ND	MG/KG
1024-57-3	Heptachlor Epoxide	ND	MG/KG
77-47-4	Hexachlorocyclopentadiene	ND	MG/KG
7439-89-6	Iron	35000	MG/KG
7439-92-1	Lead	48	MG/KG
7439-93-2	Lithium	26	MG/KG
7439-95-4	Magnesium	40000	MG/KG
7439-96-5	Manganese	1400	MG/KG
7439-97-6	Mercury	ND	MG/KG
72-43-5	Methoxychlor	30	MG/KG
7439-98-7	Molybdenum	27	MG/KG
7440-02-0	Nickel	32	MG/KG
7440-09-7	Potassium	1900	MG/KG
7782-49-2	Selenium	ND	MG/KG
7440-22-4	Silver	1.7	MG/KG
7440-23-5	Sodium	240	MG/KG
7440-28-0	Thallium	0.46	MG/KG
7440-31-5	Tin	20	MG/KG
7440-62-2	Vanadium	25	MG/KG
7440-66-6	Zinc	140	MG/KG
14952-40-0	Actinium-227	1.10E-01	PCI/G
10045-97-3	Cesium-137	0.42	PCI/G
14255-04-0	Lead-210	1.20E+00	PCI/G
13981-16-3	Plutonium-238	0.13	PCI/G
15117-48-3	Plutonium-239	1.80E-01	PCI/G
PU239/240	Plutonium-240	1.80E-01	PCI/G
13966-00-2	Potassium-40	37	PCI/G
14331-85-2	Protactinium-231	1.10E-01	PCI/G
13982-63-3	Radium-226	2	PCI/G
10098-97-2	Strontium-90	0.72	PCI/G
14274-82-9	Thorium-228	1.5	PCI/G
14269-63-7	Thorium-230	1.9	PCI/G
7440-29-1	Thorium-232	1.4	PCI/G
10028-17-8	Tritium	1.6	PCI/G

13966-29-5	Uranium-234	1.1	PCI/G
15117-96-1	Uranium-235	0.11	PCI/G
7440-61-1	Uranium-238	1.2	PCI/G
Core Team Determined Screening Level			
7439-92-1	Lead	4.00E+02	MG/KG
14952-40-0	Actinium-227	5.60E-01	PCI/G
14596-10-2	Americium-241	6.30E+00	PCI/G
13982-38-2	Bismuth-207	1.75E-01	PCI/G
10045-97-3	Cesium-137	7.60E-01	PCI/G
10198-40-0	Cobalt-60	7.00E-02	PCI/G
14255-04-0	Lead-210	1.80E+00	PCI/G
13981-16-3	Plutonium-238	5.50E+01	PCI/G
14331-85-2	Protactinium-231	4.00E+00	PCI/G
13982-63-3	Radium-226	2.10E+00	PCI/G
14274-82-9	Thorium-228	1.61E+00	PCI/G
14269-63-7	Thorium-230	2.00E+00	PCI/G
7440-29-1	Thorium-232	1.47E+00	PCI/G
15117-96-1	Uranium-235	1.70E+00	PCI/G
7440-61-1	Uranium-238+D	1.30E+00	PCI/G
Maximum Contaminant Level for Drinking Water			
71-55-6	1,1,1-Trichloroethane	0.2	MG/L
79-00-5	1,1,2-Trichloroethane	0.005	MG/L
75-35-4	1,1-Dichloroethene	0.007	MG/L
120-82-1	1,2,4-Trichlorobenzene	0.07	MG/L
156-59-2	1,2-cis-Dichloroethene	0.07	MG/L
106-93-4	1,2-Dibromoethane	0.00005	MG/L
95-50-1	1,2-Dichlorobenzene	0.6	MG/L
107-06-2	1,2-Dichloroethane	0.005	MG/L
78-87-5	1,2-Dichloropropane	0.005	MG/L
156-60-5	1,2-trans-Dichloroethene	0.01	MG/L
106-46-7	1,4-Dichlorobenzene	0.075	MG/L
95-95-4	2,4,5-Trichlorophenol	0.05	MG/L
94-75-7	2,4-D	0.07	MG/L
7440-36-0	Antimony	0.0006	MG/L
7440-38-2	Arsenic	0.05	MG/L
7440-39-3	Barium	2	MG/L
71-43-2	Benzene	0.005	MG/L
50-32-8	Benzo(a)pyrene	0.002	MG/L
7440-41-7	Beryllium	0.004	MG/L
117-81-7	bis(2-ethylhexyl)phthalate	0.006	MG/L
75-27-4	Bromodichloromethane	0.008	MG/L
75-25-2	Bromoform	0.008	MG/L
7440-43-9	Cadmium	0.005	MG/L
56-23-5	Carbon Tetrachloride	0.005	MG/L
57-74-9	Chlordane	0.002	MG/L
108-90-7	Chlorobenzene	0.1	MG/L
67-66-3	Chloroform	0.008	MG/L
7440-47-3	Chromium	0.1	MG/L

7440-50-8	Copper	1.3	MG/L
57-12-5	Cyanide	0.2	MG/L
96-12-8	Dibromochloropropane	0.0002	MG/L
75-09-2	Dichloromethane (Methylene Chloride)	0.005	MG/L
88-85-7	Dinoseb	0.007	MG/L
1746-01-6	Dioxin	0.00000003	MG/L
72-20-8	Endrin	0.002	MG/L
100-41-4	Ethylbenzene	0.07	MG/L
16984-48-8	Flouride	4	MG/L
58-89-9	Gamma-BHC (Lindane)	0.0002	MG/L
76-44-8	Heptachlor	0.0004	MG/L
1024-57-3	Heptachlor Epoxide	0.0002	MG/L
118-74-1	Hexachlorobenzene	0.001	MG/L
77-47-4	Hexachlorocyclopentadiene	0.05	MG/L
7439-92-1	Lead	0.015	MG/L
7439-97-6	Mercury	0.002	MG/L
72-43-5	Methoxychlor	0.04	MG/L
7440-02-0	Nickel	0.1	MG/L
NO3	Nitrate	10	MG/L
14797-65-0	Nitrite	1	MG/L
87-86-5	Pentachlorophenol	0.001	MG/L
7782-49-2	Selenium	0.05	MG/L
100-42-5	Styrene	0.1	MG/L
127-18-4	Tetrachloroethene	0.005	MG/L
7440-28-0	Thallium	0.002	MG/L
108-88-3	Toluene	1	MG/L
8001-35-2	Toxaphene	0.003	MG/L
79-01-6	Trichloroethene	0.005	MG/L
75-01-4	Vinyl Chloride	0.002	MG/L
1330-20-7	Xylenes, Total	10	MG/L
14952-40-0	Actinium-227	0.4	PCI/L
14596-10-2	Americium-241	1.2	PCI/L
13982-38-2	Bismuth-207	1200	PCI/L
10045-97-3	Cesium-137	120	PCI/L
10198-40-0	Cobalt-60	400	PCI/L
13981-16-3	Plutonium-238	1.6	PCI/L
13982-63-3	Radium-226	4	PCI/L
10098-97-2	Strontium-90	40	PCI/L
14274-82-9	Thorium-228	16	PCI/L
14269-63-7	Thorium-230	12	PCI/L
7440-29-1	Thorium-232	2	PCI/L
10028-17-8	Tritium	20000	PCI/L
13968-55-3	Uranium-233	20	PCI/L
13966-29-5	Uranium-234	20	PCI/L
15117-96-1	Uranium-235	24	PCI/L
7440-61-1	Uranium-238	24	PCI/L
Guideline Values Based on the Hazard Index			
71-55-6	1,1,1-Trichloroethane	3.31E+03	MG/KG
79-00-5	1,1,2-Tricloroethane	8.52E+02	MG/KG

76-13-1	1,1,2-Trichloro-1,2,2triflouroethane	7.00E+04	MG/KG
75-34-3	1,1-Dichloroethane	2.13E+04	MG/KG
75-35-4	1,1-Dichloroethene	1.92E+03	MG/KG
120-82-1	1,2,4-Trichlorobenzene	2.04E+04	MG/KG
156-59-2	1,2-cis-Dichloroethene	2.13E+03	MG/KG
78-87-5	1,2-Dichloropropane	2.16E+01	MG/KG
156-60-5	1,2-trans-Dichloroethene	4.30E+03	MG/KG
99-65-0	1,3-Dinitrobenzene	2.00E+02	MG/KG
118-96-7	2,4,6-Trinitrotoluene	1.00E+03	MG/KG
78-93-3	2-Butanone	9.30E+03	MG/KG
95-57-8	2-Chlorophenol	1.06E+03	MG/KG
108-10-1	2-Methyl-4-pentanone	7.00E+02	MG/KG
50-29-3	4,4'-DDT	1.10E+02	MG/KG
106-44-5	4-Methylphenol	1.10E+03	MG/KG
67-64-1	Acetone	2.10E+04	MG/KG
309-00-2	Aldrin	6.4	MG/KG
5103-71-9	Alpha Chlordane	110	MG/KG
7429-90-5	Aluminum	210000	MG/KG
120-12-7	Anthracene	6.40E+04	MG/KG
7440-36-0	Antimony	8.50E+01	MG/KG
11097-69-1	Aroclor-1254	4.30E+00	MG/KG
7440-38-2	Arsenic	6.40E+01	MG/KG
7440-39-3	Barium	1.50E+04	MG/KG
71-43-2	Benzene	2.36E+01	MG/KG
65-85-0	Benzoic Acid	8.50E+05	MG/KG
7440-41-7	Beryllium	1.10E+03	MG/KG
117-81-7	Bis(2-ethylhexyl)phthalate	4.30E+03	MG/KG
75-27-4	Bromodichloromethane	4.26E+03	MG/KG
75-25-2	Bromoform	4.30E+03	MG/KG
74-83-9	Bromomethane	1.26E+01	MG/KG
85-68-7	Butyl Benzyl Phthalate	4.30E+04	MG/KG
7440-43-9	Cadmium	2.10E+02	MG/KG
75-15-0	Carbon Disulfide	1.16E+03	MG/KG
56-23-5	Carbon Tetrachloride	5.62E+00	MG/KG
108-90-7	Chlorobenzene	4.89E+02	MG/KG
75-00-3	Chloroethane	1.60E+02	MG/KG
67-66-3	Chloroform	1.50E+03	MG/KG
74-87-3	Chloromethane	1.58E+02	MG/KG
7440-47-3	Chromium	1.10E+03	MG/KG
18540-29-9	Chromium-VI	6.39E+02	MG/KG
7440-48-4	Cobalt	1.28E+04	MG/KG
7440-50-8	Copper	7.90E+03	MG/KG
57-12-5	Cyanide	4.30E+03	MG/KG
124-48-1	Dibromochloromethane	4.26E+03	MG/KG
75-09-2	Dichloromethane	1.00E+03	MG/KG
60-57-1	Dieldrin	1.10E+01	MG/KG
84-74-2	Di-n-butyl Phthalate	2.10E+04	MG/KG
117-84-0	Di-n-octyl Phthalate	4.30E+03	MG/KG
959-98-8	Endosulfan I	1300	MG/KG
33213-65-9	Endosulfan II	1300	MG/KG

100-41-4	Ethylbenzene	4.80E-01	MG/KG
86-73-7	Flourene	8.50E+03	MG/KG
206-44-0	Fluoranthene	8.50E+03	MG/KG
5103-74-2	Gamma Chlordane	110	MG/KG
58-89-9	Gamma-BHC (Lindane)	64	MG/KG
76-44-8	Heptachlor	110	MG/KG
1024-57-3	Heptachlor Epoxide	2.8	MG/KG
110-54-3	Hexane	9.10E+01	MG/KG
78-59-1	Isophorone	4.30E+04	MG/KG
7439-96-5	Manganese	2.70E+04	MG/KG
7439-97-6	Mercury	6.40E+01	MG/KG
72-43-5	Methoxychlor	1100	MG/KG
7440-02-0	Nickel	4.30E+03	MG/KG
87-86-5	Pentachlorophenol	6.40E+03	MG/KG
108-95-2	Phenol	1.30E+05	MG/KG
129-00-0	Pyrene	6.40E+03	MG/KG
7782-49-2	Selenium	1100	MG/KG
7440-22-4	Silver	1.10E+03	MG/KG
100-42-5	Styrene	1.45E+04	MG/KG
127-18-4	Tetrachloroethene	2.13E+03	MG/KG
79-01-6	Trichloroethene	6.39E+01	MG/KG
7440-28-0	Thallium	17	MG/KG
7440-31-5	Tin	130000	MG/KG
108-88-3	Toluene	2.50E+02	MG/KG
75-69-4	Trichlorofluoromethane	7.30E+02	MG/KG
7440-62-2	Vanadium	1.50E+03	MG/KG
75-01-4	Vinyl Chloride	1.19E+02	MG/KG
1330-20-7	Xylenes, Total	4.26E+05	MG/KG
7440-66-6	Zinc	6.40E+04	MG/KG
7440-41-7	1,1,1,2-Tetrachloroethane	2.90E-01	MG/L
7440-38-2	1,1,2,2-Tetrachloroethane	2.50E-01	MG/L
71-55-6	1,1,1-Trichloroethane	1.80E+00	MG/L
76-13-1	1,1,2-Trichloro-1,2,2triflouroethane	2.50E+03	MG/L
7429-90-5	Aluminum	100	MG/L
7440-42-8	Boron	9.00E+00	MG/L
18540-29-9	Chromium-VI	3.00E-01	MG/L
7440-48-4	Cobalt	6	MG/L
7440-50-8	Copper	4.00E+00	MG/L
7439-98-7	Molybdenum	0.5	MG/L
7782-49-2	Selenium	0.5	MG/L
7440-28-0	Thallium	0.008	MG/L
7440-31-5	Tin	60	MG/L
2691-41-0	HMX	1.10E+04	UG/KG
121-82-4	RDX	6.40E+04	UG/KG

Appendix M

Occurrence Reports

A search of the occurrence reporting system revealed twenty-nine reports, all of which were minor and without environmental impact:

- rupture of water shielded window (copy provided),
- continuous air monitor (CAM) false alarm or equipment failure (9),
- fire alarm system false alarm or equipment failure (6),
- air handling system failure (4),
- communication (security alarm) system failure,
- standby generator battery failure (dead or weak battery),
- withdrawal of sealed source acceptance,
- filter bank deluge system test not performed,
- standby generator fails full load test,
- excavator breaks street light line,
- high winds cause damage across Mound Plant Site,
- electrical short circuit, and
- low oxygen in test cell.

ALO-DA-EGGM-EGGMAT02-1994-0007 Final Report

Occurrence Report

Nuclear Energy Facilities
(Name of Facility)

Plutonium Processing and Handling
(Facility Function)

Mound Plant EG&G Mound Applied Technologies
(Laboratory, Site, or Organization)

Name: BUXTON, TERRY L
Title: MANAGER NUCLEAR TECHNOLOGY **Telephone No.:** (513) 865-3424
(Facility Manager/Designee)

Name: Terry L. Buxton
Title: Manager, Nuclear Technology **Telephone No.:** (513) 865-3424
(Originator/Transmitter)

Name: T. L. Buxton **Date:** 06/09/1994
(Authorized Classifier (AC))

1. Occurrence Report Number: ALO-DA-EGGM-EGGMAT02-1994-0007

Rupture of Water Shielded Window

2. Report Type and Date: Final

	Date	Time
Notification:	04/27/1994	14:34 (MTZ)
Initial Update:	05/11/1994	11:47 (MTZ)
Latest Update:	05/11/1994	11:47 (MTZ)
Final:	06/14/1994	13:05 (MTZ)

3. Occurrence Category: Off-Normal

4. Number of Occurrences: 1 **Original OR:**

5. Division or Project: EG&G Mound Applied Technologies

6. Secretarial Office: DP - Defense Programs

7. System, Bldg., or Equipment: Building 50 - Cell 107 - Shielding Window

8. UCNI?: No

9. Plant Area: SM/PP

10. Date and Time Discovered: 04/27/1994 05:30 (ETZ)

After reading this report I would say that NO spill or Release took place to the environment. 05/15/03

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11. Date and Time Categorized: 04/27/1994 07:30 (ETZ)

12. DOE Notification:

Date	Time	Person Notified	Organization
04/27/1994	10:15 (ETZ)	D. V. Eckman	DOE/DAO

13. Other Notifications:

14. Subject or Title of Occurrence:

Rupture of Water Shielded Window

15. Nature of Occurrence:

01) Facility Condition
E. Safety Structure/System/Component Degradation

16. Description of Occurrence:

At 0530 hours (ETZ) on April 27, 1994, three operations employees were making their morning rounds in Building 50, which houses assembly and testing operations for the General Purpose Heat Source Program, when they discovered a pool of water on the floor of corridor 113. They also noticed an acrid odor. They observed that the observation window on cell 107 had broken. They were aware that a bromine compound was used as an algae inhibitor and thus called the Fire Department hazardous material clean-up team. They posted individuals to keep others out of the area and were taken to medical as a precaution. Medical found that no chemical exposures had occurred. The Fire Department sampled the air for bromine and found none. A sample of the spill was taken for analysis. The spill was contained and clean-up began. Approximately 33 gallons of water were spilled.

Although there was no evidence that the spill had entered the sanitary sewage lines, the close proximity of a drain in the change room led to precautions being taken to assure that no material was treated or released until confirmation of the antioxidant compounds were determined. Personnel familiar with these windows stated that potassium bromide was used to prevent algae growth. Upon analysis it was determined that no potassium bromide was present in the window. Instead analysis showed zinc bromide present. The liquid was counted for radioactivity as a precaution and no significant counts were observed.

The major concern became the failure of a designed safety feature. The shielding is not required in Cell 107 because it is an instrument and pump room that contains no radioactive material. Since all radioactive material in Building 50 is in sealed sources, no material could be inadvertently pumped into this room.

This Occurrence Report was reviewed by an Authorized Derivative Classifier (T. L. Buxton, Manager, Nuclear Technology) at 0800 hours (ETZ) on June 9, 1994 and contains

M 2 of 5

no Classified or UCNI Information.

17. Operating Conditions of Facility at Time of Occurrence:

Normal Start of the Day Operations

18. Activity Category:

03 - Normal Operations

19. Immediate Actions Taken and Results:

The spill was contained and clean-up began. The fill parts on all similar windows were checked for pressure to assure that no pressure was inadvertently building up in the windows. Plans were made to inspect all available windows for cracks or flaws (all corridor windows are covered with security barriers and are only partly visible).

20. Direct Cause:

1) Equipment/Material Problem
B. Defective or Failed Material

21. Contributing Cause(s):

4) Design Problem
B. Inadequate or Defective Design

22. Root Cause:

4) Design Problem
C. Error in Equipment or Material Selection

23. Description of Cause:

A failure analysis was performed on the broken window. While the direct cause was a failed glass plate, there was considerable difficulty in pinpointing the exact root cause. Some force had to be applied that allowed the sustained crack growth to proceed. This force could have been gas pressure buildup due to a modification about ten years ago removing expansion bladders, thermal stresses, or the mass of the zinc bromide water solution. The root cause was most likely the addition of the security plates about eight years ago. These plates were installed using a drill hammer which introduced microcracks around the bolt holes fastening the window to the wall. This design error in equipment selection (use of drill hammer) caused the flaws that grew into the broken window. A contributing cause was the selection of unannealed glass twenty to thirty years ago when the windows were installed. A polarized light source revealed stress patterns that indicate unannealed glass. This allows the microcracks to expand to a failure at lower stresses. Since this building was designed and modified, DOE Orders and industry practice have been modified/improved requiring a better selection of materials and tools.

In order to solve the problem of water spilling out of these windows in the case of cracking and thus loosing shielding,

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the windows containing stagnant water-Zinc Bromide Solution will all be drained and replaced with polyethylene beads which will adsorb the neutron radiation, but if a glass window cracks will not cause a cleanup problem. In this way, shielding will not be lost since the glass would crack only and the beads will not come out.

24. Evaluation (by Facility Manager/Designee):

An investigation into the cause of failure was immediately begun. All other windows were examined for cracks and one was located. The water was drained from the broken and cracked window. All other similar windows were checked to see if a positive pressure existed. Although no quantitative measurement could be made, all had a slight positive pressure that quickly dissipated. The window design is not built to be gas tight, so this pressure could not have been too excessive. The failure analysis investigated strength of this glass, points of origin, and fracture surfaces which determined the cause of failure.

The inability to identify the source of the stress which initiated failure is not uncommon with these sorts of failures, but the use of a drill hammer was undoubtedly the source of the initial microcracks in the window. The need to rapidly proceed on security barriers was a concern at that time and inadequate attention was paid to collateral damage.

25. Is Further Evaluation Required?: No

26. Corrective Actions

(* = Date added/revised since final report was approved.)

1.	All windows reviewed for cracks.	
	Target Completion Date: 04/28/1994	**Completion Date:** 04/28/1994
2.	Drain the failed and cracked window.	
	Target Completion Date: 04/29/1994	**Completion Date:** 04/29/1994
3.	Relieve any pressure on stagnant windows.	
	Target Completion Date: 04/27/1994	**Completion Date:** 04/27/1994
4.	Fill windows with polyethylene beads.	
	***Target Completion Date:** 05/15/1995	***Completion Date:** 04/25/1995

27. Impact on Environment, Safety and Health:

None

28. Programmatic Impact:

None

29. Impact on Codes and Standards:

None

30. Lessons Learned:

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The modification of facilities, even when done for good reasons, must be carefully and thoughtfully undertaken. The collateral damage caused by the wrong tool can be significant. It is also important to keep thorough records because events occurring between ten and thirty years ago can be the cause of events today.

31. Similar Occurrence Report Numbers:

1. None

32. User-defined Field #1:

33. User-defined Field #2:

34. DOE Facility Representative Input:

35. DOE Program Manager Input:

36. Approvals:

Approved by: BUXTON, TERRY L, Facility Manager/Designee
Date: 06/09/1994
Telephone No.: (513) 865-3424

Approved by: HOLBROOK, FRED B., Facility Representative/Designee
Date: 06/10/1994
Telephone No.:

Approved by: KUMAR, RAMENDRA, Program Manager/Designee
Date: 06/14/1994
Telephone No.: (301) 903-2865

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Appendix N

PRS Information

Recommendation pages are not generated for PRSs that require Further Assessment (FA) or that are unbinned. Accordingly, there are no recommendation pages for PRSs 271 and 336 included herein.

MIAMISBURG CLOSURE PROJECT
PRS 269

RECOMMENDATION:

Potential Release Site (PRS) 269 is an area of land where two underground fuel storage tanks were shown to be located in support of original plant construction in a 1948 construction drawing that indicated a fueling facility existed near the northwest corner of Building 50. No documentation of the tanks having been removed has been found, although it is believed that they were removed as part of construction demobilization. PRS 269 was binned Further Assessment (FA) by the Core Team in December 1996 based on the suspected presence of the tanks. FA included an assessment to locate the tanks, and if the tanks were found to be present, sampling should be conducted. If the tanks were determined to be no longer present, PRS 269 would be re-binned.

FA has been successfully completed by means of a ground penetrating radar (GPR) survey that did not identify any underground tanks at PRS 269.

Therefore, the Core Team recommends **No Further Assessment** for PRS 269.

A PRS Package with an NFA recommendation signed by the Core Team will be placed in the Public Reading Room for a 30-day review period. Upon closure of the public review comments, if any, the PRS Package will be issued as a final document and made available in the Public Reading Room.

CONCURRENCE:

DOE/MCP: _____ 3/19/03
Robert S. Rothman, Remedial Project Manager (date)

USEPA: _____ 3/26/03
David P. Seely, Remedial Project Manager (date)

OEPA: _____ 3/19/03
Brian K. Nickel, Project Manager (date)

RECOMMENDATION

PRS 31-36, 125, & 270 Package

Potential Release Sites (PRSs) 31-36, 125, and 270 were identified as PRSs as a result of breaks and/or separations in Mound's sanitary sewer lines, identified during a 1982 video survey of the lines. Radionuclides were not considered contaminants of concern. The concern was the potential release of non-radioactive contaminants into the environment from the identified breaks in the lines. A subsequent project repaired these lines by replacing them or by extruding a liner at the point of the breaks. Soil sampling was performed and results for all non-radioactive analytes were below 10^{-5} Risk-Based Guideline Values.

Therefore, the Core Team recommends **No Further Assessment** for PRSs 31-36, 125, and 270.

11-27-02

Rob Rothman, OSC
U.S. Department of Energy
Miamisburg, Ohio

11/26/02

Tim Fischer, RPM
USEPA
Chicago, Illinois

11/27/02

Brian Nickel
OEPA
Dayton, Ohio

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MOUND PLANT
PRS 391
SOIL CONTAMINATION

RECOMMENDATION:

This area was identified as a potential release site in June 1994 due to qualitative PETREX soil gas results obtained during the Operable Unit 5, Operational Area Phase I Investigation. A subsequent quantitative *Soil Gas Confirmation Investigation* within 25 feet of PRS 391 showed that all concentrations of volatile, semivolatile, PCBs, pesticides, metals, radionuclides, and explosives in the soils were below their respective ALARA, regulatory or 10⁻⁶ Risk Based Guideline Criteria. Therefore, NO FURTHER ASSESSMENT is recommended for PRS 391.

CONCURRENCE:

DOE/MEMP: Arthur Kleinrath 2/19/97
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 2/19/97
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 2/19/97
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 4/3/97 to 5/8/97

☒ No comments were received during the comment period.

☐ Comment responses can be found on page _____ of this package.

Appendix O

Work Plan (Draft)

WORK PACKAGE / PRELIMINARY HAZARD ANALYSIS

☐ Office Master Copy (Original Approval Signatures) ~ Field Working Copy (Original Field Sign -Offs) ~ Review Copy [Note: Mark this section in color] ~ Other Copy

Note: The Project Engineer is responsible for completing Sections 1 through 10.

1. WORK PACKAGE TITLE: **Building 50 Demolition**

2. WORK PACKAGE NUMBER: BOSS-36965-00 | **REQUESTOR: Steve Davis**

3. WORK PACKAGE SCOPE:

The purpose of this effort is to demolish Building 50. Using heavy equipment to demolish the facilities (including concrete block structure, slab, foundation, exterior stairwells, sidewalks, and stanchions to Bldg. 128), remove and dispose of the debris, provide site restoration, grading, and erosion mitigation with seeding and mulching.

Although radiological work was performed in the building, there is no record of unencapsulated radionuclides or contamination in the building. Unless Rad survey data indicates otherwise, this is a non-radiological demolition project and no RWP is required. Safe shutdown and utility isolation activities will have already been completed prior to demolition.

4. WORK LOCATION: **Building 50, PST Area**

5. WORK PACKAGE PHASES:	**LIST OF APPENDICES:**
1. Site Information	A – PHA/JSHA
2. Site Preparation	B – Pre-job Briefings/Job Status Log
3. Building Demolition Sequence of Work	C – Drawings/Sketches
4. Site Remediation & Demobilization	D – Miscellaneous (RWP, USQ, etc.)
	E – Post-job Conference/Lessons Learned

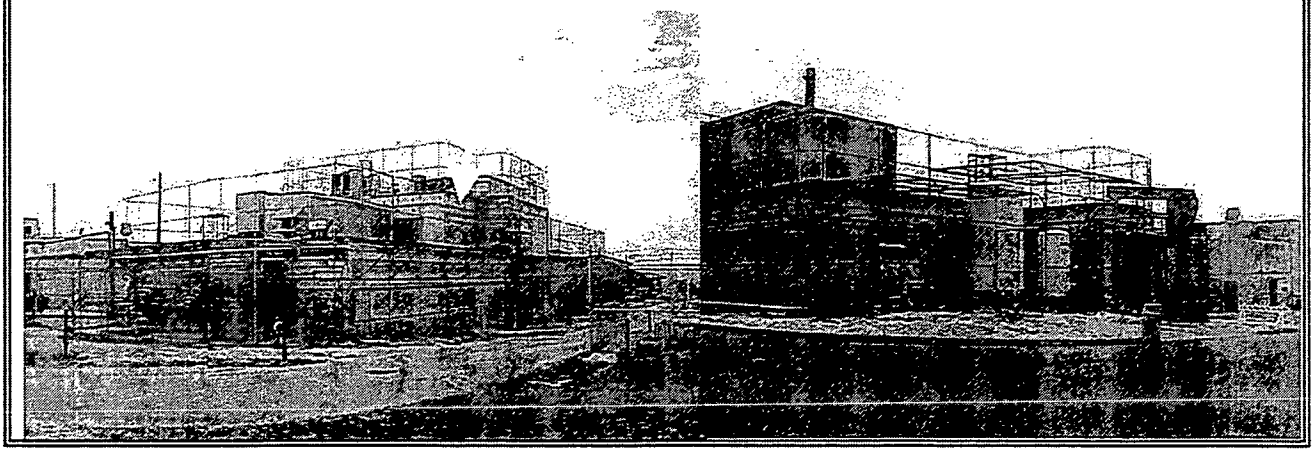
Note: Insert the Work Package phases for the job. A phase is a separately definable portion or evolution of the project.

6. SPECIAL MATERIALS AND EQUIPMENT:

1. Tracked excavator with shear, grapple, hoe ram, concrete cracker/pulverizer, or bucket attachment.
3. Rubber tired and tracked front-end loaders.
4. Transport equipment for debris as required.
5. Fog Cannon
6. Aerial lift/manlift

Note: Insert any materials that require long lead procurement or special order. Don't list common items such as PPE.

BUILDING 50, VIEWED FROM SOUTHEAST **BUILDING 50, VIEWED FROM NORTHEAST**



7. DETAILED WORK STEPS:

7.1 SITE INFORMATION

7.1.1 Building 50 Construction

Building 50 was constructed in approximately 1970 as the Alpha Fuels Environmental Test Facility. Based upon construction drawings, the total building area is approximately 15,275-ft^2 (the Penthouse has approximately 35: ft^2, with the first floor having 14,921 ft^2). Reference AYC 305000 Alpha Fuels Environmental Testing Facility construction drawing (as built).

The east, south, and north ground floor exterior walls of the building (up through the second floor/penthouse) are constructed of solid filled 8" concrete block; reinforced with #5 vertical rebar @ 24" O.C., with horizontal wall reinforcement (extra-heavy Durawall) every 2nd block course.. The west exterior wall is in 3 sections. The outer two sections (north and south) are constructed of solid filled 8" concrete block; reinforced with #5 vertical rebar @ 24" O.C., with horizontal wall reinforcement (extra-heavy Durawall) every 2nd block course. The middle section is constructed of 12" concrete blocks reinforced with #5 vertical rebar @ 24" O.C., with horizontal wall reinforcement (extra-heavy Durawall) every 2nd block course. The 12" reinforced block construction parallels the west side of the test cells and thus there is an interior wall section (along the southern half of test cells) that is of 12" reinforced concrete block construction. The interior walls of the rooms along the east, west, and south exterior walls (not the test cells), and in the penthouse, are constructed in the same manner as the exterior walls except they rest on the first floor and penthouse slabs. At approximately 7-1/3' intervals (measured from slab surface) there is a bond beam with up to 6 - #5 horizontal reinforcing rods in the exterior and interior room block walls (both 8" and 12" block walls).

The ground floor exterior and interior room walls (interior rooms along the exterior sections of the building) rest on poured reinforced concrete foundation sections and footers. The foundation sections are the same width as the concrete block wall: they support. The foundation walls are reinforced with vertical #4 rods the height of the foundation section, spaced every 12". There are also 2 - #6 rebar, continuous, every 12", horizontally. In addition, at the base of the foundation wall sections, there are 2 - #4 rebar 90°-elbow dowels, place every 12", which join the foundation sections to the footer sections. Securing the concrete block walls to the foundation sections are #5 rebar dowels, every 24", to match with the concrete block reinforcing. The foundation sections set on, and are keylocked with, reinforced, poured concrete footers. The footer: are 1 ½ foot thick, typically and are 12" wider than the foundation sections they support. The footers are reinforced with 2 #5 horizontal rebar, continuous, attached to the #4 rebar 90°-elbow dowels which join the foundation sections to the footer sections (identified previously). The elevations of the bottom of the wall foundation sections are dependent on the elevatio that rock strata were found; thus the depth of the footer sections (and consequently, the height of the foundation wall sections) may vary around the structure.

The first floor slab for the floor area from the exterior walls to the test cell walls are 6" thick poured concrete reinforced with a layer of 6 X 6 – 6/6 W.W.M. There is 6" of crushed stone and a vapor barrier beneath the slab. The first and second floor ceilings/roofs are 5 ½" poured concrete reinforced with crossing #4 or #5 rebar @ ~12". The exterior roof surface ha: a 4 ply built-up membrane over a lightweight concrete core and insulating layer.

Interior to the building are seven test cells. The walls of the seven test cells are poured-in-place, reinforced concrete. The eastern wall bounding the seven test cells (running in a north-south direction) is 36 in. thick, reinforced with #6 rebar every 8", horizontally and vertically, inside each wall face. The north wall of the northernmost cell and the south wall of the southernmost cell are also 36 in. thick, with like reinforcement. The western wall of the test cells, as well as the walls in-between the test cells are 27 in. thick, reinforced with #5 rebar every 8", horizontally and vertically, inside each wall face. In the 27 in thick walls, there are an additional 4 - # 5 reinforcing rebar (2 each wall face) just below floor or ceiling slab intersections. The cell walls are keylocked to footer and ceiling slabs and are also attached/stabilized by #4 or #6 rebar 90° elbow dowels. Cell 112 is a high bay room which extends above the second floor height. At approximately 26' above floo level, the cell walls narrow to a thickness of ~19", reinforced with #4 rebar @ 8", running horizontally and vertically inside each wall face. This wall section extends another 11', for a high bay, floor to ceiling height of 37'.

Under most cell walls are 2'(H) X 6'(W) poured concrete continuous footers. These footers are reinforced with 5 - #5 @ 12" rebar (running parallel with the length of the footers) welded to 48" - #4 rods @10" (normal to the #5 rebar) at the base of the footers. Under the north and south walls of test cell #112, are larger footers, measuring 3' (H) X 11' 9" (W). These footers are reinforced with 11 - #5 @ 12" rebar (running parallel with the length of the footers) welded to 10' - #8 rods @7 (normal to the #5 rebar) at the base of the footers. The elevations of the test cell footer sections are dependent on the elevation that rock strata were found; thus the depth of the footer sections may vary around the structure.

The floor slab for the test cells are 8" thick poured concrete reinforced with #4 @ 12" E.F.E.W rebar, except for a 16' X 1(area in the southwest corner of cell 112, which is 12" thick. There is 6" of crushed stone and a vapor barrier beneath the slab.

The ceilings of the test cells, except for a small area in cell 111 and the ceiling in cell 112, are 27" thick poured concrete, reinforced with #5 @ 8" crossing #5 @ 12", E.F. An 11' wide ceiling area, adjacent to cell 112 is 3' thick, reinforced the same. The ceiling thickness in the cell 112 (high bay area) is 18", reinforced with crossing (T & B) #4 @ 9' rebar. The high bay ceiling area also has a 15' X 15' removable roof section.

Each test cell has a concrete door, suspended on a 12 X 40.8 (63' long) I-beam trolley system. The concrete doors for the four south cells are 27" (T) X ~9' (H) X 7'-8" (W) and each door weighs approx. 28,000 pounds. Each concrete door for the three north cells are 27" (T) X ~9' (H) X 11'-2" (W) and weighs approx. 35,00 pounds. The concrete is reinforced with three equally spaced rebar lattices of #6 @ 8" rebar.

7.1.2 Additional Building 50 information

Building 50 later (late 1970s) became the Radioisotope Thermoelectric Generator (RTG) assembly and testing facility. It is bordered by Buildings 36, 128, and 37 to the west, the site perimeter fence to the east, and Building 126 to the north. There is an electrical substation (AF Sub) to the south side of the building. See aerial map in Appendix C.

Located near the center of the western side of the building, an underground, 1100-gallon, steel waste holding tank, mounted on tank supports, is set in a concrete pit. The pit is designated as the "Red Drain Disposal Pit." Drain water from all potentially radioactive areas (showers, risk area floor drains, service sinks, test cells, and the filter bank) is collected in the 1,100-gallon holding tank. After sampling, uncontaminated water is pumped into the gravity flow 8-in. sanitary sewer. Rad data indicates that the tank never held contaminated wastewater.

Abutting the south side of the Red Drain Disposal Pit was a concrete sanitary waste pit housing a sanitary lift station (two pumps). During the Building 126 construction activities, the concrete sanitary pit was demolished and the lift station pumps removed. The building sanitary line was subsequently tied into the new sanitary sewer line, north of Buildings 50 and 37.

Building ventilation, both for the buffer and the controlled area, was routed through high efficiency particulate air (HEPA) filters, then exhausted. Ducts conveying air to the filters and subsequently to discharge points were not labeled by content. However, from past Rad surveys, no radiological contamination was ever found in the HEPA filter bank system or ducting and no remediation of the filter bank/ventilation systems needs to be performed prior to demolition of the facility.

Heating and air conditioning systems are central hot water (supplied from Building 128) and chilled water (roof-mounted chiller system). The building has a fire sprinkler system, except for cells 108, 109, 110, 111, and 113.

As part of a facility upgrade for Building 50 (late 1990s), asbestos abatement of piping insulation was performed in the penthouse area. Any asbestos material remaining in the building will be removed by a certified asbestos abatement contractor as part of pre-demolition safe shutdown activities.

7.2 NATIONAL HISTORIC PRESERVATION ACT (NHPA)

Building 50 is not listed as a historic structure with the Ohio of Historic Preservation Office (OHPO). No mitigative documentation package is required.

IMPORTANT: However, if any items or artifacts are discovered as this project progresses, the Cultural Resource Representative will be notified at extension 3691. If necessary, work will be suspended until which time the items or artifacts have been recovered.

7.3 SITE PREPARATION & MOBILIZATION

7.3.1 Site Access Control

Access to the work zone boundary will be controlled using fencing and/or with barricade tape as directed by the Project Foreman. Proper signage will be placed at all access points to the work zone.

The work zone is not to be entered by anyone not directly involved with the demolition unless they have contacted the Project Construction Manager or Project Foreman in advance.

Emergency egress for Building 126 occupants shall be maintained, if personnel are still occupying Building126.

IMPORTANT NOTE: During demolition activities, when Building 50 structures are being collapsed, access to Building 126 from the south entryways will be restricted.

7.3.2 Sediment/Storm Water Control

7.3.2.1 Cover field grates with covers/sheeting for silt protection ewer gratings (See maps Appendix C) and install sediment/storm water control silt fences around designated construction area, as needed. Protect Sanitary Sewer and utility access manholes with steel plates, as needed. Coordinate and evaluate effectiveness of controls periodically throughout demolition activities with Environmental Compliance PoC.

7.3.2.2 Ensure spill kit is in area and available and adequate to prevent glycol or any other contaminant from entering storm drains.

7.3.3 Clear Area and Mark/Protect Utility Equipment

7.3.3.1 The area around the building will be cleared of obstacles as appropriate. Coordinate with site Safety and Health and Environmental Compliance.

7.3.3.2 Mark (with visible stakes) and/or construct barriers to protect utility equipment, as needed:

- Fire line PIVs south of building.
- Fire hydrant east of building.
- Three security/communications junction boxes (green) east side of building
- Above ground gas service line riser southeast of building.
- Hot water piping/utility stanchions (north-south stanchion line) from Bldg. 128 to Bldg. 37.

7.3.4 Temporary Utilities

The only temporary utility that may be required is water. If domestic water is utilized, ensure backflow prevention is present. Coordinate with site Safety and Health and Environmental Compliance PoCs. Water will be used to control dust emissions. Coordinate with Utilities Group/Utilities Package for services needed.

7.3.5 Temporary Facilities

This project will use the existing BOSS project trailer complex located in the existing Mound "C" parking lot.

7.3.6 Temporary Communications

Temporary communications are required (cell phone, radios) as equipment for hearing plant announcements and emergency notifications will have been removed during safe shutdown activities. At the job site, plant announcements and emergency notifications can be heard on the Plant radio channel.

7.3.7 Staging Areas

The project site is of sufficient size to be used as a staging area for materials needed/generated.

7.4 PRELIMINARY ACTIVITIES AND VERIFICATIONS

IMPORTANT

7.4.1 Verify all Building Safe Shutdown Activities have been completed per workpackage BOSS-36963.

verified by _____ date: _____
Bill Wahler or designee/email

7.4.2 Verify all Building Mechanical and Electrical Utility Isolation Activities have been completed per workpackages FTS-36966 and FTS-37641, respectively.

verified by _____ date: _____
Allen Upshaw or designee/email

7.4.3 Verify the Radiological Final Status Survey Report complete, by contacting Steve Collas @ 4522. Ascertain if any area in the building constitutes a Rad Hazard. If any area constitutes a Rad Hazard, coordinate with Rad Controls fc RWP/PPE/work controls and determine if separate Rad Demolition Package is required. If there is not any Rad Hazard, continue with this work package.

HOLD POINT: Radiological Final Status Survey Report complete verification: Rad Hazard exists ☐ Yes ☐ No

verified by_____ date _____
Rad PoC or email

verified by_____ date _____
Bill Wahler or designee/email

7.4.4 The *Pre-Job Briefing Record* must be completed and signed.

Verified by _____ date: _____
Mike Stromberg or designee/email

7.4.5 The Job Specific Hazards Analysis (JSHA) must be reviewed.

Verified by _____ date: _____
Mike Stromberg or designee/email

7.4.6 Notify Gary Weidenbach, Bldg. Mgr., X3241 (608-8207) of demolition schedule, potential traffic pattern delays, and building access/egress coordination.

Verified by _____ date: _____
Mike Stromberg or designee/email

7.5 BUILDING DEMOLITION SEQUENCE OF WORK

7.5.1 Structural Demolition

Notification of Demolition and Renovation form must be filed with the Regional Air Pollution Control Agency (RAPCA) at least **10 business days before planned building demolition.**

HOLD POINT: RAPCA Notification verification

Environmental Compliance PoC_____ Date to Proceed with Demo_____

HOLD POINT: 'COLD & DARK' Review Team Walk-down Completed &Project Manager Authorizes Work to Start:

Project Manager:_____ Date and Time:_____

Review Team: Program Manager, Construction Manager/Foreman, and Project Engineer, at minimum.

IMPORTANT NOTE: All workers have Stop Work Authority. Situations where stop work authority is to be exercised are:
To stop unsafe work.
To stop unauthorized work, i.e., work outside the scope of this workpackage.

7.5.1.1 Using heavy equipment as needed, demolish and remove the fencing from around the perimeter of the building.

7.5.1.2 Using heavy equipment as needed, demolish and remove the jib crane and concrete support, located at the north end of the building. Use the excavator with the grapple attachment to hold the elevated parts to be demolished steady while the concrete base is fractured to bring down the crane support pedestal. The concrete pier footings for the crane will be removed during demolition of the foundation and dock pad.

7.5.1.3 If not previously removed by the vendor, contact vendor to disconnect and remove the Argon and Nitrogen gas bulk tanks from the south side of the building. Transport tanks to a temporary storage location.

7.5.1.4 Using heavy equipment as needed, demolish and remove the AF electrical substation located at the south end of the building.

7.5.1.5 Using heavy equipment, working from the south and north ends of the structure, demolish the block exterior walls of the structure, leaving debris in-place as part of the ramp to allow equipment to reach the penthouse section of Building 50.

7.5.1.6 Using heavy equipment, working from the south and north ends of the structure, using the concrete pulverizer (or like equipment) demolish the poured concrete test cell structures. Use debris, as necessary, as ramp material to allow equipment to reach the upper sections of the high bay cell (cell 112).

7.5.1.7 Use the existing slab for load out surface for loading debris and placing into appropriate hauling containers or trucks.

7.5.1.8 If not removed during Safe Shutdown/Utility Disconnect activities, demolish/remove the hot water/steam piping and utility stanchions (east-west piping line, at southwest corner of Building 50; see sketch/photo), which ran from Bldg. 50 to Bldg. 37 and/or from Bldg. 50 to Bldg. 128. Excavation permit required. Stanchion and pipes over 14' above the ground should be stabilized using the excavator with the grapple attachment to hold the elevated parts to be demolished steady while the shears cuts the base(s) free. The materials will be sized and placed into appropriate hauling containers or trucks.

Note: The progression of the building demolition and selection/sizing of demolition equipment will ultimately be determined in the field.

CAUTION HAZARD: Vehicle traffic hazard. Control traffic flow as necessary. Project Engineering will coordinate the posting of notice on GroupWise/Mound News, several days in advance and during ongoing demolition work, that traffic routes around the demolition area may be interrupted or diverted. Notify the following organizations/personne that traffic patterns may be disrupted: Gary Morris (X4015 or 608-8242) Security (Ron Parr, X3958 or 608-8291), Fire Dept. (Tom Beal, X4897 or 608-8295), Transportation (Brady Barnhart, X4047 or 608-8284), and the Building Manager (Gary Weidenbach (X3241 or 608-8207).

CAUTION GLYCOL/CONTAMINATE SPILL HAZARD: Be aware of potential for residual glycol in piping to spill during demolition. Ensure spill kit is available to prevent glycol or any other contaminant from entering storm drains.

WARNING HAZARD: Dust Control – Utilize misting & fogging during demolition & road wetting during waste hauling. The goal is no visible dust emissions. Periodically evaluate control methods to determine their effectiveness.

CAUTION HAZARD: Contact with overhead power lines with heavy-duty equipment. If any part of heavy-duty equipment has the potential to come within 10' of street lighting circuit, perform LOTO to de-energize electrical power source. This circuit must be re-energized each evening when demolition is complete for that day.

CAUTION HAZARD: Struck by flying debris. Establish construction boundary. Wear hard hat, safety glasses, safety shoes, (Level D PPE) and reflective vest inside construction area.

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:
- Shear – 75 feet
- Hoe Ram – 50 feet
- Other heavy duty equipment – 30 feet
- Bobcat – 15 feet

CAUTION HAZARD: Breaking through into sub-floor pit (along corridor floor on western side of building) or falling into open pit (cells 112 and 113 may have open pit areas). Identify and mark hazard areas during walkdown of area with work crew. Use spotter if vision is obstructed.

WARNING NOISE HAZARD: Wear hearing protection while running heavy-duty equipment. Follow the requirements of MD-10286 D9.

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

CAUTION HAZARD: A Hot Work Permit will be required if a torch is used for cutting. Coordinate with site Safety and Health for PPE/work controls before torch-cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel). Obtain and follow Hot Work permit per MD-10286 O2

CAUTION HAZARD: Terrain surrounding Bldg. 50 is covered with rip-rap/rock. Slipping, and tripping hazards may exist due to poor footing from loose rock. Use caution traversing the area.

7.5.2 Slab and Foundation Demolition

IMPORTANT: Exercise caution when demolishing and removing slab and foundation/footers to not damage underground utilities. Be alert to and reference Underground Utilities Vista Maps in Appendix C for the following utility system lines running near the foundation/slab of Building 50.

- Sanitary System Line running along the west side of Building 50.
- Storm Sewer System lines running along the perimeter of the foundation of Building 50.
- Fire Protection System lines and Domestic Water System lines running along the west side of Building 50's foundation.
- Power Supply lines on the west and east sides of Building 50's foundation.

NOTE: During the concrete demolition, use heavy equipment to assist radiological control personnel to perform radiological screening of ground contact concrete surfaces. Based on radiological screening results, transport to designated disposal area as directed by Waste Management PoC.

7.5.2.1 Using heavy equipment, break apart the concrete slab, foundation, sidewalks. and footers to 3 feet below grade, torch cut the rebar if required (Hot Work Permit is required) to support demolition and downsizing.

7.5.2.2 Using heavy equipment, remove/demolish the Red Drain (RAD) storage tank. The tank and concrete pit surfaces will be surveyed/ scanned by Rad. Control technicians. Survey/sample the interior of the tank, as possible.

7.5.2.3 Demolish and completely remove both the Red Drain concrete pit and the sanitary waste concrete pit (if any of the sanitary pit remains). Use torch to cut rebar as necessary to support downsizing/demolition (Hot Work Permit Required) Dispose of tank/pit material per direction of Waste Management POC.

7.5.2.4 After removal of the concrete pits, Radiological Control will perform a walkover survey of the soil below the removed pits. Radiological Control will collect three (3) biased soil samples from the soil under the two removed concrete pits. The samples will be sent to the onsite laboratory for gamma spec analysis.

NOTE: If soil staining or unusual fumes/odors are noted during tank/pit excavation, contact IH (Chris Ahlquist X3737 or 608-8203) or Safety (Doug Hanson X3769 or 608-8008) and Environmental Compliance (Ron Paulick X4080). The tanks are located at the approximate midpoint of the exterior western wall of Building 50.

7.5.2.5 Using heavy equipment, remove and demolish the concrete pier footings for the stanchions and jib crane. Pier footings will be removed and surveyed/ scanned by Rad. Control technicians. The materials will be sized and placed into appropriate hauling containers or trucks.

7.5.2.6 Using heavy equipment, remove and demolish the security detector posts and any utility protection posts that will no longer be needed. Post footings will be removed and surveyed/ scanned by Rad. Control technicians. The materials will be sized and placed into appropriate hauling containers or trucks.

Note: The progressions of the slab & foundation demolition will ultimately be determined in the field.

CAUTION HAZARD: Strike underground utilities. Obtain Excavation permit and follow its requirements per MD-10286 O5

WARNING HAZARD: Personnel entry into excavation/trench 4' or greater in depth. Obtain Excavation permit and follow its requirements per MD-10286, Operations O5, M10, and M11. Operators must be trained to OSHA requirements of 29 CFR 1926, Subpart P. Erect soil barricade and use Personnel Retrieval Equipment, as necessary.

CAUTION HAZARD: Contact overhead power lines with heavy-duty equipment. If any part of heavy-duty equipment has the potential to come within 10' of street lighting circuit, perform LOTO to de-energize electrical power source. This circuit must be re-energized each evening when demolition is complete for that day.

WARNING HAZARD: Dust Control – Utilize misting & fogging during demolition & road wetting during waste hauling. The Goal is no visible dust emissions.

WARNING NOISE HAZARD: Wear hearing protection while running heavy-duty equipment. Follow the requirements of MD-10286 D9.

CAUTION HAZARD: Struck by flying debris. Establish construction boundary. Wear hard hat, safety glasses, safety shoes, and high visibility clothing (i.e.; highway reflective vests; fluorescent shirts) inside construction area.

CAUTION HAZARD: A Hot Work Permit will be required if a torch is used for cutting. Coordinate with site Safety and Health for PPE/work controls before torch-cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel).

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:
- Shear – 75 feet
- Hoe Ram – 50 feet
- Other heavy duty equipment – 30 feet
- Bobcat – 15 feet

CAUTION HAZARD: Burns/fire. Utilize Burn Permit , fire protection, and wear appropriate PPE

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

CAUTION HAZARD: Terrain surrounding Bldg. 50 is covered with rip-rap/rock. Slipping and tripping hazards may exist due to poor footing from loose rock. Use caution traversing the area.

7.6 Site Remediation & demobilization

7.6.1 Grading, Seeding, & Mulching

7.6.1.1 Remove rip-rap/rock as necessary to provide smooth continuous grade and restore the area by grading and filling with appropriate amount of gravel/soil to grade to drain.

7.6.1.2 Apply appropriate amounts of grass seed and mulch to maintain erosion control/protection in accordance with Environmental Compliance PoC instructions.

7.6.1.3 Remove any temporary protection/structures used to protect utility equipment/PIVs, Sanitary /Storm Sewer grates and manholes, and utility access manholes.

7.6.1.4 Remove silt protection covers from field grates and any remaining sediment/storm water control fences, straw bales and sand bags, unless it is beneficial to keep silt/sediment control devices in-place for further demolition/remediation work.

7.6.1.5 Remove sediment and debris that has collected at the storm sewer gratings and along roadways and curbing.

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

CAUTION FALLING HAZARD: Utilize fall protection, barricades, or man-lifts

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:
- Shear – 75 feet
- Hoe Ram – 50 feet
- Other heavy duty equipment – 30 feet

- Bobcat – 15 feet

CAUTION HAZARD: Terrain surrounding Bldg. 50 is covered with rip-rap/rock. Slipping and tripping hazards may exist due to poor footing from loose rock. Use caution traversing the area.

7.6.2 Demobilize Construction Equipment

Remove dust control water distribution system, temporary power (if used), fencing and any traffic control. Scan equipment for radiological contamination prior to leaving area, as required, dependent upon in-process Rad surveys.

CAUTION FALLING HAZARD: Utilize fall protection, barricades, or man-lifts

Note: Insert the activities to be performed during the job. Describe the specific methods of accomplishing these activities and appropriate level of detail based on the complexity, hazard, and skill of the craft. Activities listed must be grouped under the Work Package phases listed in item 5.

8.COMMENTS:

Note: Comments, to identify activities/hazards that are common to multiple phases of the project (example: Wear leather gloves when handling cut pipe). Identification of these items will facilitate the addressing the items once in the pre-job briefing.

9. REVIEW SIGNATURES:

Written by: _____ Date: / / Phone: _____

Superintendent: _____ Date: / / Phone: _____

Foreman: _____ Date: / / Phone: _____

Project Eng. Mgr: _____ Date: / / Phone: _____

Industrial Hygiene : _____ Date: / / Phone: _____

Safety : _____ Date: / / Phone: _____

Rad. Controls: _____ Date: / / Phone: _____

ES&C: _____ Date: / / Phone: _____

Waste Mgmt: _____ Date: / / Phone: _____

Bldg. Mgmt: _____ Date: / / Phone: _____

Classification: _____ Date: / / Phone: _____

Other: _____ Date: / / Phone _____

Note: Project Manager has the authority to N/A signatures if review is not applicable.

10. USQ SCREEN / DETERMINATION REQUIRED? ☐YES ☒NO

Brief Explanation___ This work will have no affect upon a Nuclear or Radiological Building_____

_____

USQ Trained Person: Date: / / Phone: _____

11. AUTHORIZATION SIGNATURE:

Project Manager: Date: / / Phone: _____

12. WORK PACKAGE CLOSURE:

Job Supervisor: Date: / / Phone: _____

Project Manager: Date: / / Phone: _____

RETURN PHA TO IS&H AT JOB COMPLETION.

APPROVAL CONTINUATION SHEET

Reviews:

Name	Signature	Date	Department

Reference Drawings	Rev.	Reference Procedures	Rev.
AYC 305000 – (Bldg. 50) Alpha Fuels Environmental Test Facility	1		

Appendix A

PHA/JSHA

APPENDIX A

Preliminary Hazard Analysis (PHA) For Work Package Activities

SECTION A, INDUSTRIAL SAFETY - TO BE COMPLETED BY THE INDUSTRIAL SAFETY AND HEALTH REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Hazard Analyses. Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards, that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Access/Blockage:			
Blockage of exits or means of egress	YES	2, 3	[EGRESS] Building 126 south side access restricted during demolition/collapse of building.
Blockages/obstructions (Identify)	YES	2, 3, 4	Roadway around Bldg. 50 & plant-site access to Bldg. 126
Confined space entry (permit)	N/A	N/A	[CONFINE]
Emergency alarms or evacuation plans required	YES	2, 3, 4	[EMERG] Plant Public Address system will be used to announce any plant emergency over the plant radio channel, cell phones will be used also, no specific added hazards exist in the demolition of this building.
Obstruction of fire protection equipment (pull boxes, hydrants, fire department connections, control panels, fire extinguishers, etc.)	YES	All	Fire utilities available for emergency use.
Traffic control/flagman	YES	3, 4	[TRAFIC] as needed basis, during equipment movement & demolition activities
Flammable/Explosive:			
Burning, welding, hot-work (Fire Watch) (permit)	YES	2, 3	[BURN] Use of cutting torch during demolition. Obtain and follow Hot Work Permit. All compressed gas cylinders will be stored, transported and used in accordance with MD-10286, Ops. H-1. Coordinate with site Safety and Health for PPE/work controls before torch-cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel).
Chemical compatibility of corrosives/flammables	N/A	N/A	
Explosive/flammable atmosphere	N/A	N/A	
Explosives	N/A	N/A	
Fire protection system/equipment outage	YES	2	[FIRE/EFIRE]] FAS & fire protection system isolated during Utilities Isolation activities.
Fire Hazards Analysis/Fire Engineer Approval	YES	2	[FHA/ADJA] FHA walkthrough of facility is accomplished during Utilities Isolation activities
Flammable liquids/gases	YES	2, 3	[FLAM] Use of cutting torch during demolition. Obtain and follow Hot Work Permit. All compressed gas cylinders will be stored, transported and used in accordance with MD-10286 ops. H-1.
Powder-actuated tools (permit)	N/A	N/A	
Special Fire Protection Equipment Required	N/A	N/A	[FIREQU]
Chemicals:			
Chemical process safety	N/A	N/A	
Compressed gas cylinders	YES	2, 3	Use of cutting torch during demolition. Obtain and follow Hot Work Permit. All compressed gas cylinders/bulk gas tanks will be stored, transported and used in accordance with MD-10286, Ops. H-1.
Emergency eyewash/shower available	N/A	N/A	[EWASH]
Elevated/Aerial Work:			
Crane operations, overhead or mobile	N/A	N/A	
Critical lifts (heavy or high value loads)	N/A	N/A	[CLIFT]
Elevated work/fall protection	YES	2, 3, 4	[ELEV] Utilize fall protection, as necessary, per Op M8 of MD 10286.
Forklift, aerial lifts or material handling equip	YES	2, 3, 4	
Hoisting and rigging	YES	2, 3, 4	[HOIST] Initiate Hoisting/Rigging permit. Implement applicable sections of M10508
Overhead utilities (Identify)	YES	ALL	[UTIL] See Vista Maps in Appendix C

Preliminary Hazard Analysis (PHA) For Work Package Activities (Continued)

SECTION A, INDUSTRIAL SAFETY - TO BE COMPLETED BY THE SAFETY AND HEALTH REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.). Including any notations for future Job Safety and Health Analysis(JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Lockout/tagout, outages, disconnects (permit)			[LOTO/ISO]
• Electrical	YES	2	Electrical Isolation of facility is accomplished during Utilities Isolation activities. Streetlight circuit to be LOTO as needed.
• Mechanical (steam, hydraulic, pneumatic, gravity)	YES	2	Isolation of facility utilities is accomplished during Utilities Isolation activities. Streetlight circuit to be LOTO as needed.
• Interlocks	N/A	N/A	[ILOCK]
• Chemical	N/A	N/A	
• Radiological	N/A	N/A	
Outages of the plant public announcement (PA) system or the emergency notification system	N/A	N/A	[OUTAGE]
Building Systems Alarms - Ensure systems are not functional by contacting: Fire Department Security Facilities Services.	YES	2	-Fire Alarm Pull Boxes x -Fire Suppression Water Flow Alarms x -Smoke Detector Alarms x -Security Systems x -DDC signals x
Alarm Disable/Disconnect	YES	2	FAS & fire protection system isolated during Utilities Isolation activities.
Structure Related:			
Modification to Fire Wall/Door	N/A	N/A	[FIREWAL]
Penetrations into walls, floors, etc. (permit)	N/A	N/A	[PENETR]
Plastic sheeting or wood framing/enclosures	N/A	N/A	
Structural Modification	YES	3	[STRUCT] Structure/slab being demolished
Work impacting adjacent normally occupied areas	YES	2, 3, 4	[ADJAC/BMAPP/SIGNS/NOTIF] Building 126 alternative access provided.
Temporary Requirements:			
Temporary heating facilities	N/A	N/A	
Temporary/portable buildings or structures	N/A	N/A	[FACIL]
Temporary service hook-ups (Identify)	YES	2,3,4	Temporary water & electricity hook-ups, as needed
Public utilities (Identify)	N/A	N/A	[WATER]
Lighting/illumination/adequacy	N/A	N/A	[MLITE]
Miscellaneous:			
Machine guards	N/A	N/A	
Off-shift work	YES	2,3,4	
Repetitive work	N/A	N/A	[ERGO]
Other (Specify)	N/A	N/A	
Work in attics, ceilings, chases, or crawlspaces	N/A	N/A	
Work Requiring Scaffolding (inspection required)	N/A	N/A	[SCAFF]
Electrical:			
Electrical hazards	YES	2,3,4	[LIVEL] Electrical Isolation of facility is accomplished during Utilities Isolation activities. LOTO overhead & underground utilities, as needed.

APPENDIX A

Preliminary Hazard Analysis (PHA) For Work Package Activities (Continued)

SECTION A, INDUSTRIAL SAFETY - TO BE COMPLETED BY THE SAFETY AND HEALTH REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), including any notations for future Job Safety and Health Analysis (JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Grounding of electrical equipment	N/A	N/A	
Soils/Excavation:			
Underground utilities (Identify)	YES	2,3,4	[UITL] Isolation of facility utilities is accomplished during Utilities Isolation activities.
Trenching/Shoring (permit)	YES	2,3,4	[DIG] Excavation Permit required
Hazards due to condition of facility or terrain (Identify)	N/A	N/A	
Any soil disturbance	YES	2,3,4	[DIG] Rad waste tank & sanitary pits to be removed. Excavation Permit required

SECTION B, INDUSTRIAL HYGIENE - TO BE COMPLETED BY INDUSTRIAL HYGIENE REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), including any notations for future Job Safety and Health Analysis (JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Asbestos/Fibers:			
Asbestos	YES	3	[ASBEST]. Assumed to be in asphalt roofing. Demolition of roof/floor tile by normal remote (using Heavy Duty) means only. Certified contractor may remove floor tile.
Removal of ceiling tiles*	N/A	N/A	
Insulation/man-made mineral fibers (☐ MSDS available)*	N/A	N/A	
Hazardous Materials:			
Beryllium	N/A	N/A	
Cadmium	N/A	N/A	
Chlorofluorcarbon (CFC)	N/A	N/A	[CFC]
Coal, tar or asphalt products	Yes	3	Roofing material contains tar and asphalt products; to be disposed of as construction debris.
Lead	Yes	3	Coordinate with site Safety and Health for PPE/work controls before torch-cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel). Contact IH & Waste Mgmt for handling & disposal guidance.
Mercury	Yes	3	Switches & barometer; Contact IH & Waste Mgmt for handling & disposal guidance.
Polychlorinated biphenyl's (PCBs)	N/A	N/A	
Carcinogens (☐ MSDS available)*	N/A	N/A	[CARC]
Chemical/Corrosives:			
Chemicals/solvents (☐ MSDS available)*	N/A	N/A	[CHEM/MSDS]
Corrosives/acids/caustics (☐ MSDS available)*	N/A	N/A	

*NOTE: Requires a description of the materials involved which present a hazard. Identify the physical location of the MSDS.

Preliminary Hazard Analysis (PHA) For Work Package Activities (Continued)

SECTION B, INDUSTRIAL HYGIENE - TO BE COMPLETED BY INDUSTRIAL HYGIENE REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), Including any notations for future Job Safety and Health Analysis (JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Ventilation/Air:			
Abrasive blast (☐ MSDS available)*	N/A	N/A	
Coating/painting (☐ MSDS available)*	N/A	N/A	
Dusty operations	YES	2, 3, 4	[POWDER] Potential dust generation controlled via water misting during demolition and road wetting during waste hauling per OPA 980014.
Foam in Place Operations	N/A	N/A	
Spraying/generation of mists*	YES	3, 4	Potential dust generation controlled via water misting during demolition and road wetting during waste hauling per OPA 980014.
Ventilation or Air Monitoring requirements	YES	2, 3, 4	[VENTIL/IH] Air monitoring for potential silica during demolition activities will be performed as needed for annual site assessment.
Miscellaneous:			
High Pressure systems	N/A	N/A	[HIPRES]
Lasers	N/A	N/A	
Noise in excess of 85 dBA	YES	2, 3, 4	[NOISE] Hearing protection required
Blood-borne pathogens*	N/A	N/A	
Temperature extremes (heat or cold stress)	YES	2, 3, 4	[CRYRO/COLD/HEAT] Discuss in Pre-job/daily briefings & monitor work.
Welding, brazing, or thermal cutting operations (permit)	YES	3, 4	[BURN] Hot Work Permit required.
Hazardous Waste Operations (HAZWOPER)*	N/A	N/A	
Other (specify)	N/A	N/A	-

***NOTE:** Requires a description of the materials involved which present a hazard. Identify the physical location of the MSDS.

APPENDIX A

Preliminary Hazard Analysis (PHA) For Work Package Activities (Continued)

SECTION C, RADIOLOGICAL PROTECTION - TO BE COMPLETED BY RADIOLOGICAL CONTROLS REPRESENTATIVE
Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. RWP, ALARA Plan, etc.). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person. (Use Section F if additional space is needed.)

Item		Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Location:	Controlled Areas (Specify)	N/A	N/A	No unencapsulated Radionuclides in building
	Other (Specify)	N/A	N/A	
Activities:	Digging/Soil Removal (permit)	YES	2, 3, 4	[DIG] Survey soils and concrete (soil contact side) following slab removal. Excavation Permit required. Flip slab sections to survey before release.
	• URMA	N/A	N/A	
	Welding, burning, grinding, hammering, chipping, or scraping of contaminated materials	N/A	N/A	Hot work permit required
	Decontamination	N/A	N/A	
	Other (Specify)	N/A	N/A	
Sources:	X-Ray equipment, sealed, or unsealed sources	N/A	N/A	
Controls:	Radiological Work Permit	N/A	N/A	[RWP/RWP=JS/RWP=N/R/RPGEN]
	ALARA Plan	N/A	N/A	[ALARA]
	Other	N/A	N/A	

Preliminary Hazard Analysis (PHA) For Work Package Activities (Continued)

SECTION D, ENVIRONMENTAL COMPLIANCE- TO BE COMPLETED BY ENVIRONMENTAL COMPLIANCE REPRESENTATIVE
Identify engineering/administrative controls as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard. Additionally, identify any activities which are DOE or EPA prescribed protective requirements. (Use Section F if additional space is needed.)

		Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Conditions:	Fugitive Dust (**refer to Table 1 below**)	YES	2, 3, 4	OPA 980014 Section 2.11; Use water misting during demolition & road wetting during waste hauling.
	Storm Water Runoff	Yes	2, 3, 4	Cover field grates with covers/sheeting. Install sand bags/silt fences, as needed.
	Erosion Control	YES	3, 4	Grading, seeding, & mulching
	NESHAPS Calculation	YES	N/A	Emission Levels determined to be below requirement. No US EPA approval required for this building.
	National Historic Preservation	N/A	N/A	
	• Artifacts found			•
	Safe Drinking Water Act	Yes	2, 3	Ensure backflow prevention for water misting source.
	• Potable water	Yes	2, 3	Ensure backflow prevention for water misting source.
	• Backflow preventers for misting	Yes	2, 3	Ensue backflow prevention for water misting source.
	Emergency Spill Response Materials (Confirm process lines are drained)	Yes	3	Ensure glycol spill kit is available. Isolation of facility utilities is accomplished during Utilities Isolation Workpackage activities.
	Locate Monitoring Wells	No	N/A	Vista Maps show none located in area near bldgs 50
Notifications:	RAPCA Notification for Asbestos	N/A	N/A	Asbestos abatement completed prior to demolition.
	RAPCA Notification for Demolition	Yes	3	Required 10 business before beginning demolition activity
	Emergency Spill Response Notification	Yes	3	Call 911 or 854-4040, have spill kit at job site.
	Other			

Preliminary Hazard Analysis (PHA) For Work Package Activities (Continued)

SECTION E, WASTE MANAGEMENT- TO BE COMPLETED BY WASTE MANAGEMENT REPRESENTATIVE *Include any required and/or other special actions to be taken because of the particular hazard. Additionally, identify any activities which are required by DOE, Nevada Test Site, Envirocare or other waste site.* (Use Section F if additional space is needed.)

	Quantity Expected	Work Package Phase	Radiological Characterization	Packaging Requirements	Mode of Disposal
Types:					
Sanitary Landfill Waste: • Concrete • Steel & Copper Piping • Metal Roofing • PVC • Electrical Wiring • Fiberglass Insulation • Wood	Total 4000 Cubic Yards	3	No elevated radioactivity levels	30 Cu. Yd. Roll-Off/End Dumps	Offsite disposal via Waste Management Operations/Journey LTD
Hazardous Waste: • RCRA Hazardous Waste • Asbestos • Other	~10 Cu. yd.	During Utilities Disc. Pkg.			
Mixed Waste	N/A	N/A			
Low Level Radiological Waste: • Building Debris • Below grade	N/A	N/A			
Transuranic (TRU) Waste	N/A	N/A			
NOTE: 1. Sealed pressure vessels will need to be at <1.5 atmosphere if present. 2. Any items not previously evaluated are to be set aside for evaluation by Waste Management prior to disposal.					
Other:					
Material sent off-site Fill out MD-22180 Attachment 1 (see Appendix D)					
Material sent to concrete crusher/ Fill out MD-22180 Attachments 1 &2 (see Appendix D)					

SECTION F - OTHER CONDITIONS, CONCERNS, OR SUPPLEMENTAL INFORMATION FROM SECTIONS A THROUGH C INCLUDING APPLICABLE LESSONS LEARNED:

EMERGENCY PREPAREDNESS

- **Site Notification Procedures**
  Use **911** for all emergency services onsite. This is the first response for any emergency, spill, or release. If using a cell phone, dial **865-4040**. This number will ring into the plant 911 system. Any injury, no matter how minor, shall be reported immediately to the Medical Department for evaluation and treatment. The injured employee shall report any injury to the supervisor in charge or designee.
  Employees will be notified of emergency or abnormal conditions by the project two-way radios. Additionally, unique sheltering and evacuation signals are available should site-wide protective actions be necessary.
- **Evacuation Route/Assembly Areas**
  Assembly area is northeast of Buildings 50 in the parking lot southeast of Building 126. See map in Appendix C.
- **Take Shelter Area** (Be aware of threatening weather and take shelter when life-threatening storms are imminent)
  The take shelter area is Building 126, corridors 119 and 127. See map per Appendix C.

APPLICABLE LESSONS LEARNED – See Appendix E

Table 1 Airborne Contaminant Protection Methods

Dust Generating Activities	Administrative and Engineering Dust Control Measures
Building Demolition	• Applying dust control materials such as water and surfactants
Hauling Material and Equipment	• Reducing vehicle speeds (<20 mph) • Covering truck beds when transporting materials • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Vehicle and Equipment Traffic	• Reducing vehicle speeds (<20 mph) • Covering truck beds when transporting materials • Wetting roads used for transport • Minimizing unnecessary traffic on roadways, parking areas, and areas around field activities
Excavation	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks
Trenching	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides

Table 1 Airborne Contaminant Protection Methods (continued)

Dust Generating Activities	Administrative and Engineering Dust Control Measures
Trenching (Continued)	• Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks
Material Loading and Unloading	• Minimizing the material drop height during excavation and loading operations • Reducing vehicle speeds (<20 mph) • Covering truck beds when transporting materials • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Storage Piles	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover to storage pile areas at completion of project
Wind Erosion from Work Sites	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover or asphalt to project work area at completion of project

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Project/Activity: DEMOLITION OF BUILDING 50.

Name: Stephen Davis, X4436

JSHA CRITERIA CHECKLIST	YES	NO	N/A
1. Work performed with an unprotected 6 ft. or greater fall hazard, excluding portable ladders. See Item 14 of this checklist for further requirements.		X	
2. Roof work requiring the use of fall protection (within 6 ft of an unprotected edge) or special fall protection procedures.		X	
3. Potential hazardous chemical exposure above action levels or permissible exposure limits (PELs), or ACGIH Threshold Limit Values (TLVs).		X	
4. Work activity in an immediately dangerous to life or health (IDLH) breathing hazard environment.		X	
5. Fire or explosion hazards. Are fire hazards beyond a Hot Work Permit? (Reference O2, MD-10286)		X	
6. Work within close proximity of live electrical greater than 50 volts, conductors, and/or work that requires multiple locks, multiple hazard sources, or complicated lockout/tagout circumstances. (Reference MD-10444, *Lockout/Tagout Procedure Manual*, for multiple energy lockout/tagout.)		X	
7. Any maintenance or repair of equipment under pressure where the pressure cannot be shut off and de-energized.		X	
8. Work with high or extreme exposure to ionizing or non-ionizing radiation (reference MD-80036, Op 10002), noise, or heat or cold stress (reference D9, D13 & D16, MD-10286).		X	
9. Determined by an appropriate core team, building manager, member of general or executive management, or the IS&H manager to require a JSHA.	X		
10. Any onsite construction or service project directed to have JSHAs based on this procedure and/or instruction from project personnel or IS&H staff.		X	
11. Near-miss event with the potential for loss of life or limb or disabling injury/illness if repeated.		X	
12. Excessive trauma/motion/vibration work situations or manual lifting involving heavy, large, and/or awkward-to-handle objects (reference MD-10407, *Ergonomics Program.*		X	
13. Unguarded, unmarked close clearance, pinch point, exposed moving machinery parts.	X		
14. Known potential falling object hazards (e.g., employees working above other employees, potential for dropping tools, falling equipment or material) or working in areas with the potential for flying objects (flying chips, sandblasting, etc.), exposure to sharp or protruding objects (e.g., working inside plenums, air mover ducts, etc.).	X		

JOB SAFETY AND HEALTH ANALYSIS FORM

JSHA MASTER DOCUMENT CONTROL NO:
BOSS – 50- 36965

DATE:	_X_ NEW ___ REV	BUILDING: 50	JOB:
10/06/03			Demolish Building 50

DEPARTMENT/COMPANY:	SECTION:
BOSS Project/CH2M Hill Mound, Inc.	N/A

OCCUPATIONS: Heavy Duty Operators, Demolition Tech's, Demolition Crafts, & Electricians.
Supported by Project Personnel e.g.. Supervision, Engineering, RAD Control, Ind. Hygiene, and Safety

SIGNATURES

ORIGINATOR: Steve Davis
REVIEW/REV: Safety IH
REVIEW/REV: Foreman
REVIEW/REV: Bldg Mgr
APPROVED: Project Manager

REQUIRED PERSONAL PROTECTIVE EQUIPMENT:	MSDS(s)/CHEMICALS ASSOCIATED WITH THE JOB:
Hard Hat, Safety Glasses with side shields, safety shoes, safety vest	None

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
Break the job down into basic steps that tell what is done *first*, what is done next, and so on. Record the job steps in their normal order of occurrence. Describe what is done, not the details of how it is done. Usually, three or four words are sufficient to describe each job step. For example, the job of "replacing a light bulb" may break down into basic steps as follows: 1. Bring and set up ladder 2. Ascend ladder 3. Remove light globe & bulb 4. Replace light bulb 5. Replace light globe 6. Descend ladder 7. Remove and store ladder	Ask yourself for each job what accidents/illnesses could occur to the employee doing the job. Record potential accidents/illnesses by combining one of the abbreviations below with the agent of contact. For example, "struck by a crane hook" is recorded "SB-crane hook." Number each potential accident. SB - Struck by CB - Contacted by SA - Struck against CW - Contact with CI - Caught in CO - Caught on JB - Caught between F - Fall SO - Strain-overexertion* E - Exposure (occ. illness) *Show ergonomic stresses as SO (repetitive trauma, single event strain, or awkward position)	For each potential accident/illness, ask yourself exactly what the employee should do or not do to avoid the accident/illness. Describe specific precautions in detail. Give each precaution the same number given in the potential accident (center column) to which it applies. Avoid generalities such as "Be alert," "Be careful," and "Take caution." Use simple do or don't statements; e.g., "Lock out main power switch," "Stand clear of lift before signaling," or "Check wrench grip before exerting full force." If necessary, explain how, as well as what, to do. Amount of detail is a matter of judgment. Describe ergonomic solutions (job redesign, new tools, worker lift assistance, etc.)
General Safety Note	A wide variety of incidents occur on a regular basis that potentially could result in injury or illness	-Be cognizant of your own safe work practices as well as those of your co-workers -Review any related safety procedures of which you are unsure -Utilize STOP WORK Authority as necessary
Pre-job meeting with involved personnel to discuss the work plan and safety requirements. This meeting is conducted daily.	N/A	-This project engages in Enhanced Work Planning (EWP), an ISM process that evaluates and improves the approach by which work is identified, planned, approved, controlled, and executed.
1. Site Preparation & Mobilization	Standard construction hazards. Poor footing/slipping/trip hazard.	-Demolition preparation is defined by 29CFR1926.850; workers, unfamiliar with construction standards must notify the project supervision and/or project health and safety personnel. -Terrain surrounding Bldg. 50 is covered with rip-rap/rock. Use caution traversing the area due to poor footing from loose rock.
1a. Site Access Control	Struck by equipment, debris	-Once the work area is defined, only authorized personnel are permitted in the construction perimeter. -Unescorted, non-project and non-emergency personnel must have acceptance of the BOSS Project Manager for entry.
1b. Emergency egress/access	Blocked access	-Emergency access to the work zone will be maintained to the extent possible. Bldg. 126 emergency egress will be maintained for occupants, if still occupied.

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JOB SAFETY AND HEALTH ANALYSIS FORM
(CONTINUATION SHEET)

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
1c. Clear Area and Mark/Protect Utility Equipment	Running into utility equipment, manhole covers, or grates over field drains.	-Mark/protect fire PIV west of bldg. 50, fire and potable water lines and other utility equipment with wooden boxes, visible stakes, and/or colored flags. -Cover field grates with covers/sheeting for silt protection.
2. Operation of heavy equipment near electric overhead lines	Shock Hazard	-All utilities to the building including electrical have been disconnected prior to demo by project electricians at a point away from the building. -Identify sources outside the building that may require LOTO to prevent incidental contact by Heavy Duty Equipment, such as street lighting circuit.
2a. Demolish building, pipe stanchions, building structure and slab using excavator mounted shear, hoe ram, grapple, loader, and bobcat.	Struck by flying debris Struck by moving equipment	-Establish construction boundary. -Wear hard hat, safety glasses, safety shoes, and reflective vest inside construction area. Make eye contact with operator when working around equipment. Use hand signals to communicate intent. -Maintain the following distances from operating equipment: Shear – 75 feet; Hoe Ram -- 50 feet Other heavy duty equipment – 30 feet Bobcat – 15 feet -Make sure equipment is in safe working order. Use spotter if vision is obstructed.
	Possible asbestos in roofing material and floor tiles.	-Demolish roof &b floor tiles by normal remote means only (using Heavy Duty). Floor tiles may be removed by certified contractor.
	Noise Hazard	-Wear hearing protection while running heavy duty equipment. Follow the requirements of MD-10286 D9
	Breaking through into sub-floor pit (along corridor floor on western side of building) or falling into open pit (cells 112 and 113 may have open pit areas).	-Identify and mark hazard areas during walkdown of area with work crew. . Use spotter if vision is obstructed.
2b. Torch cut rebar or to weaken structural members	Burns, fire	-Obtain and follow Hot Work permit per MD-10286 O2. Wear proper PPE, have fire extinguishers in the construction zone.
	Potential lead paint	-Test for lead paint; coordinate with site Safety and Health for PPE/work controls before torch-cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel).
2c. Working in excessive heat/cold	Heat Stress/Cold Stress	-Follow the requirements of MD-10286 D13/D16 and discuss in daily pre-job briefings.
2d. Building & Slab Demolition	Vehicle Traffic Hazard	-Control traffic with flagmen as necessary
	Operating Heavy Duty equipment on debris slope/ pile/heap	-Exercise caution operating equipment on debris ramp. -Coordinate with Safety & check stability of debris ramp often. -Maintain safe distance from debris ramp edge.

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JOB SAFETY AND HEALTH ANALYSIS FORM
(CONTINUATION SHEET)

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
2e.. Slab removal	Strike underground utilities Radiological Contamination	-Obtain Excavation permit and follow its requirements per MD-10286 O5. -Coordinate in-process Rad Surveys with Rad Techs.
2f. Pit soil surveys - Personnel entry into excavation/trench 4' or greater in depth	Trench collapse/entrapment of personnel (asphyxiation, cuts, abrasions)	-Obtain Excavation permit and follow its requirements per MD-10286, Operations O5, M10, and M11. Operators must be trained to OSHA requirements of 29 CFR 1926, Subpart P. Erect soil barricade and use Personnel Retrieval Equipment, as necessary
3. Site Remediation & Demobilization	**General Safety Note** A wide variety of incidents occur on a regular basis that potentially could result in injury or illness	-Be cognizant of your own safe work practices as well as those of your co-workers. -Review any related safety procedures of which you are unsure. -Utilize STOP WORK Authority as necessary.
3a. Rough grading	Equipment/ personnel mixture.	-Stay clear of operating heavy equipment.
3b. Seeding & Mulching	Slip – Trip – Fall Lifting /twisting strain.	-Uneven walking and/or working surfaces –use extra caution. -Follow accepted practices.
3c Remove Temporary Protection Structures from Bldg. 50 area Remove protective barriers from hydrant, potable, and firewater lines penetrations.	Lifting /twisting strain. Cuts and abrasions. Slip trips and falls.	-2 man rule; follow standard practice lifting. -Wear appropriate PPE. -Be cognizant of your own safe work practices as well as those of your co-workers.
3d. Demobilize Construction Equipment Remove dust control water distribution system Remove temporary power Remove fencing	Equipment/ personnel mixture. Cuts and abrasions. Lifting /twisting strains. Radiological contamination of equipment if required by in-process surveys	-Be cognizant of your own safe work practices as well as those of your co-workers. -Review any related safety procedures of which you are unsure. -Utilize STOP WORK Authority as necessary. -Coordinate in-process Rad Surveys with Rad Techs.
4. Work from elevated surfaces (manlift, bucket truck, etc.).	Fall hazard	Wear proper PPE, restraints, harness, and other fall protection, as required per MD10286, Op M8. Use workers, properly trained and instructed in the hazards of working from elevated surfaces.

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SIGN-OFF SHEET

I have read and understand the attached Job Specific Work Plan and JSHA:

Signature	Date	Department

WORK PLAN REVISION SHEET

1. WORK PACKAGE TITLE: Building 50 Demolition
2. WORK PACKAGE NUMBER: BOSS-36965-00

[Note: Mark this section in color]

~ Office Master Copy (Original Approval Signatures) ~ Field Working Copy (Original Field Sign -Offs) ~ Review Copy ~ Other Copy

Revision Description: (attach page revisions to form)

Reviewed by:	Name	Signature	Date
Project Engineering:			
Project Superintendent/Foreman:			
Radiological Operations:			
Industrial Safety & Hygiene:			
Waste Management:			
Environmental Safeguards & Compliance:			
Building Manager:			
Other:			

Approved by:

CH2M HILL Project Manager_____

Name Signature Date

027064

REVISION LOG

1. WORK PACKAGE TITLE: Building 50 Demolition

2. WORK PACKAGE NUMBER: BOSS-36965-00

Revision	Reason	By	D

028 of 64

Appendix B

JOB STATUS LOG

JOB STATUS LOG

1. WORK PACKAGE TITLE: **Building 50 Demolition**

2. WORK PACKAGE NUMBER: BOSS-36965-00

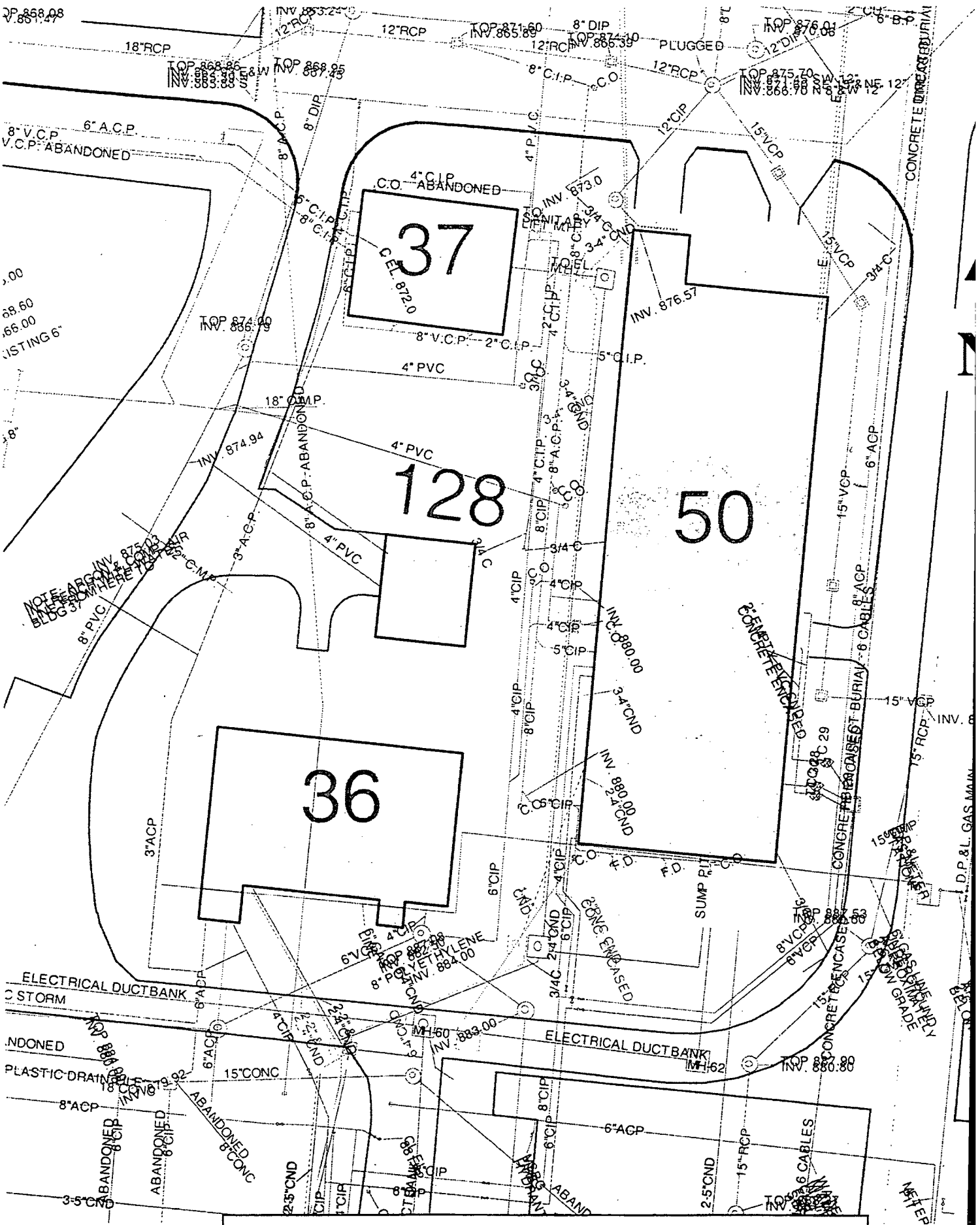
DATE	TIME	WORK PKG. SECTION	% Complete	BY	STATUS

030d 64

Appendix C

DRAWINGS/SKETCHES

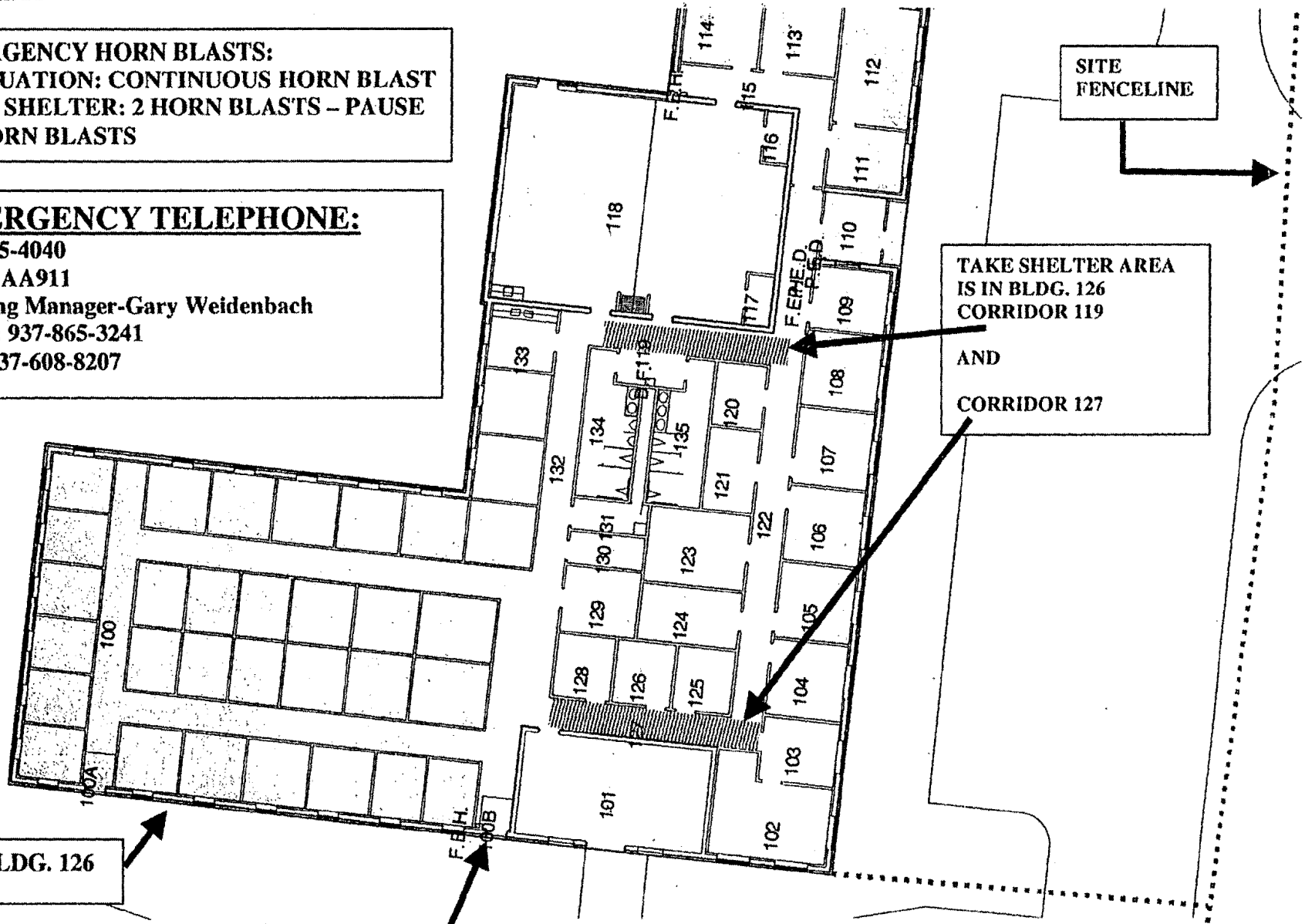
- Structural and Mechanical Drawings -Foundation Plan, Wall Sections, Floor Plans, and Mechanical Details
    - AYC 305000 – (Bldg. 50) Alpha Fuels Environmental Test Facility Construction Drawing
- Building 50 Surrounding Underground Utilities Vista Map
- Evacuation Assembly Area/Take Shelter Area Sketch
- Other Vista Maps
    - Building 50 Floor Plan
    - Sanitary Sewer System Lines/Manholes
    - Storm Sewer System Lines/Manholes
    - Domestic Water Lines
    - Underground Fire Protection Lines
    - Underground Power Supply Lines
    - Underground Gas Supply Lines
    - Stanchions/Aboveground Pipes
    - Underground Signal Lines
    - Underground Comm. Lines
    - Underground Tanks
    - PRS Point Sites
    - URMAs/Monitoring Wells
    - Aerial View



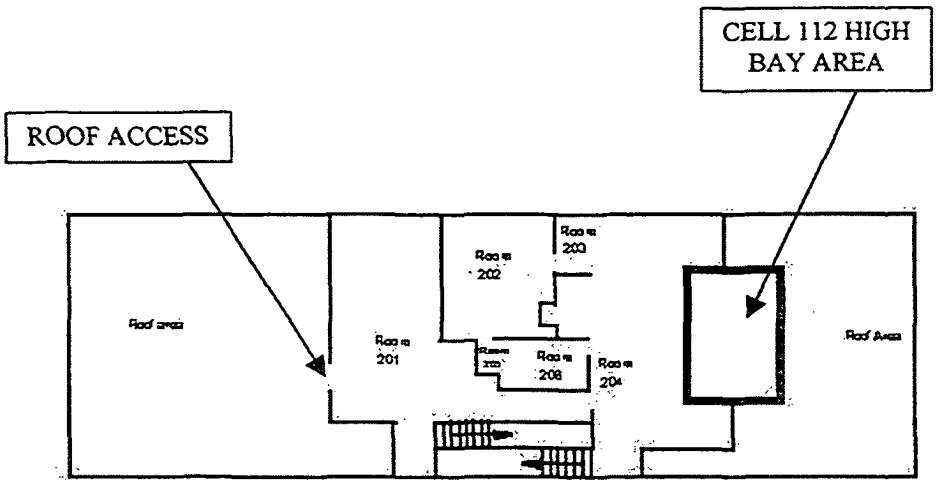
BLDG. 50 - UNDERGROUND UTILITIES

EMERGENCY HORN BLASTS:
EVACUATION: CONTINUOUS HORN BLAST
TAKE SHELTER: 2 HORN BLASTS – PAUSE – 2 HORN BLASTS

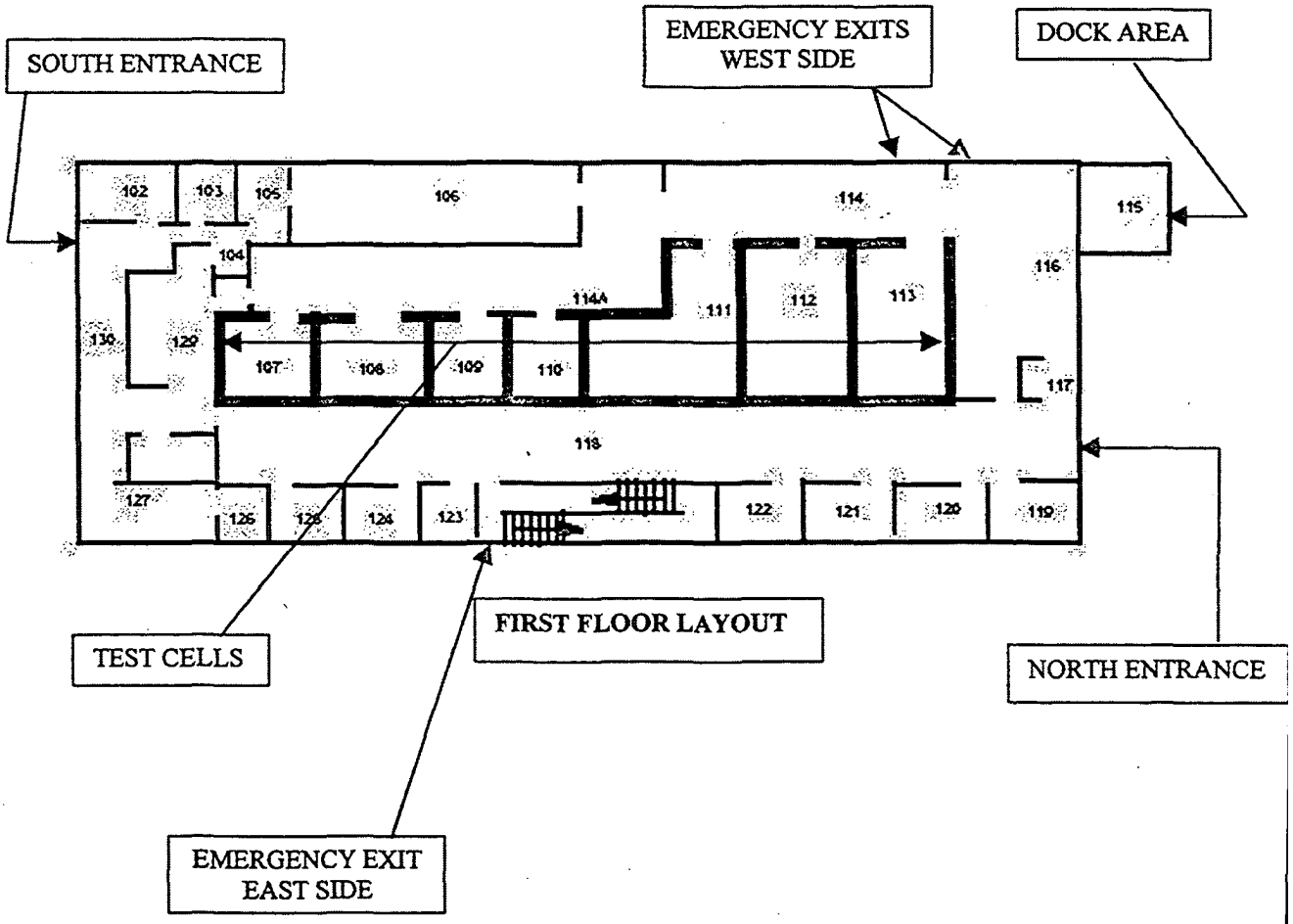
EMERGENCY TELEPHONE:
937-865-4040
Nextel AA911
Building Manager-Gary Weidenbach
Phone: 937-865-3241
Cell: 937-608-8207



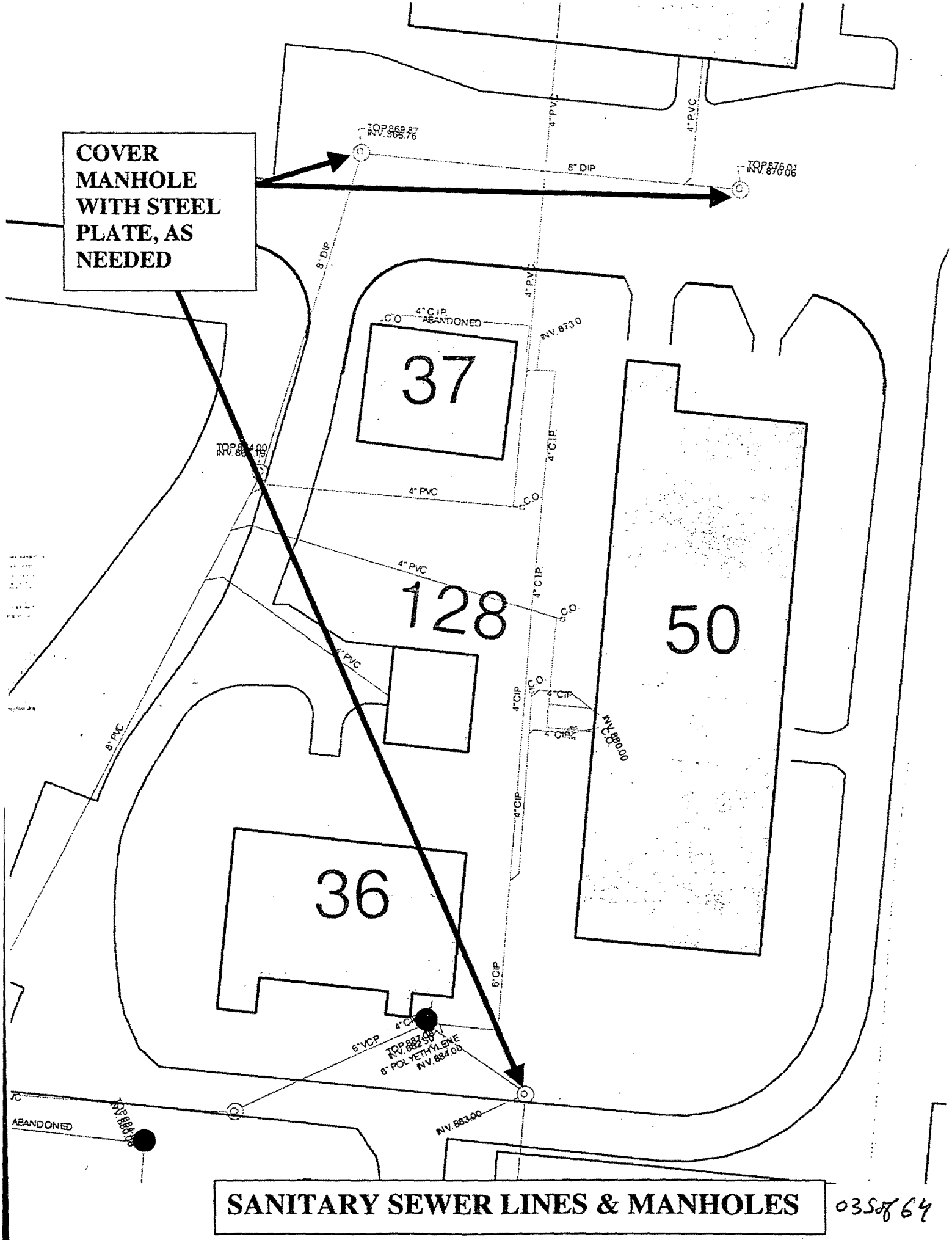
ASSEMBLY AND TAKE SHELTER AREA WHILE WORKING ON BLDG. 50



SECOND FLOOR/PENTOUSE LAYOUT



BUILDING 50 FLOORPLAN/LAYOUT



SANITARY SEWER LINES & MANHOLES

035 of 64

COVER STORM SEWER GRATE WITH FABRIC, PROTECT AS REQUIRED

COVER STORM SEWER GRATE WITH FABRIC, PROTECT AS REQUIRED

COVER MANHOLE WITH STEEL PLATE AS NEEDED

FLOOR DRAINS, COVER OR PLUG

37

128

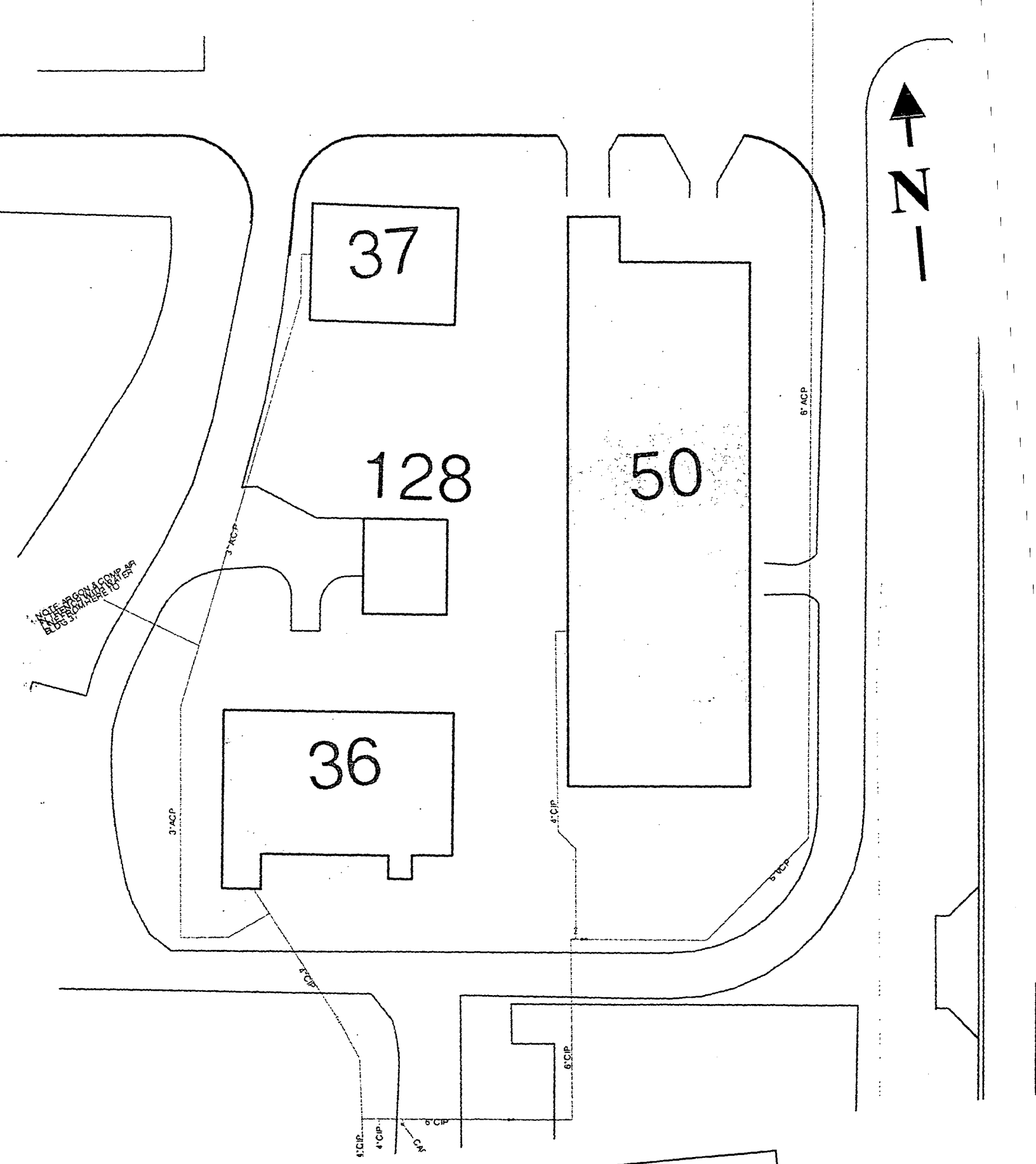
50

36

PLUGGED

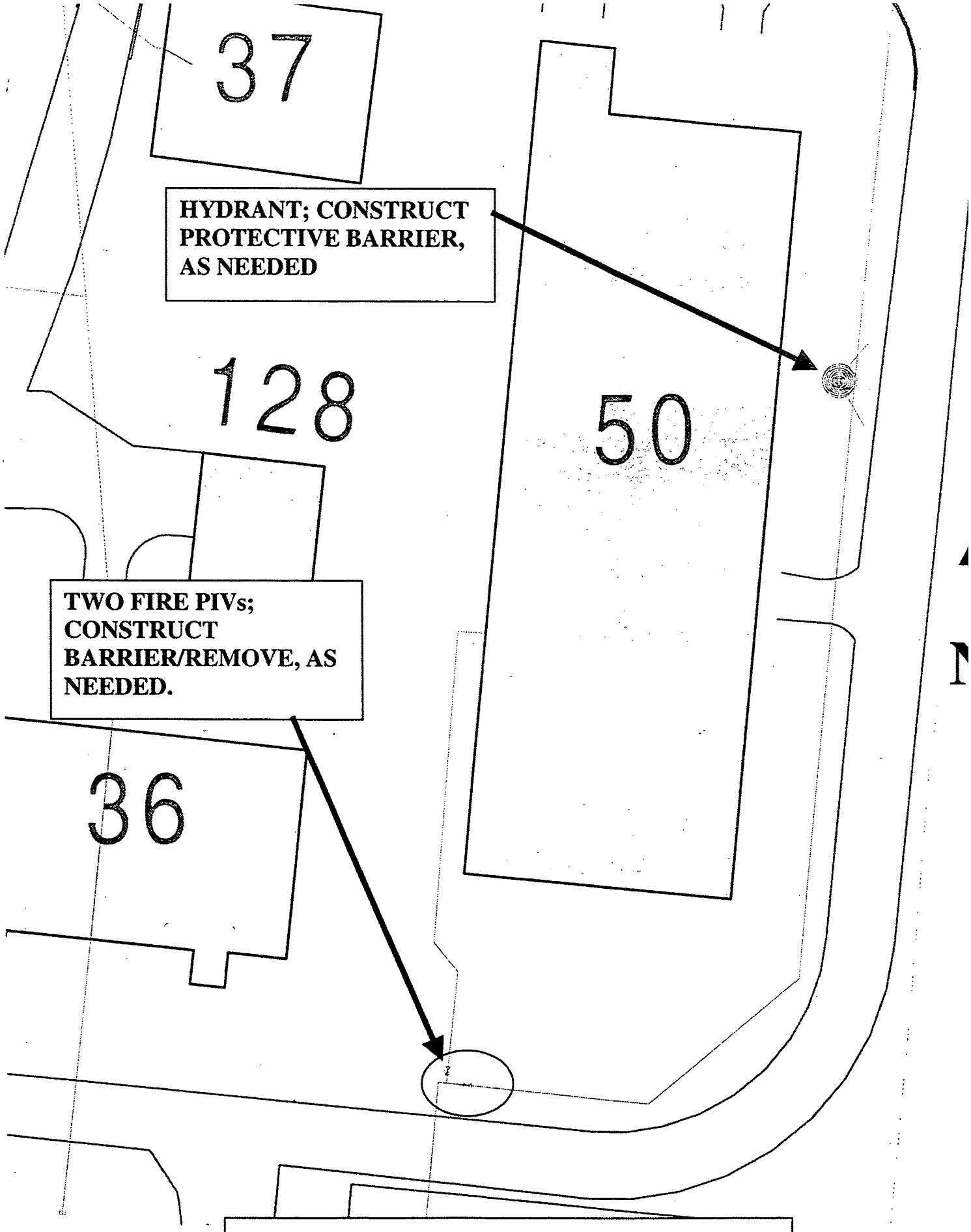
TO SANITARY LIFT M.H.

STORM SEWER LINES & MANHOLES



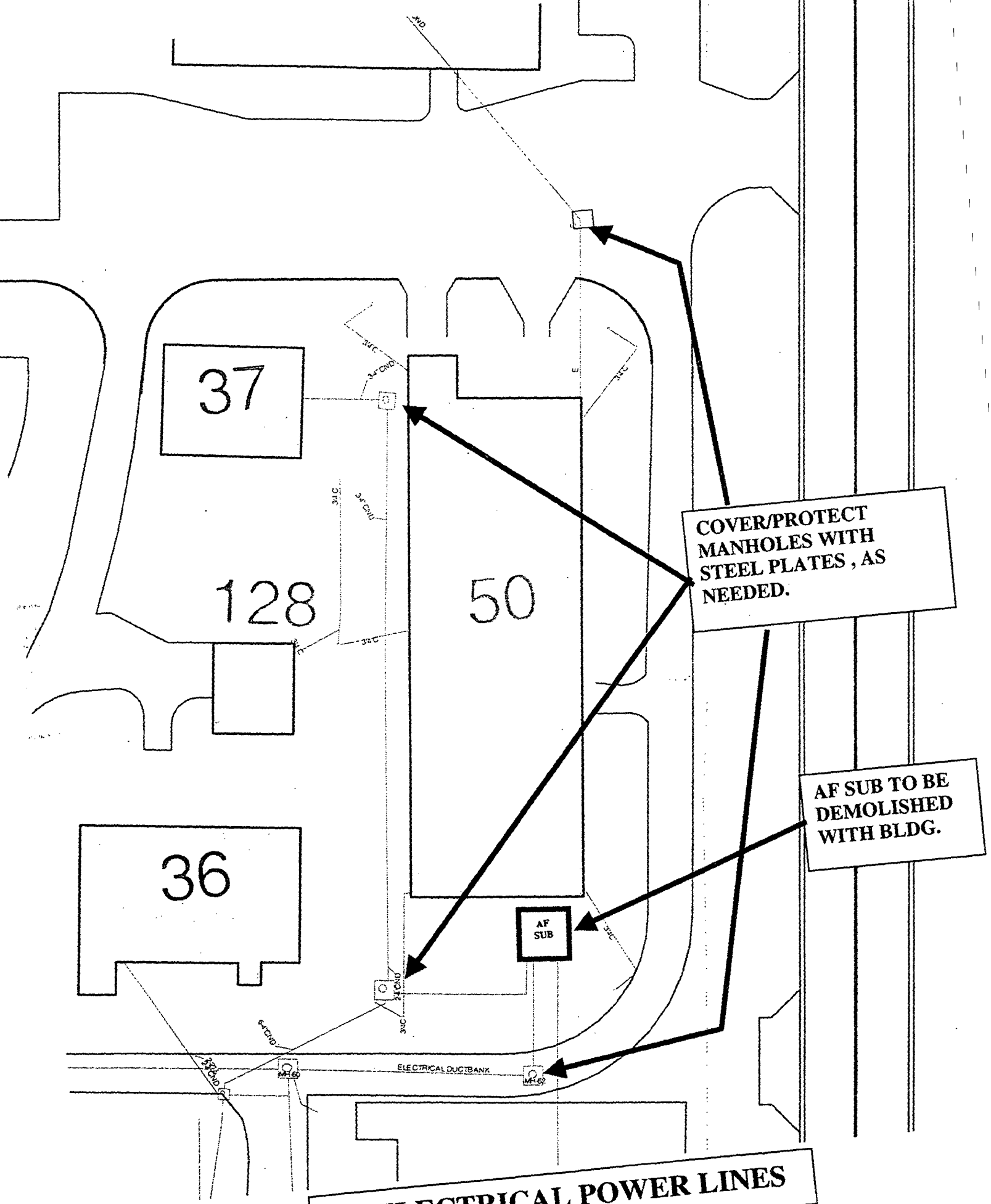
DOMESTIC WATER LINES

0378 64



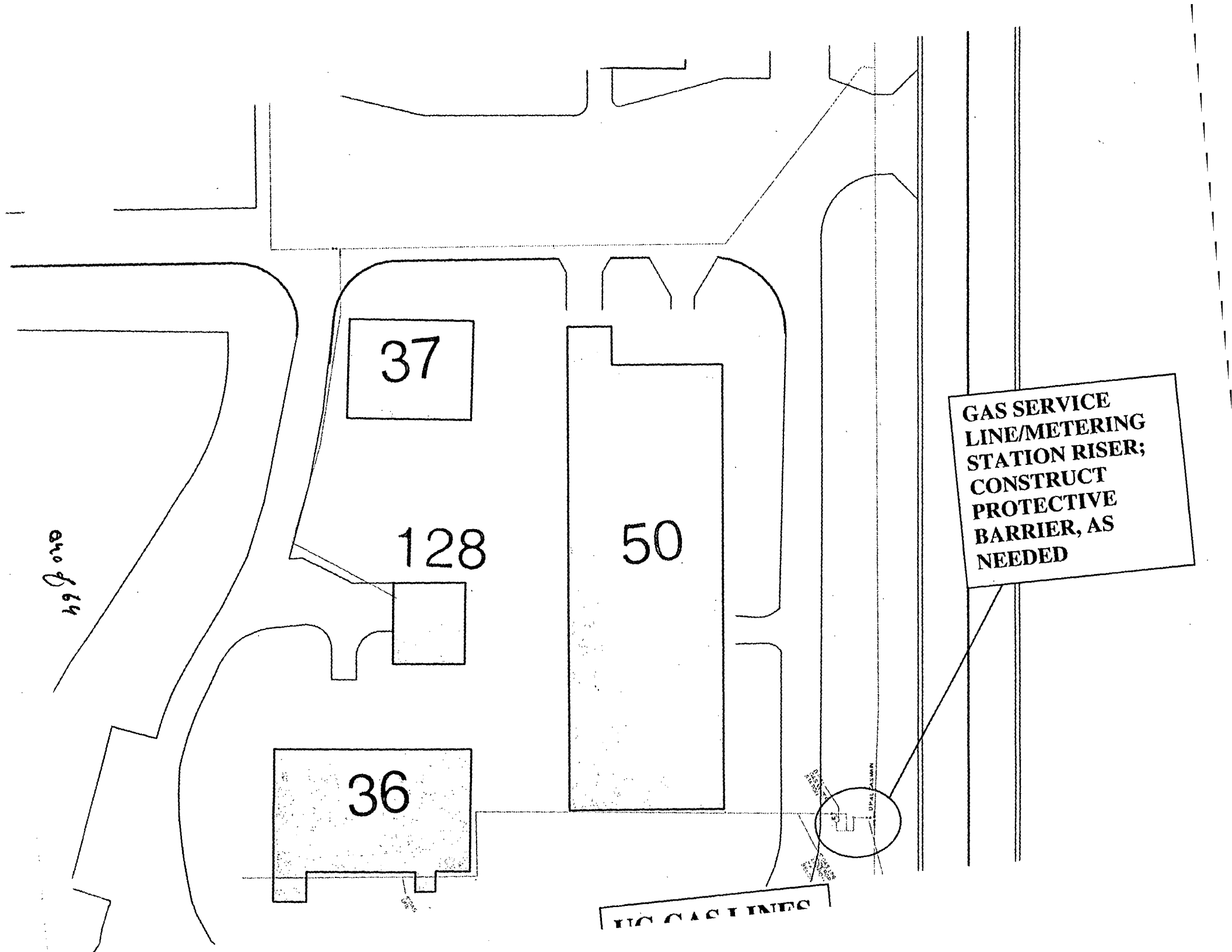
FIRE PROTECTION SYSTEM LINES + HYDRANT & PIV LOCATIONS

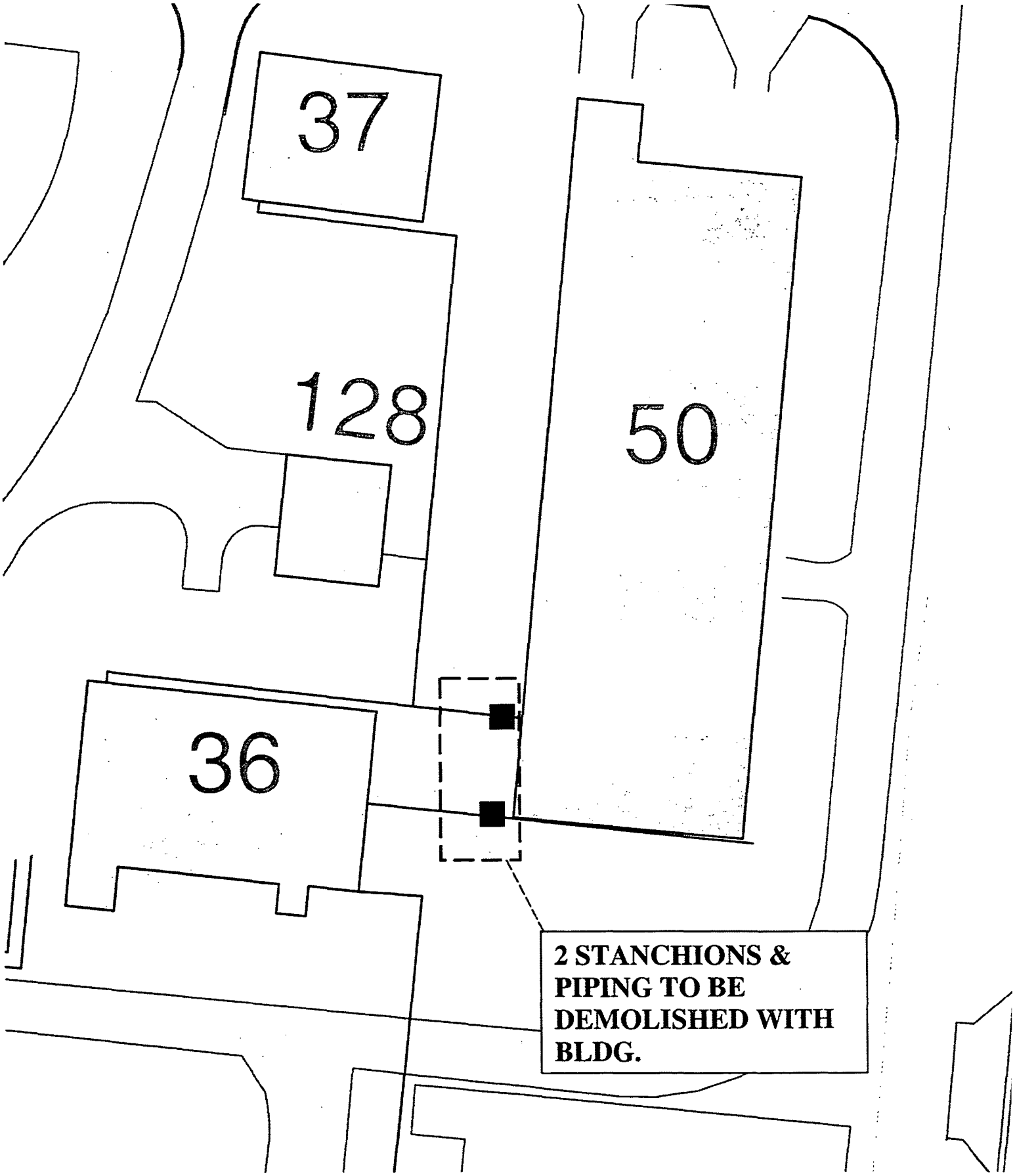
038of 64



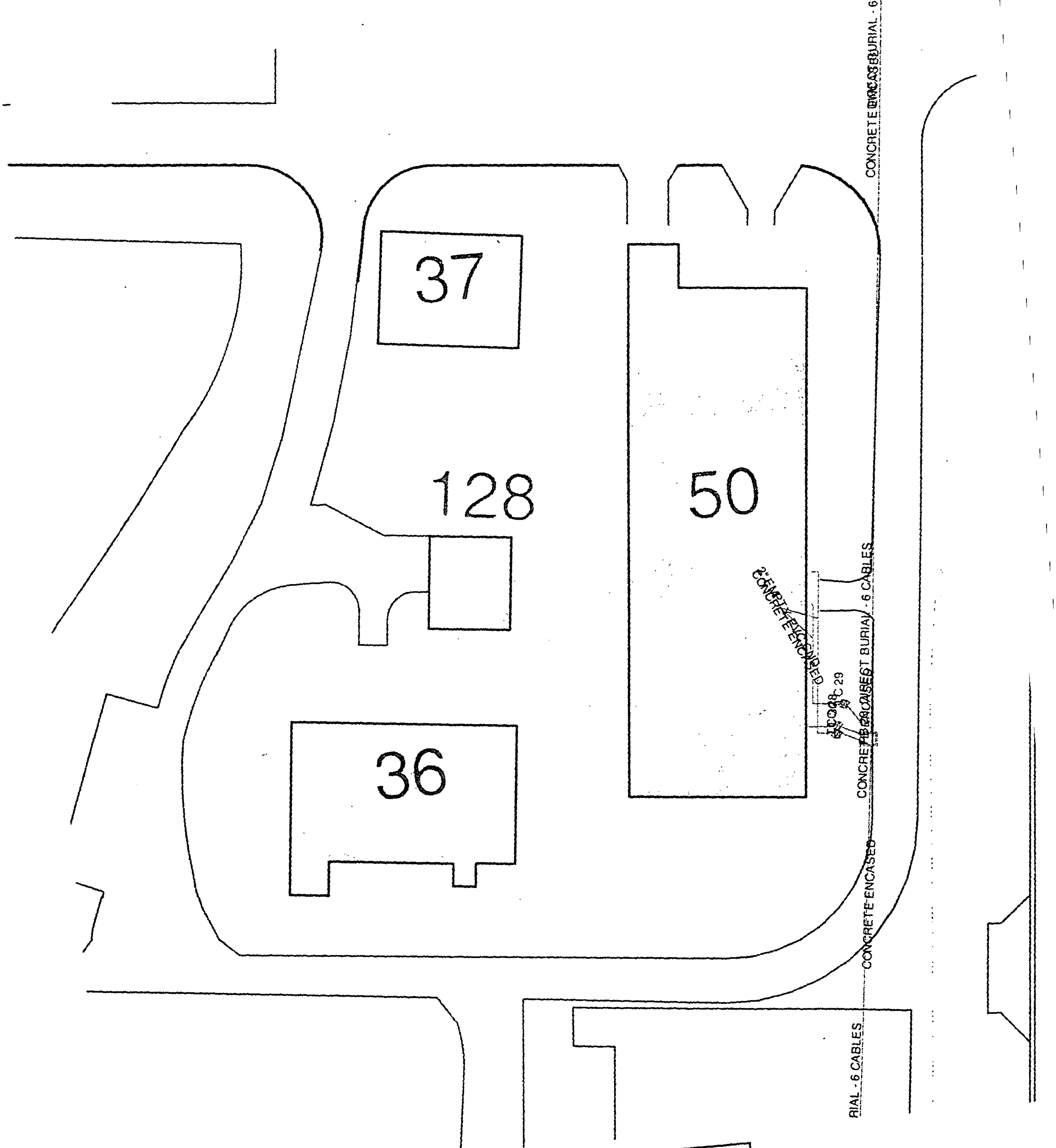
UG ELECTRICAL POWER LINES

039of 64


37
128
50
36
GAS SERVICE LINE/METERING STATION RISER; CONSTRUCT PROTECTIVE BARRIER, AS NEEDED
UG GAS LINES

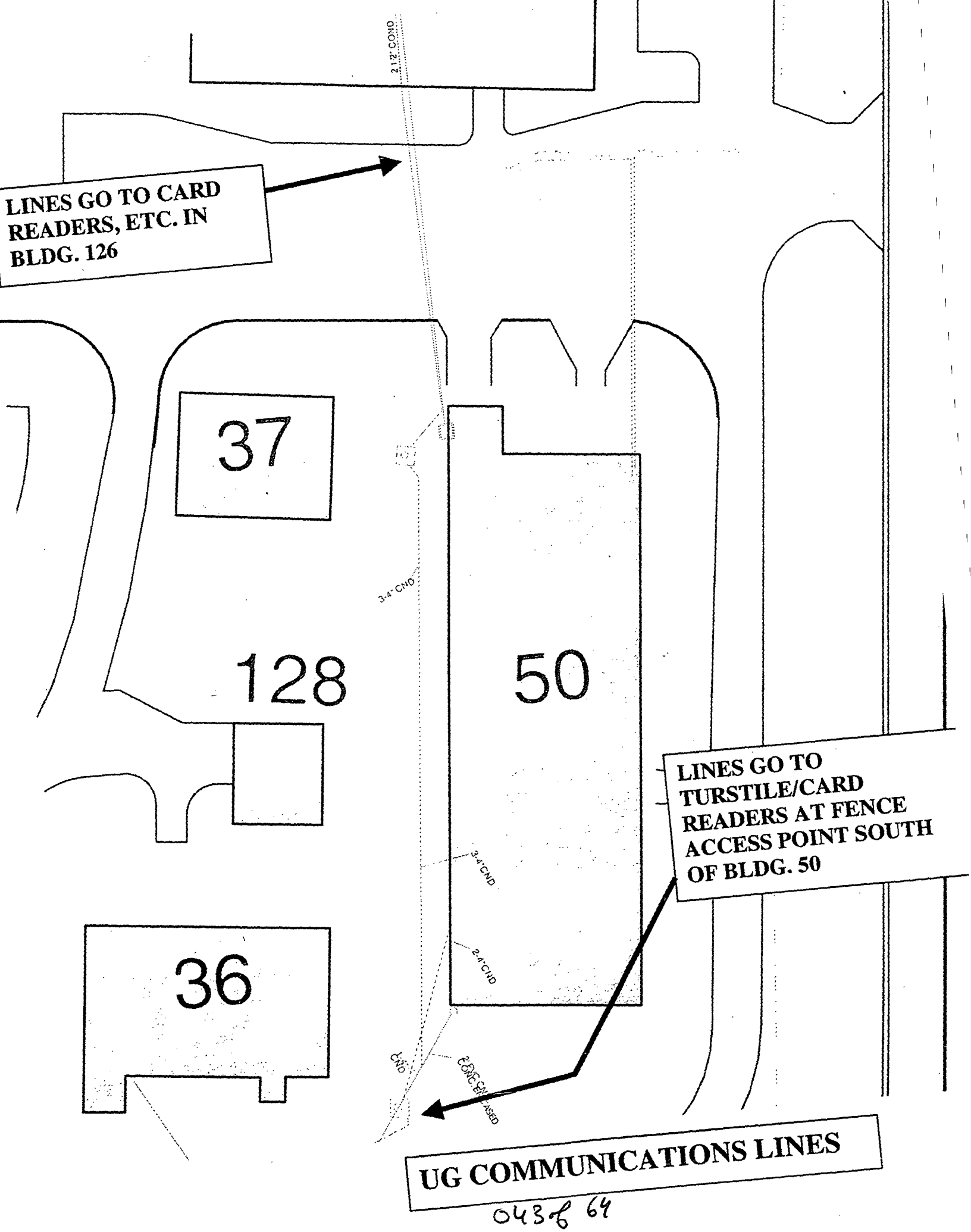


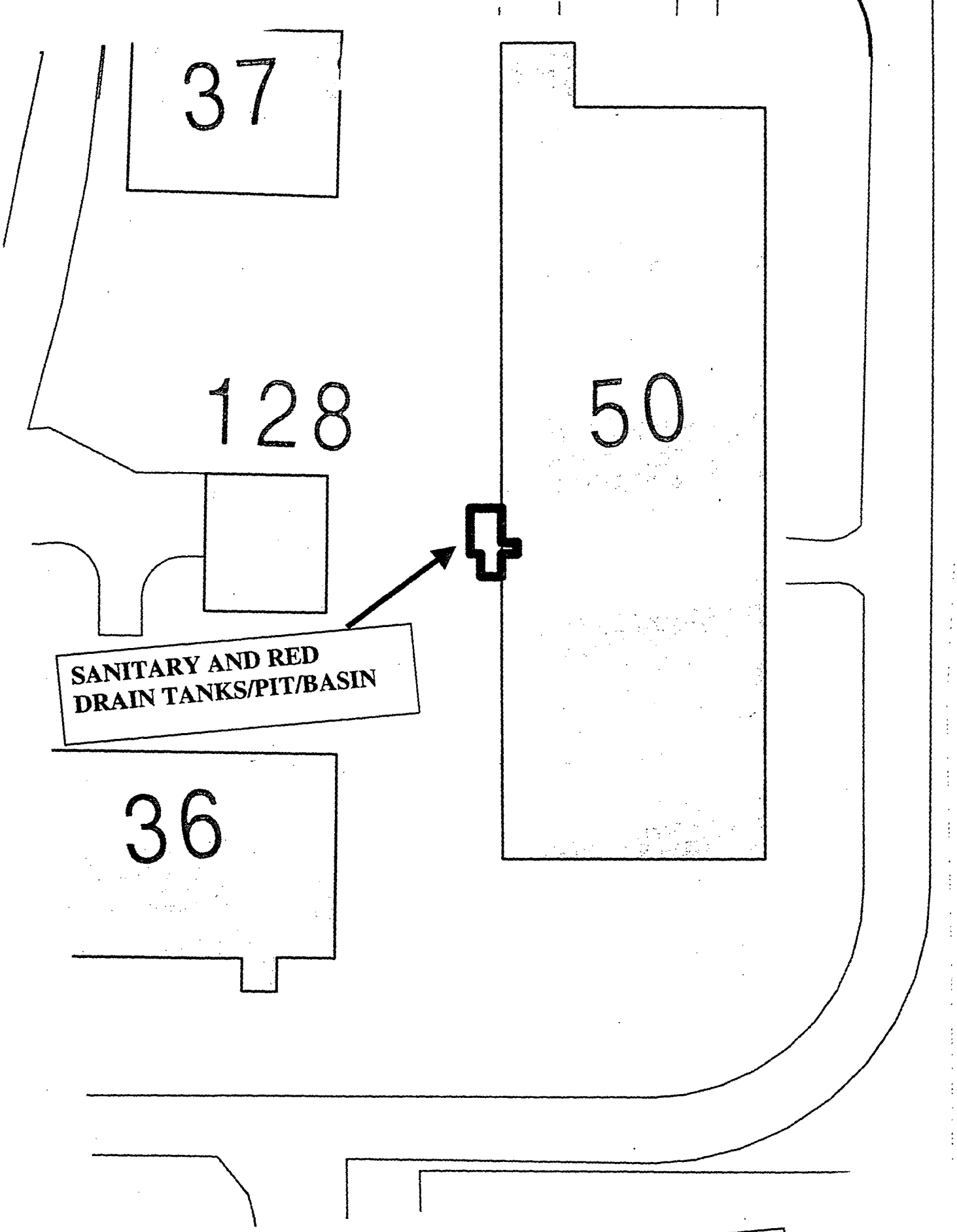
ABOVE GROUND PIPES/STANCHIONS IN VICINITY OF BLDG. 50



UG SIGNAL LINES

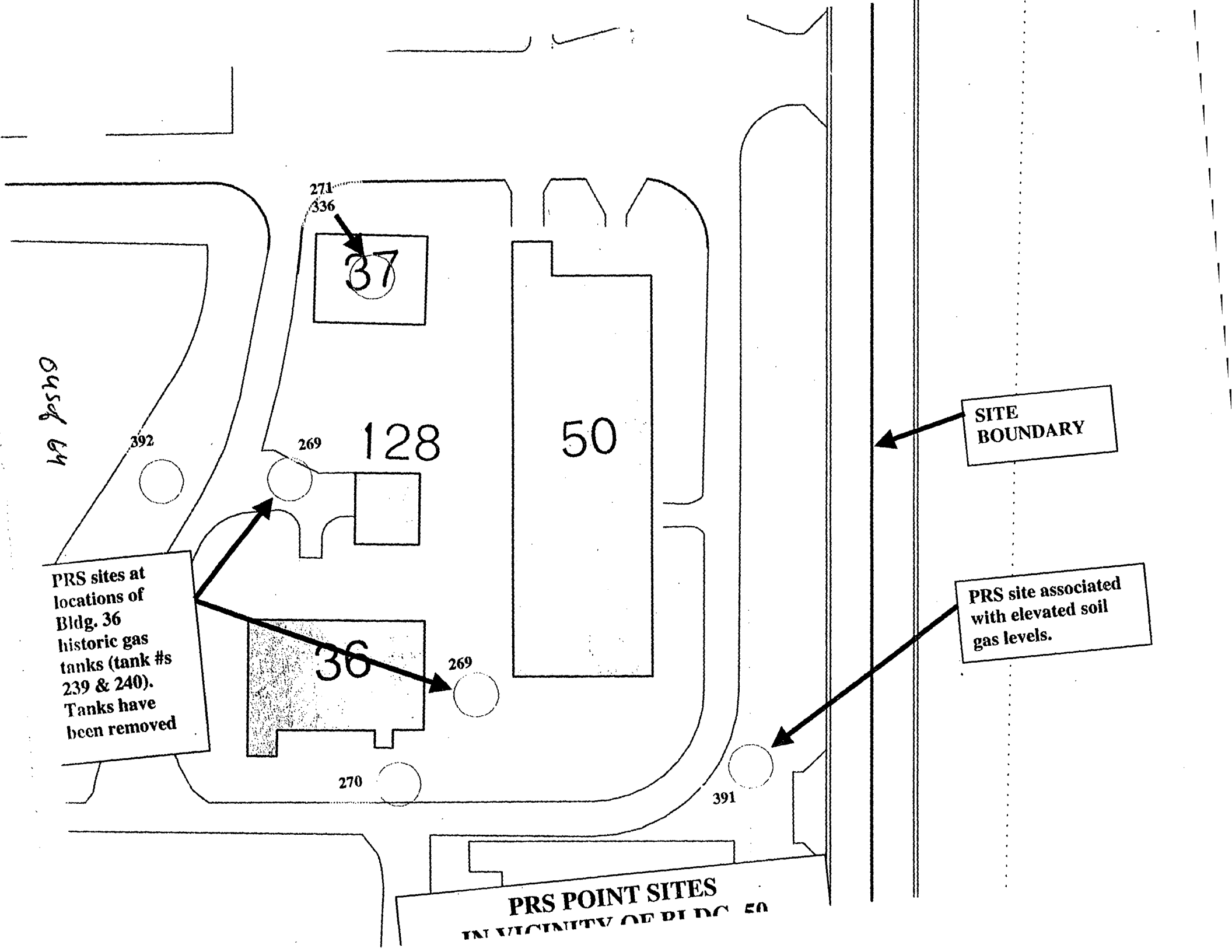
042 of 64

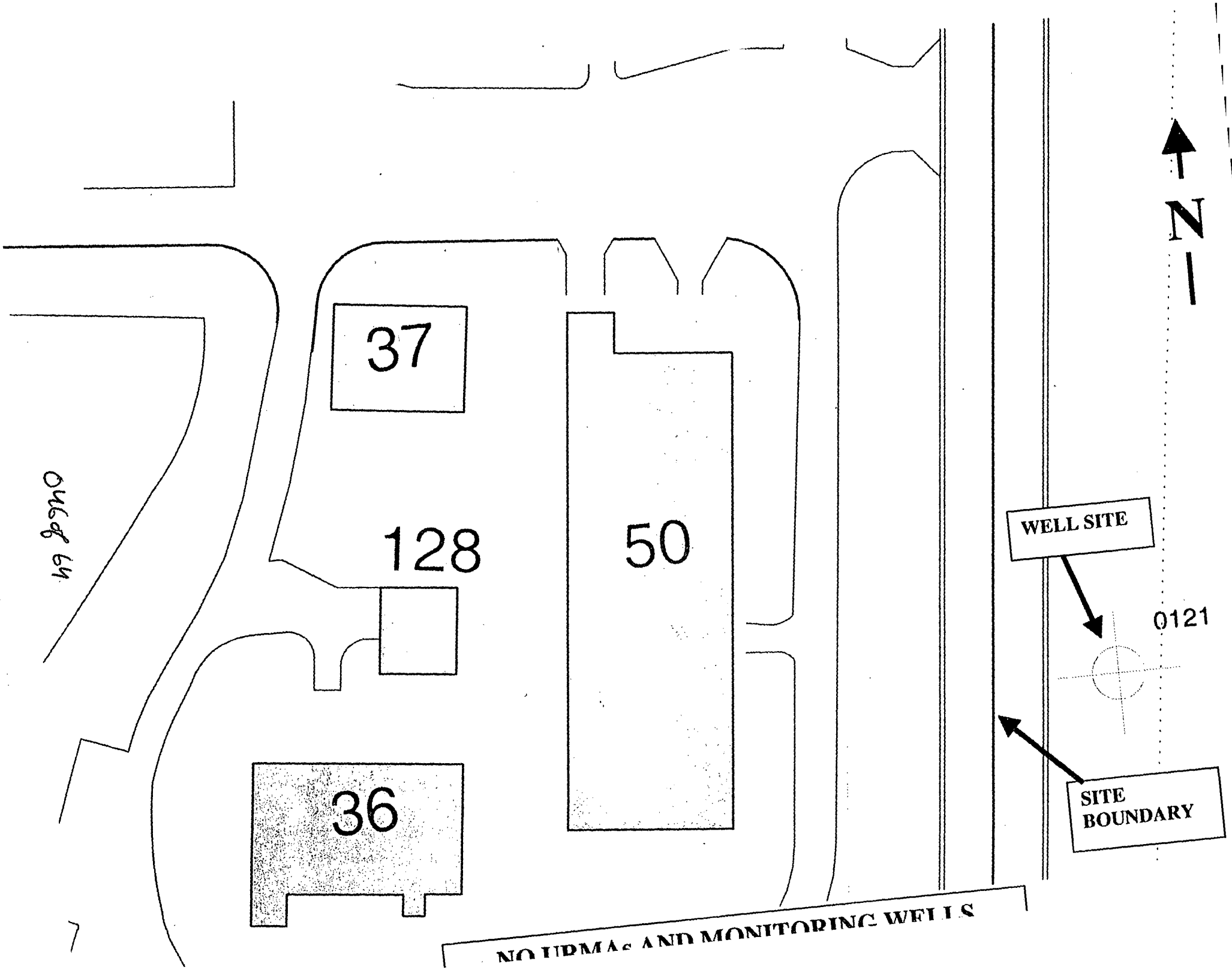

LINES GO TO CARD READERS, ETC. IN BLDG. 126
2 1/2" CONID
37
128
50
36
3-4" CNID
3-4" CNID
2-4" CNID
LINES GO TO TURSTILE/CARD READERS AT FENCE ACCESS POINT SOUTH OF BLDG. 50
UG COMMUNICATIONS LINES

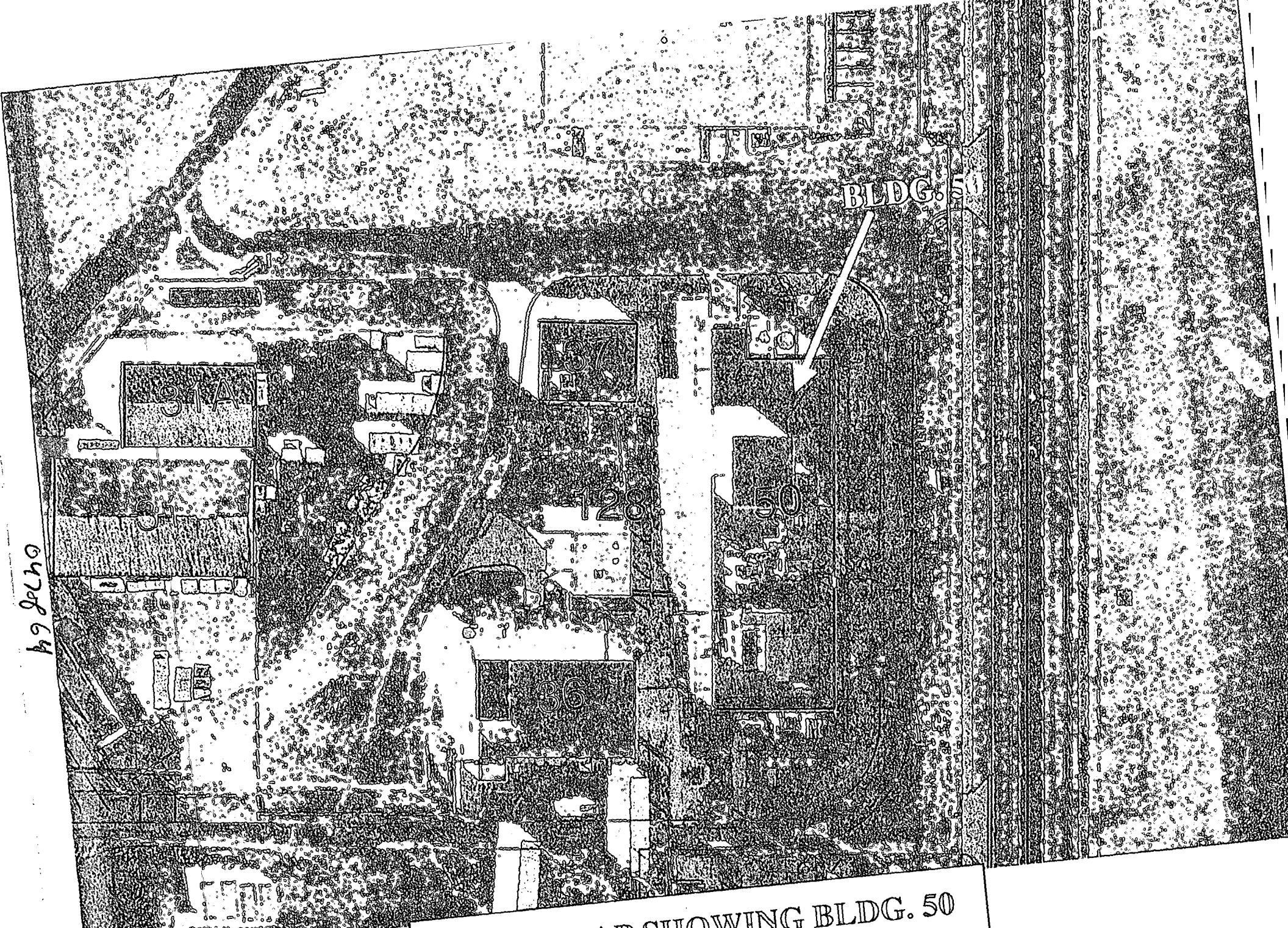


BLDG. 50 UG TANKS

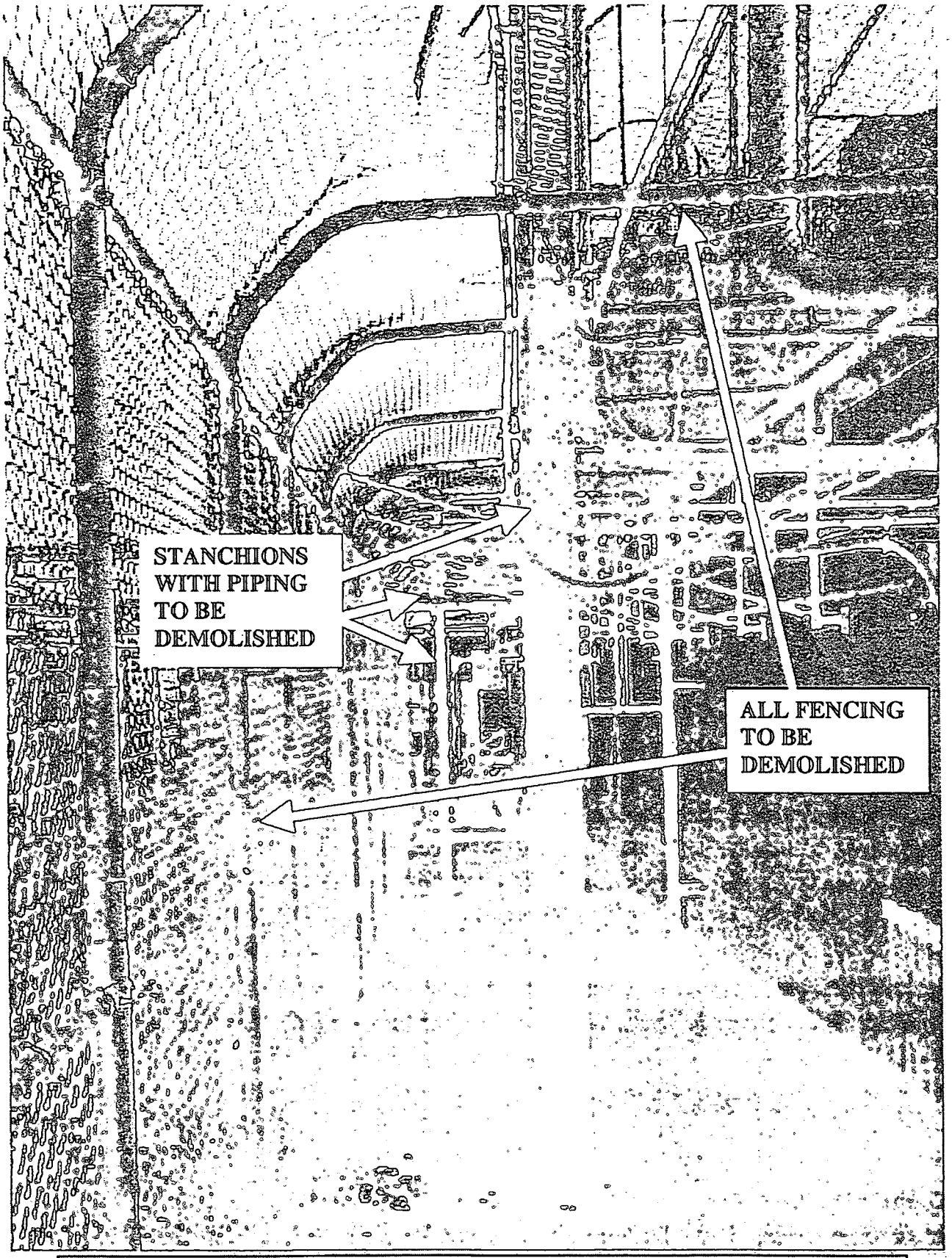
0446 64


271
336
37
128
50
392
269
36
269
270
391
SITE BOUNDARY
PRS sites at locations of Bldg. 36 historic gas tanks (tank #s 239 & 240). Tanks have been removed
PRS site associated with elevated soil gas levels.
PRS POINT SITES

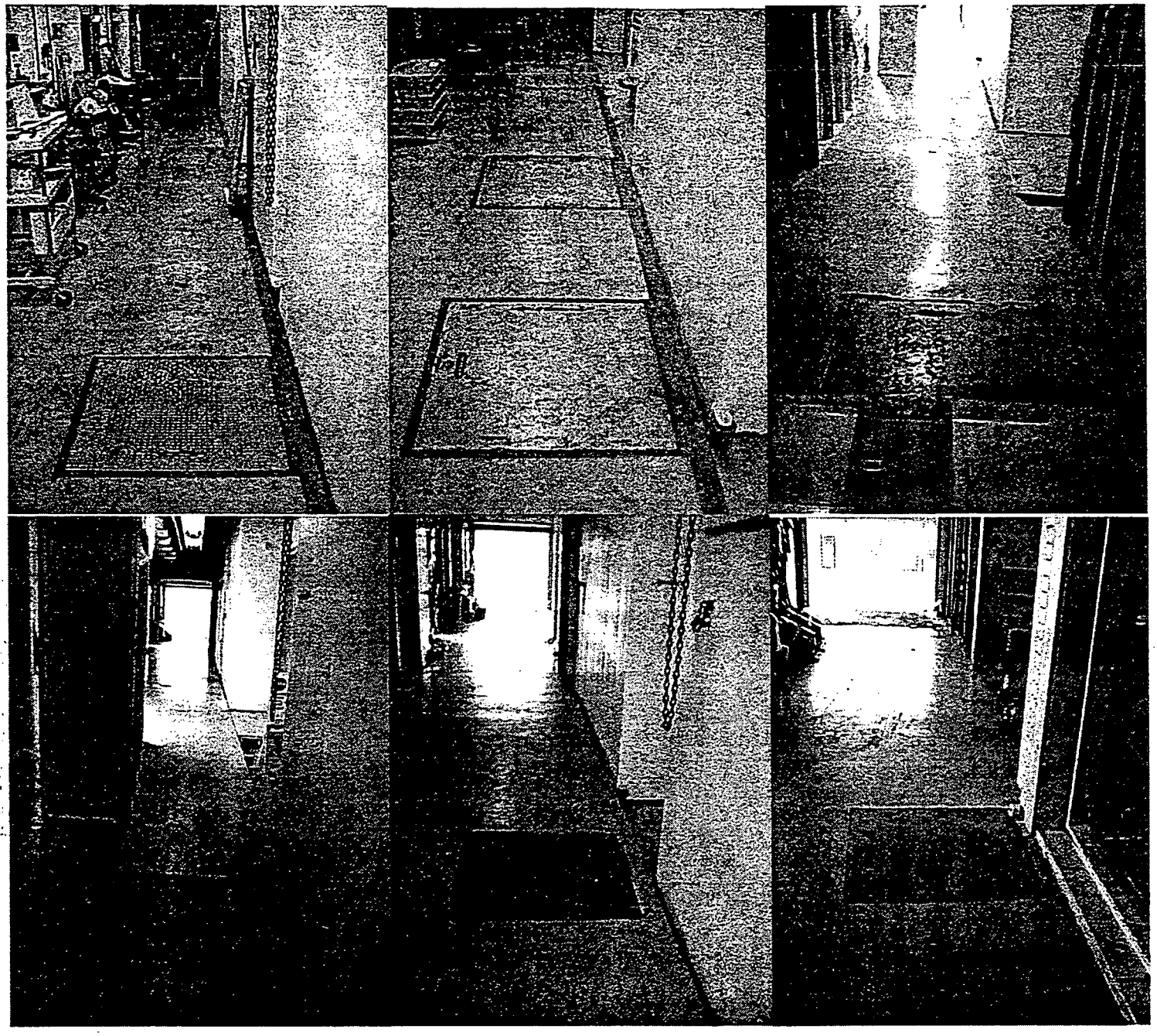

N
37
128
50
36
WELL SITE
0121
SITE BOUNDARY
NO UPMAs AND MONITORING WELLS



AERIAL MAP SHOWING BLDG. 50

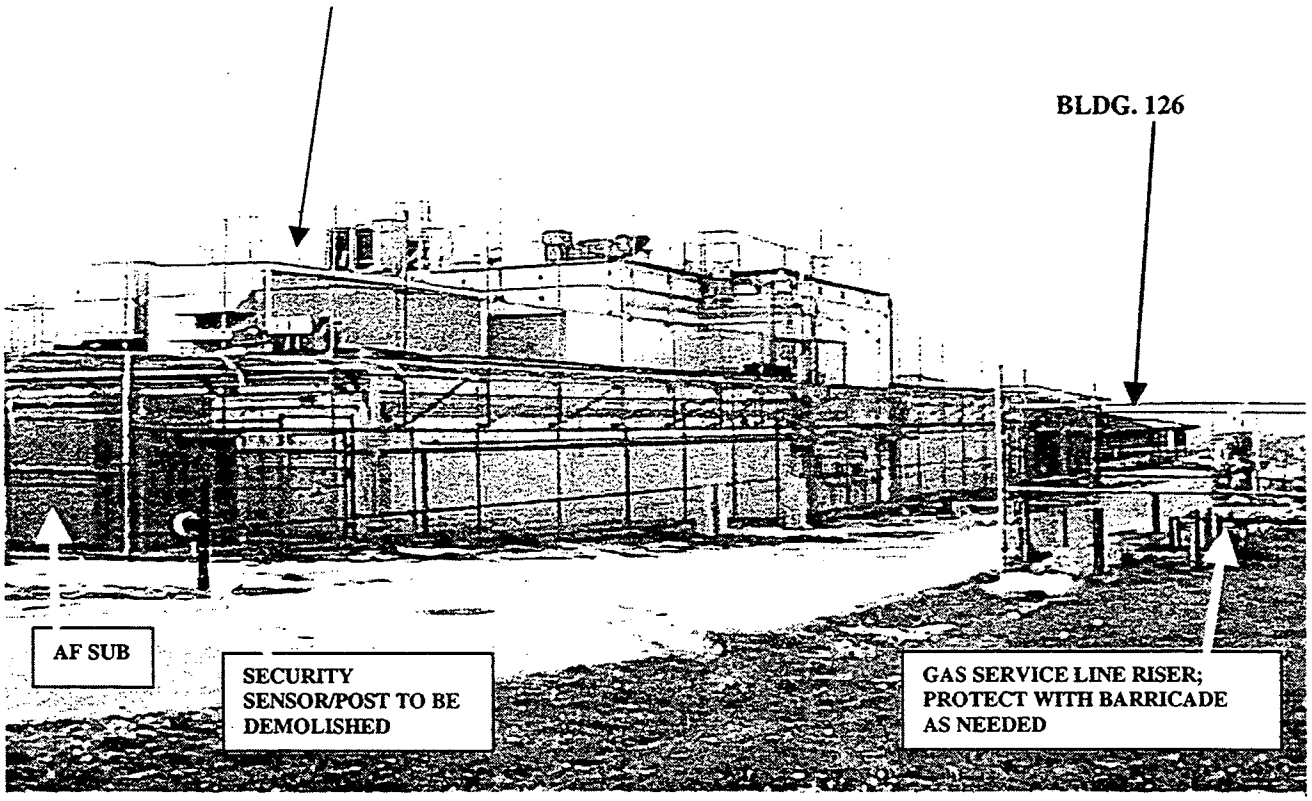


STANCHIONS/PIPING/FENCING TO BE DEMOLISHED

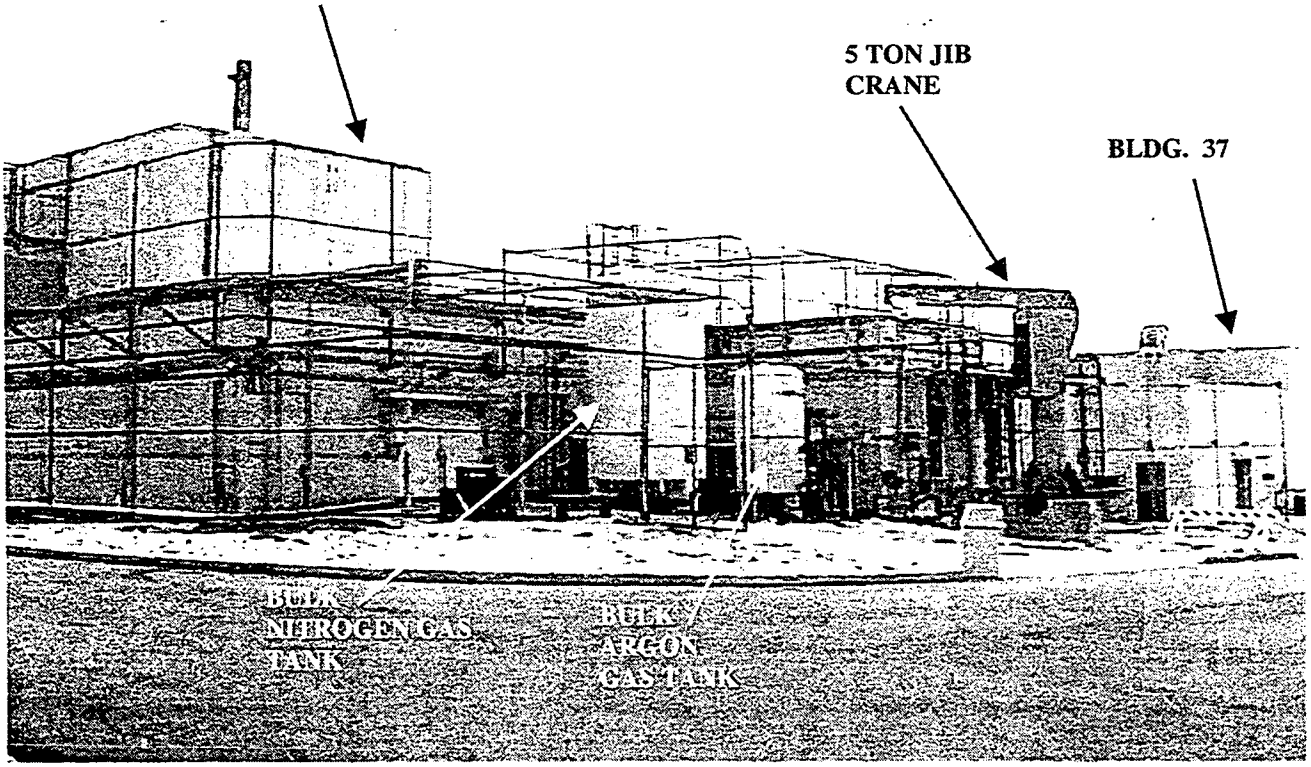


FLOOR ACCESS PITS IN CORR. 114
(WEST SIDE CORRIDOR)

BLDG. 50
VIEW OF EAST SIDE OF BUILDING



BLDG. 50
VIEW OF NORTH SIDE OF BUILDING



BUILDING 50 EQUIPMENT/SERVICES

Appendix D
MISCELLANEOUS
(USQ, RWP, etc.)

- No USQ required for this Work Package
- No RWP required for this Work Package
- Structural Engineering Survey letter, per 29 CFR 1926.850
- Waste Disposition Plan
- Work Package Material List

Structural Engineering Survey letter will go here

Attachment 1 – Request To Stage Clean Hard Fill Debris at Construction Spoils Area

Work Location/ Source of material Bldg. 50 Approximate Volume ~4000 cu. Yds.

Requestor Project Group BOSS Project Point of Contact Steve Davis

Name/Phone Ext Steve Davis ext. 4436

MSR # BOSS-36965-00 Charge # EE050J

Process Knowledge (attach documentation, if more space needed):
BUILDING 50 WAS A TEST FACILITY FOR THE HEAT SOURCE PROGRAM BUT ACCORDING TO HISTORICAL DOCUMENTATION, NO UNENCAPSULATED RADIONUCLIDES RESIDED IN BUILDING 50.

PRS # N/A PRS Binning Status: NFA RA FA UB NFA Pending Stakeholder Review

Binning remarks _____

Clean up criteria for soils _____

Identify how point of origination /area is posted: (e.g. non-RMMA, URMA, SCA, CA, HCA, RMA, RMMA, FCA, etc.)
Note: NON-RMMA

Radionuclides of Concern for verification sampling: N/A

Radiological Surface Contamination [Not Applicable – never exposed to radionuclides] circle if applicable

Survey Results: _____ <PP-1059F, Table 2-2 criteria _____ > PP-1059F, Table 2-2 criteria

In Process monitoring of excavating equipment: _____ <PP-1059F, Table 2-2 criteria _____ > PP-1059F, Table 2-2 criteria

Activation Concerns: No Yes If yes, explain

Material is released for recycle /reuse Yes No

Sending Rad POC Signature	**Date**
Sending Project Manager Signature	**Date**

Work Location/ Source of material _____

Final material use:
On-site Unrestricted Removed as LLW to disposal

Waste Management Rad POC Signature	**Date**
Spoils Area Foreman Signature	**Date**

Attachment 2 — ML-9987 – D & D Solid Waste Free Release Declaration

The _____SMPP/TFV - BOSS_____ Project has determined that all solid waste streams resulting from safe shutdown, decontamination, and/or demolition of Building(s) ____50_____ have been free released in accordance with DOE Order 5400.5, MCP procedural manual MD-80043, and direction from the DOE Miamisburg Environmental Management Project (MEM office (letter from Provencher to Baker, MB 423-99, dated April 27, 1999). Data supporting this free release determination may b found by contacting ____STEVE DAVIS_____, Project Manager, at ____X4436_____. This data may include radiological surveys and data sheets and/or process knowledge utilized according to the above procedures.

_____ _____

Waste Coordinator Date

Attachment 1, (Example) Solid Waste Debris/Roll-off Release – ML9901 (10/02)

SOLID WATE ROLL-OFF RELEASE

ROLL-OFF NUMBER: _____ **WASTE GENERATED:** _____

BUILDING/AREA	Buildings with no Rad History		Buildings/Rooms with Rad History	
	ANNUAL SURVEY (DATE/NO.)	ROLL-OFF/ DEBRIS PILE SURVEY (DATE/NO.)	ITEM/AREA PRE-DEMOLITION/TRANSITION SURVEY or MARSSIM METHODOLOGY\ (DATE/NO.)	COMMENTS

The demolition/solid waste being disposed of from the Mound Location identified above meets the standards established by the Mound Guidance for Disposal of Solid Waste in agreement with the Ohio Environmental Protection Agency and the Department of Health Bureau of Radiological Protection. The Mound Guidance for Disposal of Solid Waste establishes standards for the survey of demolition debris and solid waste. The radiological surveys of the demolition debris/solid waste comprising this shipment were conducted in accordance with approved procedures and the use of best available technology as described in the Mound Guidance for Disposal of Solid Waste.

_____ Date_____

Waste Operations Manager or Designated Representative

ML-9901 (10/02).

Attachment 2 – FREE RELEASE SURVEY FOR WASTE DISPOSED OF IN ROLL-OFFS TO LOCAL LANDFILL

I. BUILDINGS WITH NO RAD HISTORY (MARSSIM NON-IMPACTED AREAS)	II BUILDINGS/ROOMS WITH RAD HISTORY (MARSSIM CAT,. 1, 2, & 3)	
ANNUAL SURVEY	PRE-DEMOLITION/TRANSITION SURVEY OR	
AND	MARRSIM methodology for unrestricted release of building structure. Equipment/furniture left in the building for D&D or that is part of a clean-out will have a representative survey of horizontal surfaces. OR	NOTES: Structural materials or specific item identified as contaminated above the limits in MD-80043, OP 400 may be decontaminated and resurveyed to determine if it meets release survey criteria
ROLL-OFF/DEBRIS PILE SURVEY	Item Specific free release requires a survey/ evaluation in accordance with MD-80043, OP 400 or OP 500, as appropriate.	

WORK PACKAGE MATERIAL LIST

Work Package # _BOSS-36965__ Page ____ of ____

Work Package Description _Demolition of Building 50_____

Item #	Qty.	Units	Material Description	Used For	Suggested Supplier
1		Ea.	Check Spill Kits	Spills	

Appendix E

POST-JOB CONFERENCE/ LESSONS LEARNED

Laborer's Personal Protective Equipment (PPE) Burned While Cutting Rebar With a Portable, Abrasive Wheel Saw (i.e.,cut-off machine)

L03-024 (R-2003-OR-BJCETTP-0201)

LESSON LEARNED STATEMENT: Hot work is any work involving burning, welding, cutting, or similar operations that is capable of initiating fires or explosions. The use of abrasive wheel cutting saws (hereafter referred to as cut-off machine) can generate hot surfaces and a large quantity of hot sparks that must be controlled. Sparks from cutting metal can burn or cause clothing to catch fire. Operators must have knowledge and training in tool manufacturer's safety manual and observe warnings.

DISCUSSION OF ACTIVITIES: A Subcontractor laborer was using a cut-off machine to cut rebar protruding from the K-1302 pad. The cut-off machine was approximately 12-inch diameter and driven by a gasoline engine. The work was being executed under the Subcontractor's Activity Hazard Assessment (AHA), and workers had signed in on a radiation work permit (RWP). The workers were wearing the following PPE: steel-toed shoes, safety glasses, face-shield, and hard hat, as well as, anti-contamination coveralls, gloves, clear plastic booties, and rubber shoe-covers. Before work began, the Subcontractor's ES&H representative, Bechtel Jacobs Company (BJC's) Safety Advocate, and BJC's Subcontractor Technical Representative discussed the requirement for a hot work permit. It was determined that the governing hot work procedure did not require a hot work permit for grinding and other abrasive cutting work; however, the Subcontractor's AHA did require a permit. No permit was obtained prior to starting work.

The Subcontractor had a portable water sprayer in the area for dust suppression and contamination control and another worker observing in the area as an additional safety precaution. After making 8-10 cuts, the Subcontractor laborer advanced to the next piece of rebar. While making this cut, he noticed his anti-contamination plastic bootie smoldering due to sparks.

Anti-contamination clothing was burned, scorched, or melted, including a yellow rubber shoe cover, clear plastic bootie, duct tape, and yellow cotton coveralls on the right leg below mid-shin. The worker's personal blue jeans (between cuff and mid-shin on right leg) appeared to have melted plastic on them. The worker was unsure whether the one hole near the plastic area was present before the incident. The second worker extinguished the smoldering material with the water sprayer in the area. Both workers proceeded to the boundary control station, doffed their clothing, and reported the incident. The worker was not burned, injured or contaminated during this event.

On Tuesday, February 18, 2003, the East Tennessee Technology Park (ETTP) Closure Project Manager of Projects (MOP) halted all hot and spark/heat generating activities at the Site. Later in the day, the Vice President and Deputy General Manager for BJC issued a stand down on all hot work (including any work that produces sparks or heat) across the company. This stand down applied to all BJC self-performed and subcontractor work at all BJC project locations.

ANALYSIS: The Subcontractor's scope of work was to decontaminate and demolish buildings at the ETTP as part of the Main Plant Decontamination and Decommissioning (D&D) Project. The Subcontractor performed characterization, removed contaminated components, decontaminated selected materials when economically practical, demolished the superstructures to the slab or grade, and disposed of the waste. At the time of the February 18, 2003, incident, work was at a point that rubble piles were being loaded on trucks for shipment to a permitted disposal facility. The Subcontractor decided to have personnel remove protruding rebar from the K-1302 concrete pad. Since the work area was considered to be a contamination area, entry required the workers to wear anti-contamination PPE. Although the Subcontractor's AHA for General Construction Hazards required this operation to be carried out using a hot work permit, the permit was not obtained. The Contractor's procedure BJC-EH-2007, "Welding/Burning/Hotwork", dated December 15, 2002, did not require a hot work permit for grinding and abrasive work. A WBH Permit was required for welding, arc and torch cutting, and open-flame operations occurring outside fixed weld shop areas. The National Fire Protection Association's Standard NFPA 51B "Standards for Fire Prevention During Welding, Cutting, and other Hot Work-1999 edition" specifically includes grinding processes.

The Subcontractor had a previous incident in May 2002 that also resulted in a laborer's PPE being burned by sparks from the same type of cut-off machine. The PPE did not ignite, but the material was charred, and it resulted in a lessons learned by the Subcontractor. However, the lessons learned was only disseminated internally and was not included in the Contractor or Department of Energy (DOE) Lessons Learned System.

Significant changes had occurred in the project staffing for both the Contractor (Safety Advocate and Subcontract Technical Representative) and the Subcontractor (Environment, Safety, and Health Representative, Project Manager, and Site Superintendent). Over the previous 11 months, there had been 25 individuals who had occupied 10 positions that were involved in the Main Plant D&D Project. Due to this large staff changeover in key critical positions over a short period, lack of project and work knowledge contributed to failures that allowed this incident to occur.

The Subcontractor selected the cut-off machine based on its availability. The hazards and its appropriateness for the task were not evaluated. The laborer did not have sufficient knowledge of the proper techniques and the hazards associated with the cut-off machine and hot sparks were allowed to impact his leg. Neither the Contractor's nor the Subcontractor's hazard assessment process properly evaluated this hazard. Although the Subcontractor's AHA required a hot work permit, the Subcontractor did not obtain a permit and followed the existing RWP. The laborer wore 100% cotton anti-contamination coveralls instead of the fire-resistant PPE that would be

required for hot work protection. The cut-off machine's manufacturer's safety manual was not at the work site until after the incid and the Subcontractor's personnel were not familiar with the precautions contained in the manual.
The manufacturer's safety manual provides the following warnings:
* When cutting metal, a cut-off machine generates sparks which can ignite clothing. Most fabrics used in clothing are combustibl even flame-retardant fabrics will ignite at higher temperatures. To reduce the risk of burn injury the manufacturer recommends wearing clothing made of leather, wool, flame-retardant-treated cotton or tightly woven, heavier cotton such as denim. Some flan retardant synthetic fabrics are also suitable but others such as polyester, nylon, rayon, and acetate can melt during a fire into a tar-matter that buns into the skin. Check the clothing manufacturer's instructions.
* Sparks from cutting metal can burn or cause clothing to catch fire. Do not use a cut-off machine on flammable ground. Always direct sparks away from the operator or any flammable surroundings.
* The wheel guard is adjustable. It is extremely important that the wheel guard is in place and set to suit the type of work and you stance. The guard should always be adjusted so that the user is not endangered by particles of the material being cut; sparks or pi of damaged wheels either directly or by ricochet. Failure to follow this instruction could result in serious or fatal injury.
A Warning label on the saw instructed personnel to adjust the blade guard to direct sparks and material fragments away from the operator. Sparks created during cutting may cause fire. Furthermore, his body position was incorrect when using the cut-off mach and the combustible coveralls were exposed to sparks. Therefore, both the direct and root causes of this event were work plannin deficiencies. The Subcontractor did not train their
workers to the requirements contained in the cut-off machine manufacturer's owners/safety manual nor to the precautions listed o equipment label. Therefore, a contributing cause to this event was a training deficiency - No Training Provided.
RECOMMENDED ACTIONS:
* Obtain manufacturer's safety manuals for powered-hand tools and equipment.
* Provide training to recognize the hazards identified in powered-hand tool manufacturer's safety manuals and adhere to manufacturer's warning label.
* Ensure appropriate selection and identification of flame-resistant clothing in work control documentation for hot work activitie
* Consider the use of hydraulic cutters instead of abrasive cutting to reduce the size of rebar at demolition sites.
* Ensure lessons learned are shared with employees as related to specific activities and hazards.
* Revise hot work procedures to include current (1999 edition) NFPA 51B requirements and applicable ASTM standards.
* Obtain hot work permits for welding and allied processes, heat treating, grinding (including abrasive wheel cutting), thawing o pipe, powder-driven fasteners, hot-riveting, and similar applications producing a spark, flame, or heat.

Lessons Learned-Miscommunications Leads to Severed Gas Line

Project Type: *Facility* Disposition
Date: August 13, *2001*
Document Type: *Lessons Learned*
Functional Area: *Decontamination* & Decommissioning
Operations Office: *Rocky* Flats

Lesson Learned Statement

Making sure the scope of work is clearly understood by everyone involved in a job is a key factor in successfully completing any D&D job.

Discussion of Activities

A *KH Construction* crew was using a backhoe to remove foundations from the PACs 3 building when the backhoe severed a one-inch gas line. The line had been removed from service and purged prior to the start of excavation.

The work crew did coordinate with excavation specialists prior to digging, as required in the work package. Excavation specialists perform drawing searches and various surveys prior to approving scheduled excavation activity. But the two groups had a different understanding of the scope of work allowed under the soil disturbance approval.

The crew thought the excavation specialists had approved demolishing all of the foundations in the building, as described in the "work to be performed" section on the first page of the excavation permit. But the excavation specialists had only surveyed and approved demolition of the center median wall, which was noted on the second page of the permit form.

Recommended Actions

One way to ensure everyone is on the same page is to thoroughly review permits to ensure that all conditions, requirements and limitations are understood before starting the job. In order to avoid future misunderstandings, the RISS Project has briefed KHC personnel to make sure they review the second page of the excavation inspection and entry approval log to determine any special requirements and remarks. The excavation specialists will also meet daily with the work crews and review that day's planned scope of work and make sure all applicable surveys have been completed.

Contact Information

Richard Schassburger
Phone: 303-966-4888
E-mail: richard.schassburger@rf.doe.gov
Authorized Derivative Classifier: Rod Hoffman
Phone: (303) 966-4398

POST JOB CONFERENCE

1. WORK PACKAGE TITLE: **Building 50 Demolition**
2. WORK PACKAGE NUMBER: BOSS-36965-00

What went well?

What could be improved?

Other Comments:

Items Requiring Further Action:

POST-JOB CONFERENCE ATTENDEES

NAME	HP	NAME	HP

LESSONS LEARNED INPUT FORM

Title: (This is a brief descriptive title)
Building 50 Demolition

Lessons Learned Statement: (This is a brief, two or three sentence, summary of the lesson that was learned)

Discussion: (This is background and detail of what happened)

Analysis: (Discussion of what went wrong, or right and what should be done in the future)

Recommended Actions: (Identify specific corrective actions)

Submitted by: _____ Date: _____

OPTIONAL

Mail to: Lessons Learned Program Manager, or appropriate Project or Functional Manager