Westinghouse

Westinghouse Electric Company
Hematite Facility
3300 State Road P
Festus, MO 63028

October 5, 2004

Post Docket: 70-36

Mr. Amir Kouhestani
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop T7 F27
Rockville, MD 20852-2738

Subject: Request for Amendment to Chapter 1 of SNM-33

Reference:
(1) SNM-33, Chapter 1
(2) DO-04-007, *Environmental Report for Building Demolition at the Hematite Facility*
(3) NUREG-1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*

Dear Mr. Kouhestani:

The purpose of this letter is to request a license amendment to Chapter 1 of SNM-33 (Reference 1) to allow dismantlement and demolition of the building complexes at the Hematite Facility. The revision to Chapter 1, Section 1.6, page 1-6 is enclosed.

In addition, Westinghouse has prepared an Environmental Report (Reference 2) in accordance with NUREG-1748 (Reference 3) that evaluates the impact of the proposed dismantlement and demolition to the environment. This Environmental Report is included with this amendment request. If you have any additional questions concerning this request, please feel free to contact me at (314)810-3306.

Regards,

Karen Ann Craig
Manager, Regulatory and Licensing

cc: Hank Sepp
Joe Nardi

Enclosures: 1 copy of Page 1-6, Revision 7, of SNM-33
6 copies of DO-04-007, *Environmental Report for Building Demolition at the Hematite Facility*

Electronically Approved in EDMS 2000

10.7.04

(d) Dismantlement and demolition of site buildings down to building slabs and foundations at grade.

(e) (deleted)

Environmental Report for Building Demolition at the Hematite Facility

Westinghouse

3300 State Road P, Festus, MO 63028

DO-04-007, Rev. 0

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ABBREVIATIONS AND ACRONYMS

ABB	Asea Brown Boveri
ACM	asbestos-containing material
AEC	Atomic Energy Commission
ALARA	as low as reasonably achievable
^{241}Am	Americium-241
AQCR	Air Quality Control Region
CE	Combustion Engineering
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
ER	Environmental Report
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
HF	hydrogen fluoride
HSA	Historical Site Assessment
LLRW	low-level radioactive waste
µCi/ml	microCuries per milliliter
MCW	Mallinckrodt Chemical Company
MDNR	Missouri Department of Natural Resources
MoDOT	Missouri Department of Transportation
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
^{237}Np	Neptunium-237
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NUREG	Nuclear Regulation
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
PCE	Perchloroethylene
POTW	Publicly Owned Treated Works
^{239}Pu	Plutonium-239
RACE	Radiological Assistance Consulting and Engineering
RCOPCs	Radiological Constituents of Potential Concern
RCRA	Resource Conservation and Recovery Act
RPP	Radiation Protection Plan
RWP	radiation work permit
SAA	site accumulation area
SNM	special nuclear material
^{99}Tc	Technetium-99
TCA	trichloroethane
TCE	trichloroethylene
^{232}Th	thorium-232
TSCA	Toxic Substances Control Act
TSDF	Treatment Storage and Disposal Facility

^{234}U	uranium-234
^{235}U	uranium-235
^{238}U	uranium-238
UF_4	uranium tetrafluoride
UF_6	uranium hexafluoride
UNC	United Nuclear Corporation
UO_2	uranium dioxide
USGS	United State Geological Survey
WAC	Waste Acceptance Criteria
WEC	Westinghouse Electric Company

1.0 INTRODUCTION

Westinghouse Electric Company LLC (Westinghouse) is in the process of evaluating the most appropriate approach to the final disposition of existing buildings on approximately ten acres of land at the Former Fuel Cycle Facility near the City of Hematite, in Jefferson County, Missouri (Hematite Facility). These approaches have been formally evaluated in an Engineering Evaluation and Cost Analysis for the Removal Action on Buildings and Equipment at the Westinghouse Former Fuel Cycle Facility Site Festus, Missouri (EE/CA) (Ref. 1). The recommended alternative in the EE/CA (Ref. 1) calls for the demolition of buildings on the Hematite Facility which requires a License Amendment from the Nuclear Regulatory Commission (NRC).

The Hematite Facility is located approximately ¾ of a mile northeast of the unincorporated town of Hematite and approximately 35 miles south of the City of St. Louis, Missouri. The surrounding area is primarily suburban and residential. As part of the license amendment process, the NRC requires the licensee to prepare an Environmental Report (ER) to describe the potential impacts that could result from implementation of the Proposed Action. This ER is being prepared per NUREG 1748 (Ref. 2) and to address the requirements of the National Environmental Policy Act (NEPA) (Ref. 3) and applicable NRC regulations (specifically 10 CFR 51.45) (Ref. 4).

Site History

In 1955, Mallinckrodt Chemical Company purchased the area where the Hematite Facility was constructed for the production of uranium and uranium compounds from natural and enriched uranium sources for use as nuclear fuel. Beginning in 1956 and continuing to the mid-1970s, the plant produced uranium compounds for use in the naval nuclear program and for use by the Department of Energy. Throughout its history, Hematite's primary function was to manufacture uranium metal and uranium compounds from natural and enriched uranium for use as nuclear fuel. Subsequently, the plant continued to produce nuclear fuel, but for commercial use. Westinghouse acquired the site in April 2000 and closed the facility in June 2001. There are currently no manufacturing operations at the site.

1.1 Purpose and Need for the Proposed Action

Westinghouse seeks to obtain a license amendment from the NRC that would allow it to demolish all of the buildings at the Hematite Facility. Westinghouse ceased fuel production operations at this site in June 2001 and has no future plans for operation of the site as a nuclear fuel processing facility. Based upon past investigations and operator's knowledge, more than 45 years of processing nuclear material have resulted in radiological contamination at process building surfaces and accompanying equipment. Moreover, there is evidence of radiological contamination of soil beneath many of the facility buildings. The purpose and need for the Proposed Action is to reduce the risk to public health, site workers, and the environment posed by the release and substantial threat of release of hazardous substances at the Hematite Facility. The Proposed Action will also facilitate the characterization and future remediation, if necessary, of soil and/or groundwater beneath the buildings which may be impacted by activities in and around the buildings. As a result, the site is expected to meet the criteria for unrestricted use as specified by 10 CFR 20.1402 (Ref. 5), which will allow for the termination of the NRC License No. SNM-33.

1.2 The Proposed Action

The buildings are located on approximately ten acres of land at the Westinghouse Hematite Facility, located in Jefferson County, Missouri (Figure 1). The Proposed Action involves the systematic demolition of the buildings at the Hematite Facility. The buildings are of differing sizes and are constructed from a combination of materials. The majority of the buildings are constructed of concrete block but some are constructed of wood and others of steel with concrete floors. The Proposed Action includes the demolition of the structures identified in Table 1 and as shown on Figure 2.

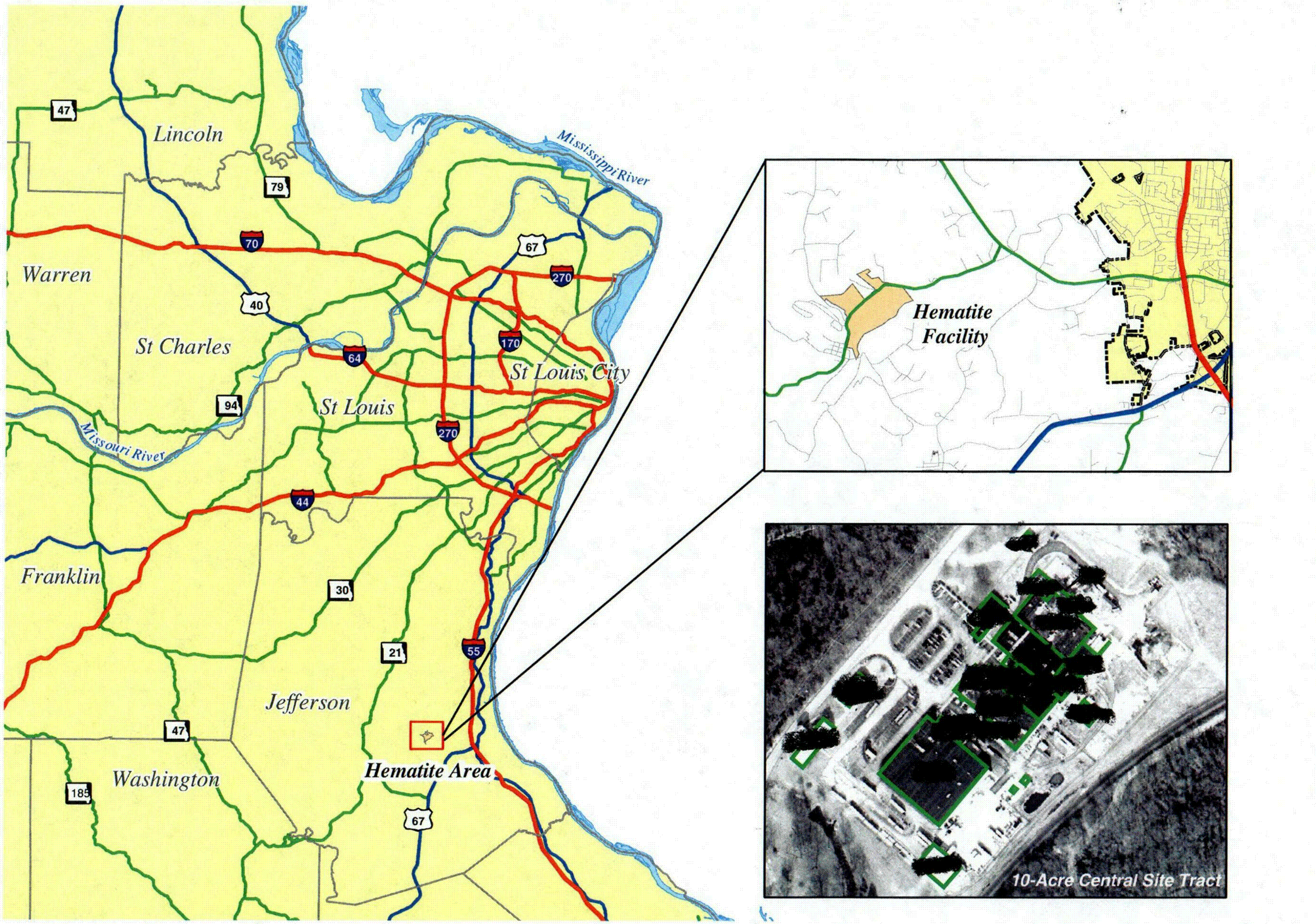
Table 1 Hematite Buildings

Building [redacted]	Tile Barn
Building [redacted]	Pedestrian Entrance
Building [redacted]	Generator/Fire Pump
Building [redacted]	Wood Barn
Building [redacted]	Offices/Former Rod Loading Plant
Building [redacted]	Warehouse
Building [redacted]	West Vault
Building [redacted]	Recycle Recovery/Maintenance Shop/Lab/Green Room
Building [redacted]	Well House
Building [redacted]	South Vault
Building [redacted]	Offices, Low Level Storage, Boiler Room, Cooling Water, Pump Room
Building [redacted]	Pellet Plant
Building [redacted]	Erbia Plant
Building [redacted]	Pellet Drying [redacted] Workhouse
Building [redacted]	Oxide and Oxide Loading Dock
Building [redacted]	Limestone Building

The equipment from each of the buildings will be removed prior to the initiation of demolition. This will allow for complete characterization of contamination within the buildings prior to demolition and will reduce the risk of future exposures to these materials.

Each of the buildings is different. Some have multiple floors and they contain different numbers of rooms. Prior to demolition, the contamination will be removed and/or fixed on the surfaces of applicable steel, concrete and metal siding. The interior and exterior of each building will be sealed where needed with a lock down agent to fix the contamination to the steel, wood or concrete. A lay down space within and around the building to be demolished will be established. The lay down area will be barricaded with signs and tape to prohibit unauthorized entry. Signs warning of the hazard of overhead work shall be posted as necessary.

A water supply, adequate to control fugitive emissions, will be identified and evaluated prior to demolition. The contractor will control the amount of water used during construction to prevent fugitive emissions and water run-off and erosion problems. Surface water runoff will be controlled and monitored through the existing outfall system under National Pollutant Discharge Elimination System (NPDES) permit MO-0000761 issued by the Missouri Department of Natural Resources (MDNR). Soil erosion and sedimentation will be controlled in accordance with applicable state requirements and guidance.



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Interstate	River
US Highway	Westinghouse Property
State Highway	County Boundary

0 5 10 20 Miles

1:700,000

Site Location
Westinghouse Facility
Hematite, MO

FIGURE 1

W:\Westinghouse\ERMaps\Westinghouse Regional Transportation w Buildings.mxd

3

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Site Buildings
Westinghouse Facility
Hematite, MO

FIGURE 2

4

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C02

Each building will be demolished using conventional demolition equipment such as a track hoe mounted shear supplemented by a concrete/masonry processor or other applicable method. During demolition operations, the contractor will maintain an appropriate clearance zone for all personnel.

The demolition of concrete buildings will be performed as determined by engineering evaluation. For example, if it was determined by engineering evaluation that the best method for demolition was to start with the corners, the contractor would push in the walls, windows and doors of the building leaving the roof and support columns. Once the walls are pushed in, a shear could be used to cut or push each support column to lower the roof to the ground. For buildings with multiple floors, the contractor could start from the top and work down.

The demolition of steel I-beam structures will include removal of the metal siding to reveal the support columns. The support columns can then be pulled away from the building to lower the roof structure to the ground. The contractor will proceed in the manner best determined by engineering evaluation, continue to size reduce the building until it has been lowered to the ground. The desired outcome of implementation of the Proposed Action is to have the buildings on the site demolished down to the concrete slabs. The concrete slabs, where they occur, would remain in place post demolition and will be removed in a subsequent phase of the project.

1.3 Applicable Regulatory Requirements, Permits, and Required Consultations

The demolition would proceed in compliance with applicable performance specifications, Health and Safety Plans, and the requirements of 29 CFR 1926.858 (Ref. 6). At the end of each shift, buildings undergoing demolition will be left in a safe condition. This will be established by ending operations at a completed bay or section of the building. A more thorough analysis of applicable or relevant and appropriate requirements is provided in Section 3.5 of the EE/CA (Ref. 1).

2.0 ALTERNATIVE TO THE PROPOSED ACTION

As noted above, Westinghouse prepared an EE/CA (Ref. 1) for the purpose of evaluating the potential removal action alternatives for the removal of radioactively contaminated buildings at the Hematite Facility and for the removal of buildings at the Hematite Facility that interfere with the characterization and future remediation, if necessary, of impacted soil and/or groundwater beneath the buildings. As set forth in the, the objectives of the removal action for the buildings and equipment located on the Hematite Facility were as follows: (1) protect human health and the environment by minimizing the release or threat of release of radioactive contaminants from buildings and equipment; (2) allow for characterization of contaminated soil and/or groundwater beneath the buildings; (3) address buildings and structures that may interfere with remediation of soil and/or groundwater; and (4) comply with applicable and relevant or appropriate requirements, including requirements imposed by the NRC in connection with site decommissioning, such as the submission of a License Amendment request for which this ER is being prepared.

As a basis for comparison, Westinghouse considered three potential removal action alternatives in the EE/CA (Ref. 1) including: (1) a "no-action" alternative; (2) equipment removal and building decontamination; and (3) equipment removal and building demolition. As discussed in greater detail in the EE/CA (Ref. 1), implementation of the "no-action" alternative would not accomplish the stated objectives for the Proposed Action. Specifically, the "no-action" alternative would not prevent future risk associated with the contaminated buildings or allow for the characterization and future remediation, if necessary, of soil and/or groundwater under the buildings. Moreover, the "no-action" alternative would reduce options for future property use and require perpetual care and security for the site in its current radiological condition, and would not allow the property to eventually be released for unrestricted use. Therefore, the "no-action" alternative is not considered as a reasonable and viable alternative to the Proposed Action and will not be discussed further here.

Implementation of the equipment removal and building decontamination would also allow the buildings to remain in place and hence prevent the property from being released for unrestricted free use. While implementation of the equipment removal and building decontamination would remove reduce the future risk to the public and environment stemming from the radiological contamination of the buildings, this alternative would not allow for characterization and future remediation, if necessary, of soil and/or groundwater beneath the buildings. Given the high cost associated with decontaminating the buildings and the fact that the buildings would remain an interference to characterization and potential remediation of soil and/or groundwater beneath the buildings, the equipment removal and building decontamination is not considered as a viable alternative to the Proposed Action and will not be discussed further here.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The Hematite Facility is located in Jefferson County, Missouri approximately 35 miles south of the City of St. Louis. The site is situated south of Missouri Route P, between the hills to the northwest and the Joachim Creek floodplain to the southeast. The following sections focus on the baseline conditions (the status quo) of the ten acres of the site where the buildings are located. The baseline conditions will be used to assess the impacts associated with implementation of the Proposed Action in Section 4.0 of this ER.

3.1 Land Use

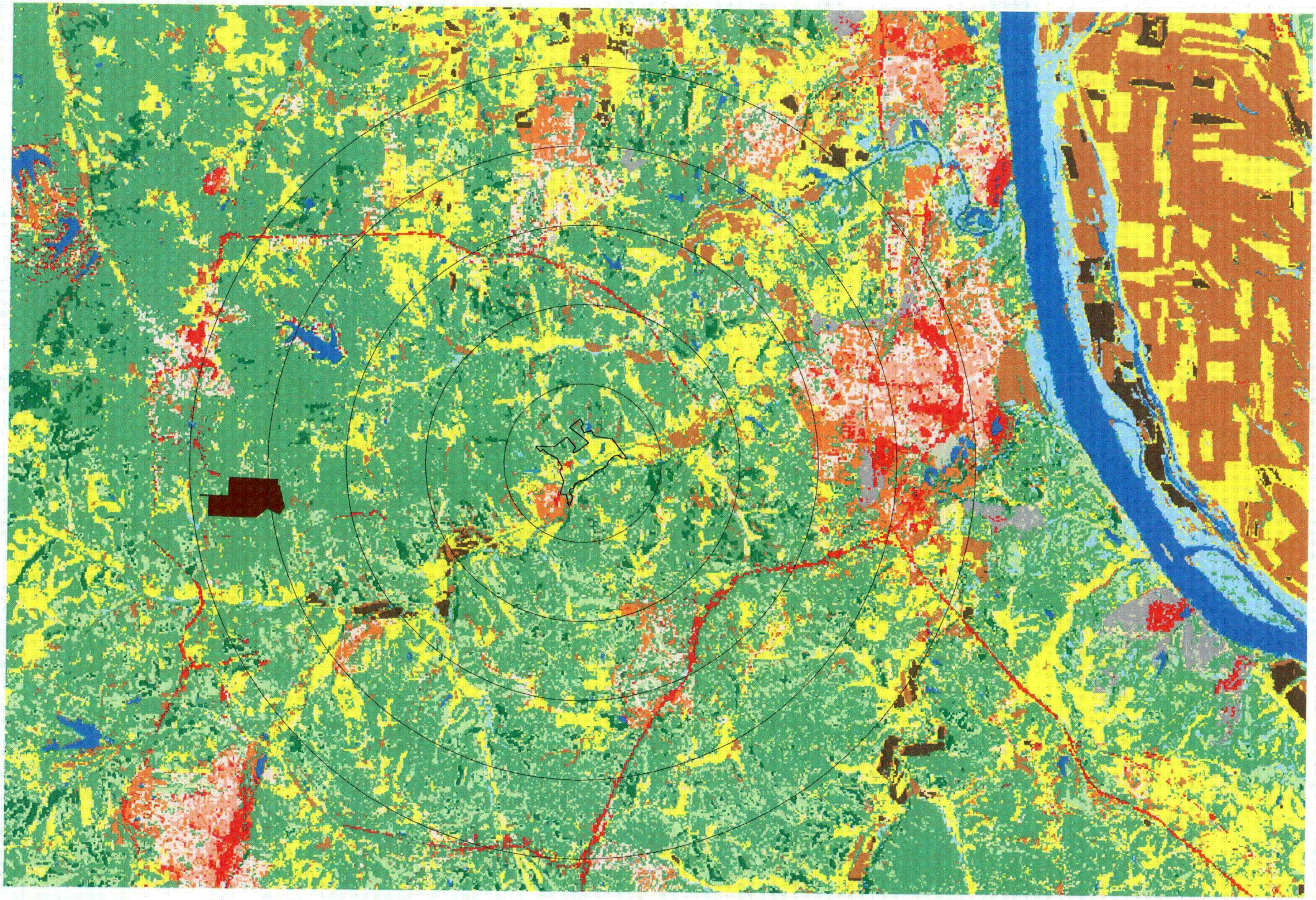
3.1.1 Regional Setting

The primary land use within a five-mile radius of the facility consists of deciduous forest, pasture and residential. Residential land use is centered on the communities of Festus/Crystal City to the northeast, Horrine to the north, and Hillsboro to the northwest. Other land uses include row crop and urban/residential. Land use classifications are based on the National Land Cover Dataset and are shown in Figure 3.

The nearest significant public lands are the Victoria Glades Conservation Area located approximately 3.5 miles west of the Hematite Facility. No other significant public lands are located within a five-mile radius of the site. Interstate 55 is located three miles east of the site and provides access to the site via State Routes A and P.

3.1.2 Hematite Former Fuel Cycle Facility

During operation of the facility, production activities were limited to the process buildings and grounds within an approximately 10-acre central site tract.



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Westinghouse Boundary
Open Water
Low Intensity Residential
High Intensity Residential
Commercial/Industrial/Transportation
Bare Rock Sand Clay
Quarries/StripMine/Gravel pit
Deciduous Forest
Evergreen Forest
Mixed Forest
Grasslands/Herbaceous
Pasture/Hay
Row Crop
Small Grains
Urban/Recreational
Woody Wetland
Emergent Herbaceous Wetland

0 0.5 1 2 Miles

1:110,000

Land Use
Westinghouse Facility
Hematite, MO

FIGURE 3

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Only limited land use activities are known to have occurred in areas outside of the central site tract. Land use/land cover types at the Hematite Facility ten-acre central site tract includes gravel drives, paved areas, mowed turf grass areas and the areas encompassed by the buildings. Other significant site features include Route P and the Union Pacific Railroad both which cross the property from the southwest to the northeast and roughly divide the property into thirds.

3.1.3 Land Use Plans

In November 2001, as part of a more formal Community Relations Plan for the Hematite Facility, a series of interviews were conducted with residential neighbors, adjoining property owners and other community leaders and officials to determine the interests and concerns of the community. The issue of future land use and development opportunities for the site was discussed and the community of Hematite expressed significant interest in future development of the site. As of June 2004, no definite future plans have been developed for the site.

3.2 Transportation

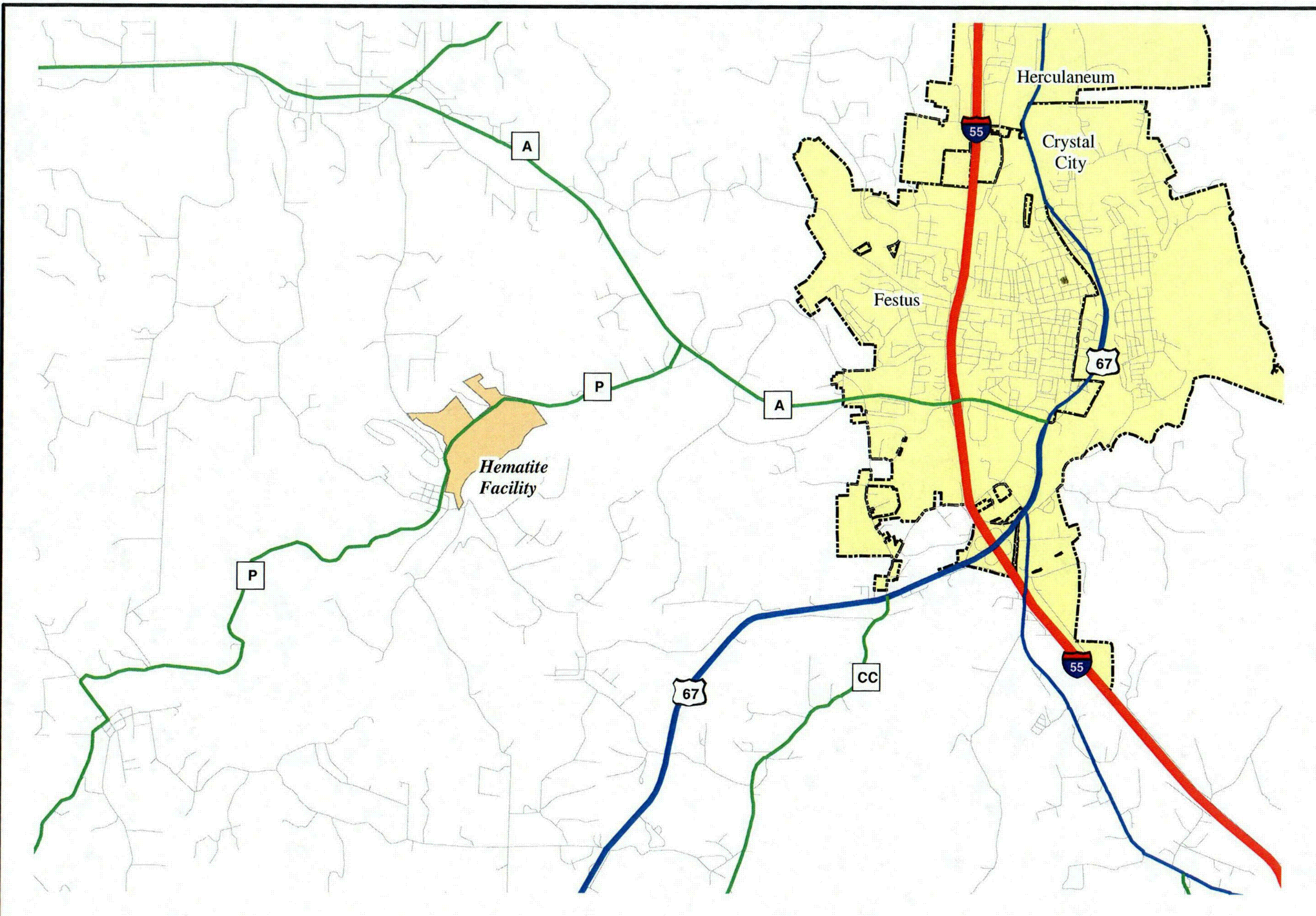
3.2.1 Hematite Facility Area

The Hematite Facility is served by a network of roads, including an interstate freeway, state highways, and state routes. Missouri State Route P, a two-lane rural highway, serves as the entrance to the Hematite Facility. The annual average daily traffic count for State Route P in 2002 was 2,570 vehicles per day (Ref. 7). Missouri State Route A, a two-lane rural/suburban highway, connects to State Route P approximately two miles east of the site. Although traffic on these roads is typical of low volume rural highways, weekend and "rush-hour" traffic volume increases do occur. State Route A enters the western edge of the City of Festus, Missouri and traffic counts increase with proximity to this city. Interstate Highway 55 (I-55), a major north-south freeway, is located approximately 3.5 miles east of the site and intersects with State Route A in Festus, Missouri. This four-lane interstate freeway extends from La Place, Louisiana to Chicago, Illinois and connects to Interstate Highways 270, 44, and 70 in the St. Louis, Missouri area, approximately 35 miles north of the site. In 2002, the annual average daily traffic count for I-55 near Festus, Missouri was 35,347 vehicles per day (Ref. 7). The vicinity transportation networks are shown on Figure 4. Public transit systems, such as bus or light rail, are not available in the immediate vicinity of the site.

The Hematite Facility is located within the St. Louis District (District 6) of the Missouri Department of Transportation (MoDOT). MoDOT currently does not have plans to improve the section of State Route P that extends from the facility to State Route A or the section of State Route A from its intersection with State Route P to I-55. Between 2005 and 2007, some bridge rehabilitation work is planned for structures along State Route A. (Ref. 8).

3.2.2 Waste Transportation Routes

It is anticipated that debris from the dismantled buildings would likely be transported by truck to the Envirocare Facility in Clive, Utah or to the Radiological Assistance, Consulting and Engineering (RACE) Facility in Memphis, Tennessee.



Intersates
US Highway
State Roads
Minor Roads
Westinghouse Property
Municipaities

0 0.5 1 Miles
1:60,000

FacilityTransportation Westinghouse Facility Hematite, MO

FIGURE 4

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C04

Other disposal alternatives may be developed and implemented based upon technical feasibility, regulatory requirements and cost-effectiveness. Carriers may deviate from the following general routes because of road construction, detours, weather conditions, or other reasons. Carriers will be required to hold appropriate state permits for the transportation and hauling of radioactive/hazardous materials.

3.2.2.1 Envirocare Facility

The Envirocare Facility is located in the Great Basin Desert Area of western Utah, approximately 75 miles west of Salt Lake City. Trucks traveling to the Envirocare Facility travel on designated routes limited to Interstate Highways 15, 215, 80, and 84 and the short Tooele County road from Interstate 80 to the Envirocare Facility. It is anticipated that trucks bound for the Envirocare Facility would exit the Hematite Facility and proceed along the following general route of approximately 1,430 miles:

- East on State Route P toward State Route A
- East on State Route A toward Festus
- North on I-55 toward St. Louis
- North on I-270 toward Kansas City
- West on US-40 toward Wentzville
- West on I-70 to Kansas City
- North on I-435 toward Des Moines
- North on I-29 toward St. Joseph
- West on IA-2 toward Nebraska City
- West on I-80 to Salt Lake City
- I-80 west to Clive, Utah (Envirocare Facility)

3.2.2.2 RACE Facility

Materials from building demolition activities may be brought to the RACE Facility in Memphis, Tennessee for volume reduction processing prior to shipment to a licensed disposal facility. The RACE Facility is located on President's Island, in Memphis's heavy industry district. It is anticipated that trucks bound for the RACE Facility would exit the Hematite Facility and proceed along the following general route of approximately 260 miles:

- East on State Route P toward State Route A
- East on State Route A toward Festus
- South on I-55 to Memphis (President's Island)
- Take the McLemore Avenue exit (number 11)
- Right turn onto McLemore
- McLemore becomes Riverside Blvd.
- Left turn onto Jack Carley Causeway
- Jack Carley Causeway becomes Harbor Avenue
- Left onto Pier Street
- Left onto Channel Avenue
- RACE Facility at 2550 Channel Avenue.

3.3 Geology, Soils and Seismology

The Hematite Facility is located on the north, northeast flank of the Precambrian age St. Francis Mountains uplift, which created the Ozark Dome. Based upon the "Missouri Geologic Map," 1979 (Ref. 9) and the "Bedrock Geologic Map of the Festus 7.5 Minute Quadrangle, Jefferson County, Missouri" (Ref. 10), the uppermost bedrock beneath the site is the lower Ordovician Canadian series, Jefferson City Dolomite (Ref. 10).

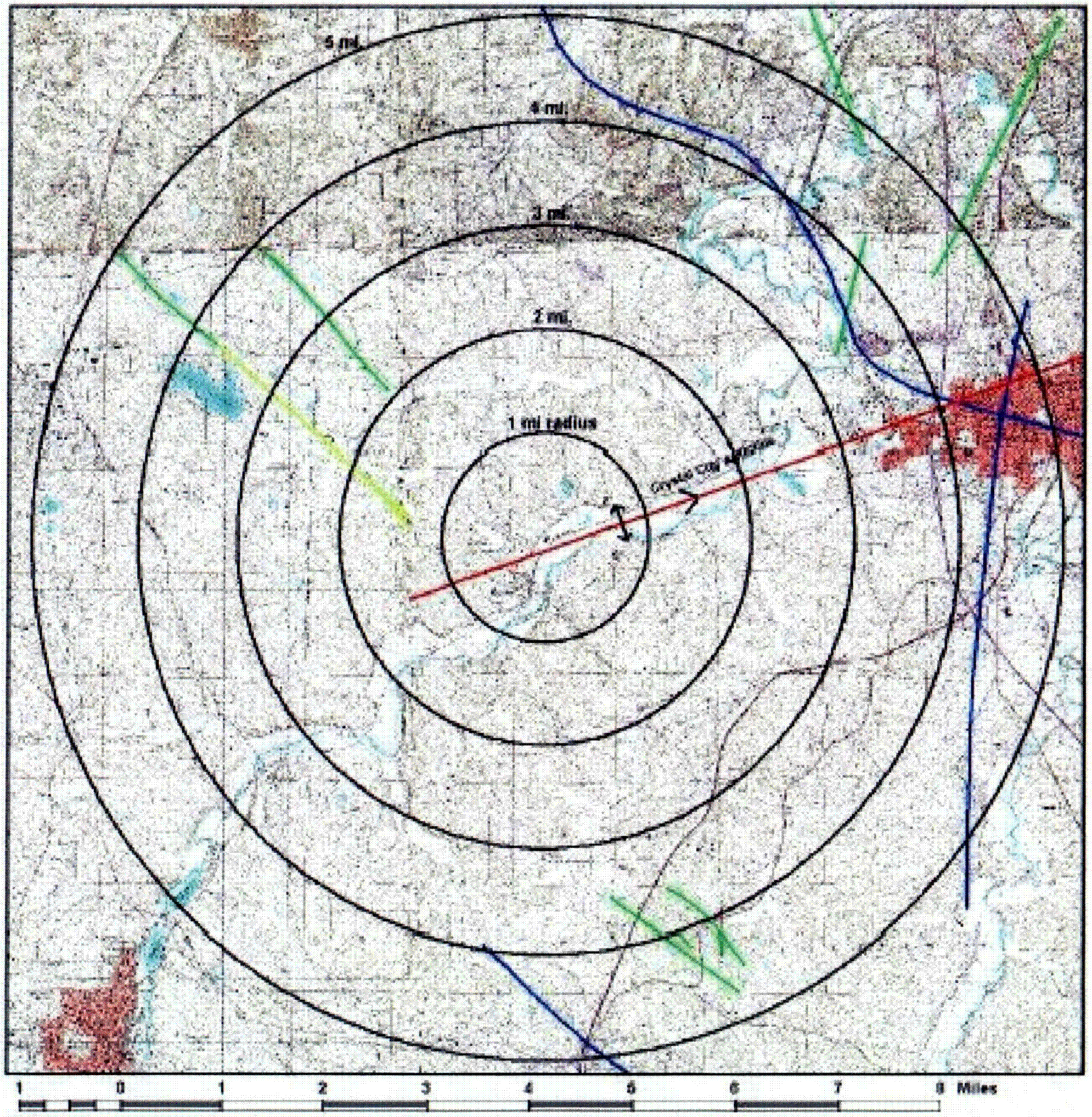
The Jefferson City Dolomite is described as mostly light brown to medium-brown, medium to finely crystalline dolomite and argillaceous dolomite. The elevation of the Jefferson City Dolomite ranged from 396 feet above mean sea level (28.7 feet below ground surface) to approximately 398 feet above mean sea level (39.9 feet below ground surface). The Jefferson City Dolomite is typically 125 to 325 feet thick and is bounded by the overlying Cotter Formation also mostly a dolomite, and beneath by the Roubidoux Formation that is dominantly a sandy dolomite with lesser beds of dolomitic sandstone and dolomite (Ref. 11).

Several test borings have been made in connection with past investigatory activities at the site. The borings were drilled to depths of approximately 35 feet. The soil profile shows upper alluvial soils of stiff, very silty clays containing some sand, underlain by silty clays of firm to stiff consistency to depths of 10 to 13.5 feet. Very stiff, highly plastic clay with limestone fragments were next encountered to depths of approximately 22 feet. Firm to stiff, sandy, silty clay was then found until auger refusal was obtained on boulders or limestone bedrock at an approximated depth of 36 feet. The overburden consists of quaternary alluvial and colluvial deposits of silts, clays, sands, gravels and cobbles. Overburden depths vary across the site from 8.5 to 45 feet below ground surface being deeper near Joachim Creek and shallower towards Route P (Ref. 12).

Regarding seismology, although there are no mapped or suspected faults within several miles of the site (Figure 5), the southeastern area of Missouri is quite active seismically. The southeastern part of Missouri contains a portion of the New Madrid Fault that caused the "great earthquakes" of 1811 and 1812. There were three quakes of Epicentral Intensity XII Modified Mercalli scale (M.M.) that took place on December 6, 1811 and January 23 and February 7, 1812 near New Madrid. In 1962, a quake measuring V (M.M) was recorded in the New Madrid area. A quake with a magnitude of 4.5 was recorded in the New Madrid area in 1963. A quake reported as "the strongest in years" occurred near Caruthersville, Missouri, 150 miles southeast of Hematite, on December 3, 1980. The closest earthquake to the Hematite Facility of 3.0 magnitude or greater was centered roughly 10 miles south-southeast of the facility (Ref. 13).

3.4 Water Resources

The ten-acre central site tract is bounded by the Northeast Site Creek to the northeast and the Site Pond and its effluent stream, Site Creek, which merges with the Lake Virginia Tributary to the south.



Location of site within Jefferson County, Missouri

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Anticline	Fault and Monocline
Fault	Monocline

Geologic Structures Westinghouse Facility Hematite, MO

FIGURE 5

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C05

The site also contains two evaporation ponds located behind the building group near the fenced perimeter.

3.4.1 Surface Water Discharge

Site Creek, formed from the effluent of the Site Pond, receives discharge from the facility's stormwater and sanitary sewer systems. The Hematite Facility is currently discharging water to three outfalls; 001 – sanitary wastewater, 002 – site dam overflow which receives discharge from 003, and 003 – stormwater under NPDES permit number MO-0000761 (Figure 6). This permit allows the Hematite Facility to discharge wastewater to an un-named tributary of Joachim Creek. The permit effluent and monitoring requirements are listed in Table 2.

Table 2 NPDES Permit MO-0000761 Effluent Limitation and Monitoring Requirements

Outfall Number & Effluent Parameters	Units	Final Effluent Limitations			Measurement Frequency
		Daily Maximum	Weekly Average	Monthly Average	
Outfall 001					
Flow	MGD	[1]	NA	[1]	once/month
BOD[3]	mg/L	NA	45	30	once/quarter[2]
TSS[3]	mg/L	NA	45	30	once/quarter[2]
pH	SU	[4]	NA	[4]	once/quarter[2]
Fecal Coliform[5]	#/100mL	1000	NA	400	once/quarter
Chlorine, Total[5]	mg/L	1.0	NA	NA	once/quarter
Outfall 002					
Flow	MGD	[1]	NA	[1]	once/month
Fluoride	mg/L	1.2	NA	1.2	once/quarter[2]
TSS	mg/L	NA	45	30	once/quarter[2]
pH	SU	[4]	NA	[4]	once/quarter[2]
Oil & Grease	mg/L	15	NA	10	once/quarter[2]
Radioactive Material[3,6]	pCi/L	NA	[1]	NA	weekly
Outfall 003					
Flow	MGD	[1]	NA	[1]	once/month
BOD	mg/L	NA	45	30	once/month
TSS	mg/L	NA	45	30	once/month
pH	SU	[4]	NA	[4]	once/month
Oil & Grease	mg/L	NA	NA	10	once/month
Temperature	°F	[7]	NA	[7]	once/month
Fluoride	mg/L	2.2	NA	1.2	once/month

BOD – Biochemical Oxygen Demand
TSS – Total Suspended Solids
1 – Monitor requirement only
2 – Once per quarter during the months of February, May, August, and November.
3 – A composite sample made up from a minimum of four grab samples collected within a 24 hour period with a minimum of two hours between each grab sample.
4 – pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
5 – Final limitations and monitoring requirements for Fecal Coliform and Total Residual Chlorine are applicable only during the recreational season from April 1 through October 31. Fecal Coliform and Total Residual Chlorine must be measured during May, August and October of each calendar year.
6 – Monitoring required for gross alpha and beta radiation in accordance with Nuclear Regulatory Commission License No. SNM-33.
7 – Effluent shall not elevate or depress the temperature of the receiving stream beyond the mixing zone more than 5°F. The stream temperature beyond the mixing zone shall not exceed 90°F due to the effluent. Temperature shall be monitored at 40 yards below Outfall 003 and upstream of Outfall 003 for comparison purposes.

NPDES Outfalls Westinghouse Facility Hematite, MO

FIGURE 6

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C06

In accordance with the NRC License No. SNM-33, the Hematite Facility is required to monitor wastewater for gross alpha and gross beta radiation. The monitoring locations and frequency are listed in Table 3.

Table 3 NRC Monitoring Locations, Frequency and Sample Type

Location	Frequency	Sample Type
Effluent discharge at the dam (Outfall 002)	weekly	24-hour composite
Joachim Creek upstream and downstream from the site creek	monthly	Grab
Confluence of Joachim Creek and the site creek	quarterly	Grab
On-site water supply well	monthly	Grab
Hematite water supply well	quarterly	Grab

3.4.2 Groundwater

The Hematite Facility is located in the Salem Plateau groundwater province. This province contains two separate aquifers, the Ozark and St. Francois. The shallower Ozark aquifer is separated hydrologically from the deeper St. Francois aquifer by the St. Francois confining layer. The near-surface hydrostratigraphic units at the Hematite Facility were characterized in *Hydrologeological Investigation and Groundwater, Soil and Stream Characterization, 1999* (Ref. 14).

Groundwater flow under the Hematite Facility is generally towards Joachim Creek to the east. The average hydraulic gradient was calculated to be 0.021 feet per foot near the north portion of the site and 0.026 feet per foot east of the plant following the Joachim Creek floodplain. According to "*Water Resources Report 30*" (Ref. 15), domestic and industrial water wells in the vicinity of the site produce water from the Powell-Gasconade aquifer group which includes the Jefferson City Dolomite Formation (Ref. 15). Wells in this area, especially to the west and southwest, intersect the Jefferson City Dolomite Formation, if present, but do not derive significant quantities of water from Jefferson City Dolomite Formation. Although some of the neighboring residents use the Jefferson City Dolomite Formation as a drinking water source, it has been documented that the Jefferson City Dolomite Formation is generally not capable of sustained water production because of its low storage capacity.

3.5 Ecological Resources

No ecological resources are located within the ten-acre central site tract. The ten-acre area consists of gravel drives, asphalt parking lots, some mowed turf grass areas and the former industrial buildings.

Consultation with state or federal natural resource agencies has not occurred for the proposed building demolition activities. However, based on pedestrian surveys of the ten-acre central site tract, the area of the Hematite Facility where building demolition is planned does not possess a quantity or uniqueness of habitat to support ecological resources.

The nature of the building structures and associated surrounding area, being primarily paved, does not provide suitable habitat for wildlife in general or threatened/endangered species in particular. In addition, demolition activities are similar to those that have been approved under SNM-33 for past operations of building demolition and construction.

3.6 Meteorology, Climatology, and Air Quality

3.6.1 Meteorology and Climatology

The *Missouri Water Atlas*, 1986 (Ref. 16) was consulted to determine local precipitation characteristics. The area of the Hematite Facility receives an average of 38 inches of precipitation annually with 12 inches of annual runoff. Approximately 45 percent of the total yearly precipitation falls from April through September. The maximum 10-day precipitation event would yield nine inches of precipitation in a given 25-year span. Snowfall has averaged less than 20 inches per winter season since 1930. December, January and February are the driest months while April and May are normally the wettest. It is not unusual to have extended periods (1 to 2 weeks or more) without appreciable rainfall from the middle of the summer into the fall. Thunderstorms occur on the average between 40 to 50 days per year and occur most between May and August. The U.S. Department of Commerce reports a mean annual frequency of about eight tornadoes per year for a 30-year period (Ref. 13). The probability of a tornado striking the site location is computed at 7.51×10^{-4}, and the recurrence interval is 1,331 years (Ref. 13).

General climatological characteristics of the site area can be inferred from those of St. Louis, the location of the nearest U.S. Weather Bureau recording station. The region experiences a modified continental climate without prolonged periods of extreme cold, extreme heat, or high humidity. Generally, air masses moving northward from the Gulf of Mexico bring warm, moist air, while colder, drier air masses typically approach from the north. Invasion of the region by these air masses, along with local weather phenomena, produce a variety of weather conditions. Winters are brisk but seldom severe. Minimum temperatures remain as cold as 32°F or lower for fewer than 20 to 25 days in most years. Summers are warm with a maximum temperature of 90°F or higher for an average of 35 to 40 days per year (Ref. 13).

The prevailing wind is from the south. Average wind speed is highest, 11 miles per hour, from January to April (Ref. 13).

3.6.2 Air Quality

The Clean Air Act was established to protect the public safety, health, and welfare from the effects of a variety of air pollutants. National Ambient Air Quality Standards (NAAQS) were established for sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen dioxide and lead. Missouri has adopted the federal NAAQS and added hydrogen sulfide and sulfuric acid emission standards. In order to monitor the attainment of the NAAQS the United States Environmental Protection Agency has designated Air Quality Control Regions (AQCR) across the United States. The Hematite Facility is located in the Metropolitan St. Louis Interstate Air Quality Control Region as defined in section 302(f) of the Clean Air Act, 42 U.S.C. 1857h(f) (Ref. 17). This AQCR has been designated by U.S. Environmental Protection Agency (EPA) as an ozone non-attainment area and a portion of Jefferson County, particularly the city of Herculaneum, has been designated as a lead non-attainment area.

Air quality concentrations of radionuclides have been determined at Hematite based on historic sampling activities as part of licensed required monitoring. A significant amount of this environmental monitoring data has been accumulated during the history of the site license. This historical environmental monitoring data will be used as a standard for demolition activities.

Gross alpha analysis is performed on air effluent samples. The average concentration for 2003 (stack) samples was 2.27E-15 µCi/ml as compared to the limit given in 10 CFR 20 Appendix B (Ref. 18) of 6.00E-14 µCi/ml (e.g., Class Y uranium).

During plant operations, environmental air emissions were monitored from 19 stacks. The 2002 radiological results for the air emissions were loaded into COMPLY Code-V1.6 and executed at Level 1, the most conservative level. The results of the COMPLY run indicated that the Hematite Facility was in compliance with 40 CFR 61, National Emissions Standards for Hazardous Air Pollutants (Ref. 19) and 10 CFR 20.1101 (Ref. 20).

In 1992, Global Environmental, Inc. performed an asbestos survey of buildings 240, 253, 254, 255, and 256 (Ref. 21). This survey included an inspection of the buildings for suspect asbestos containing materials; bulk sampling of material, and material analyses. This survey identified the presence of asbestos pipe insulation, floor tile, pipe joints, and wall panels. To date, all asbestos within these buildings has been abated with the exception of a pipe bridge in Building [redacted] in the bulk drying room. The pipe bridge has been encapsulated with a metal liner. Demolition activities will be conducted in accordance with the NESHAP requirements.

3.7 Noise

This section describes the noise baseline at and near the site of the Proposed Action. Although no previous noise studies have been conducted, vehicular traffic on Route P and trains on the Union Pacific rail line dominate the ambient noise levels near the Hematite Facility. The noise levels associated with the decommissioning process at the facility are presently no greater than while performing normal licensed operations during fuel production. The Hematite Facility is located in a predominantly rural area and outside noise sources are only related to vehicles, trains and farm machinery that is used for agricultural purposes. At any location on or around the site, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week. These variations are caused in part by changing weather conditions, local traffic, train noise and the seasonal effects of vegetative cover.

Some residential areas border the Hematite Facility. WEC owns two single-family houses on the property, and leases them as residences. A subdivision is located south of the site across Joachim Creek.

During building demolition, standard noise abatement measures will be implemented, as necessary, based on the type of work and noise levels. These noise abatement measures could include:

- scheduling work to minimize the impacts;
- locating stationary noise sources, such as generators, as far from sensitive uses as possible;
- using of electrically or hydraulically powered impact tools when feasible; and
- using the best available noise control techniques where possible.

3.8 Historic and Cultural Resources

3.8.1 Regional History

Prior to European settlement, the area that now includes Jefferson County was inhabited by Delaware, Missouri, Osage and Shawnee tribes. The Delaware, Missouri, and Osage tribes lived along the river valleys while the Shawnee tribes were principally wanderers. The earliest European settlers to Jefferson County arrived in the mid 1770s and acquired land grants from the Spanish authorities. These early settlements rarely extended much beyond the shoreline of the Mississippi River. In 1800 the Spanish territory transferred the property of the county to the French who then transferred the property to the United States in the 1803 Louisiana Purchase. The county was established in 1818 out of portions of St. Louis and St. Genevieve counties. Early settlers in the county were attracted to the agricultural lands and mining opportunities around such towns as Herculaneum. The first railroad entered the county in 1857 and continued the development of industrial and manufacturing facilities throughout the county. The county continued to increase in population throughout the late nineteenth and early twentieth century. In the 1930's extensive improvements were made to the infrastructure of the county. After World War II the county began to receive large numbers of St. Louis residents who were relocating to suburban areas.

3.8.2 Site History

In the mid-1950's Mallinckrodt Chemical Works (MCW) purchased 150 acres of land from a dairy farmer. Of the 150 acres that was initially purchased, the facility originally occupied eight acres. "Mallinckrodt Chemical Works began in March 1956 to construct the first privately-owned and operated plant designed to produce, from government-owned uranium hexafluoride, enriched uranium compounds for nuclear reactor fuel element use." (Ref. 21) The Hematite Facility went "critical" in July 1956; "it immediately began processing uranium fuel for the United States government." The facility continued to operate under MCW until January 2, 1959 when the business and facilities of the nuclear fuels division of the company, including all of the facilities located at Hematite, Missouri were transferred to Mallinckrodt Nuclear Corporation, a wholly owned subsidiary of the company. In September 1960, Mallinckrodt Nuclear Corporation was liquidated and all assets and business were transferred back to the parent company, MCW. At that time, operations at Hematite and Weldon Springs (which was run by MCW for the Atomic Energy Commission) formed the "Nuclear Division" within MCW.

Mallinckrodt Chemical Works operated the facility until approximately May of 1961 at which time ownership was transferred to the United Nuclear Corporation (UNC), a new corporation owned, in part, by MCW. In 1970, UNC and Gulf Nuclear Corporation entered into a joint venture forming Gulf United Nuclear Fuels Corporation (Gulf) which owned and operated the facility until the spring of 1973 when UNC closed the plant and began decommissioning. General Atomic Company purchased the property in January of 1974, and then sold it to Combustion Engineering Inc. (CE) in May of 1974. In 1989, Asea Brown Boveri (ABB) acquired the stock of CE and began operating the facility as ABB Combustion Engineering. In April of 2000, Westinghouse purchased the nuclear operations of ABB which included the Hematite Facility.

Primary functions at the facility throughout its history have included the manufacture of uranium metal and uranium compounds from natural and enriched uranium for use as nuclear fuel. Specifically, operations included the conversion of uranium hexafluoride (UF_6) gas of various ^{235}U enrichments to uranium oxide, uranium carbide, uranium dioxide pellets, and uranium metal. These products were manufactured for use by the federal government and government contractors and by commercial and research reactors approved by the Atomic Energy Commission (AEC). Research and development was also conducted at the plant, as were uranium scrap recovery processes. During the period prior to CE's purchase of the facility in 1974, government projects dominated the operations on the site. Much of the work, on behalf of the government, at the site was classified, and therefore specific details regarding the exact nature of the processes are not known. Examples of known projects during this time include:

- the production of uranium fuel for nuclear submarines and a D1G destroyer reactor;
- the supply of specialized uranium oxides for the Army Package Power Reactor;
- the supply of high enriched oxides for a General Atomics gas-cooled reactor;
- the production of highly enriched fuel for materials test reactors (MTR) utilized by the Navy;
- the supply of uranium-beryllium pellets for use in the "SL-1" reactor;
- the production of high enrichment uranium zirconia pellets for a naval reactor;
- and the production of highly enriched oxides to General Atomics for use in nuclear rocket projects.

Throughout the history of the facility, various buildings were constructed and demolished or incorporated into other buildings as necessary. Table 4 provides a list of the buildings currently on the facility and a short description of the materials from which they were constructed. In addition, the narrative following the table describes each building and its former use at the facility.

Table 4 Hematite Building Description[1]

Building	Foundation	Walls	Openings	Roof
Building [redacted]	Reinforced Concrete	Tile/Wood/ Cement Block	Loft Doors, Wood Doors and Windows	Metal
Building [redacted]	Reinforced Concrete	Brick	Doors and Windows	Flat tar
Building [redacted]	Reinforced Concrete	Brick/Cement Block	1 Steel Door and 1 Vent	Flat Tar
Building [redacted]	Soil	Wood	Loft Doors, Wood Doors and Windows	Metal
Building [redacted]	Reinforced Concrete	Metal Siding	4 Steel Doors with Windows, 3 Metal Rollup Doors, 5 Steel Doors, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Metal Siding	4 Metal Rollup Doors, 1 Metal Door and 1 Metal Door with Window	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Metal Siding	1 Steel Door, 1 Steel Door with Window and 4 Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	2 Metal Rollup Doors and No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Cement Block	1 Steel Door, No Windows	Flat Metal
Building [redacted]	Reinforced Concrete	Metal Siding	1 Metal Rollup Door and No Windows	Flat Metal

[1]Sources for building description include personal observations from 06/23/04 site visit, 2003 HABS/HAER report (Ref. 21), and the RI/FS report (Ref. 22).

Building [redacted] - Tile Barn

This structure was part of the dairy farm that operated on the property prior to the purchase of the land for the construction of the Facility. The building has served as storage for both clean and contaminated equipment. During the construction of the former Emergency Operations Center residual contamination was detected at low concentrations in this building.

Building [redacted] - Pedestrian Entrance

Building [redacted] is the pedestrian entrance into the plant. The building currently has a security station at the entrance to the building and several offices, a conference room, and a kitchen. No work with radioactive or chemical compounds is known to have occurred in this building.

Building [redacted] Generator/Fire Pump

A diesel-powered emergency generator was located in this building. A diesel powered firewater pump is located in this building. There is no evidence that work with radioactive materials was performed in this building.

Building [redacted] Wood Barn

This building was also part of the dairy farm that operated on the property. The building was used to store both clean and contaminated equipment. This building contains a dirt floor, which may contain residual contamination.

Building [redacted]- Offices/Former Rod Loading Plant
Building [redacted] was built in 1992 to receive finished pellets (standard, erbium and gadolinium), which were then loaded into fuel rods and assemblies for shipment offsite. No appreciable amounts of chemicals were used in this building and contact with fuel pellets was limited to two small contact areas. The building is currently being used as office space. The building surfaces have no known levels of contamination above the level for unrestricted use.

Building [redacted] - Warehouse
Building [redacted] was used to store shipping containers. Some shipping container refurbishment was performed in this building. Recent surveys did not detect the presence of radioactive contamination in the building.

Building [redacted] - West Vault
The West Vault was most recently used to store depleted and natural uranium. It was used historically to store high-enriched uranium. The interior of the building was painted in 1994 and contamination may be present under the paint.

Building [redacted] Recycle Recovery/Maintenance Shop/Lab/[redacted] Room/[redacted] Room
This building contains laboratory and maintenance areas, a recycle recovery area, a waste incineration area and a health physics laboratory. Support operations were conducted for conversion, pelletizing and fuel assembly including material recycle, scrap recovery, cylinder heel recovery, quality control and analytical laboratory, maintenance, waste consolidation and disposal preparation. This building was integral to the historic operations of the facility. Past operations included the conversion of HEU using a wet conversion process and wet recovery of scrap. The effluent streams were piped to the retention ponds for settling and evaporation. The pipe system is likely to contain HEU and will be addressed during a later phase of the project. Numerous spills and leaks have occurred in these areas and parts of the slab have been re-poured over the existing contaminated flooring. Additionally sub slab contamination was found during the 1989 construction of Building [redacted]

Building [redacted] was initially divided into three sections and was thus numbered sequentially. These rooms were also given a color designation in order to prevent cross mixing of various enrichments. Low-enrichment material was worked in the "[redacted] room," intermediates in the [redacted] room," and high enrichments were processed in the [redacted] room."

Building [redacted] formerly housed the health physics and production laboratories, lunchroom and laundry for radioactively contaminated personal protective equipment. It historically housed the lunchroom, offices, locker rooms and laundry. The only current use for this section of the building is personal protective equipment and material storage.

Building [redacted] Room) was used for recycle and recovery operations. It historically included high-enriched material operations, including recycle and recovery.

Building [redacted] ([redacted] Room) was formerly used for the incinerator and associated support operations. The room historically housed low-enriched powder operations, including ammonium diurinate and oxidation/reduction furnaces. The room is currently used for storage and waste staging.

Building [redacted] Room) formerly housed the maintenance shop. It also housed the low-enriched powder operations and the production laboratory until 1993 when the laboratory was moved to Building 240-1.

Building [redacted] Well House
The Well House is a block building attached to the potable water tank by the double doors into the laundry room. Currently, chlorinating of potable water occurs in the building using sodium hypochlotite (bleach), and the tank marked "potable water" is used to ensure appropriate contact time. This building and the attached tank are connected to the 200,000-gallon gravity tank on the hill across State Road P.

Formerly, the existing chlorine contact tank was used as a pressure tank to create the static head by adding nitrogen as necessary. That operation ended when the gravity tank was built in 1991. The Well House formerly contained a mop water boil-down tank immediately east of the chlorinating tank with a storm drain under the tank for overflow. The boil-down tank was eliminated around 1993 and the storm drain was capped with concrete.

Building [redacted] South Vault
The South Vault is a reinforced concrete structure with six bays. The South Vault was used for the storage of low- and high-enriched nuclear material. Because of the traffic in and out of the building it is likely that the floor is contaminated. The building's most recent use has been for the storage of chemicals and low-level radioactive waste.

Building [redacted] Offices, Low Level Storage, Boiler Room Cooling Water, Pump Room
This building contains offices, various site utilities, a uranium storage facility, processing areas and decontamination facilities. Within Building [redacted] is Building [redacted] which was formerly a stand-alone structure. In 1958 rooms [redacted] and [redacted] were added to Building [redacted] Building [redacted] became room [redacted] and continued to be used for the storage of uranium hexafluoride cylinders and mechanical operations such as boilers, cooling tower pumps, and recycle hopper make-up. Building [redacted] was used as a general storage area and Building [redacted] became the blending room for low-enriched oxide. The building and equipment surfaces are contaminated.

Building [redacted] Pellet Plant
In this building, granules of uranium dioxide (UO_2) or uranium oxide (U_3O_8) were fed into a mill (micronizer) that produced a fine powder for pressing. A starch and die lubricant was added and blended into a batch and subsequently pressed into pellets. The [redacted]' fuel pellets were processed through a dewaxing furnace to remove the additives and then passed through a sintering furnace where they were made into a ceramic. The

furnaces were electrically heated and used disassociated ammonia to provide a reducing atmosphere. The building surfaces are contaminated.

Building [redacted] Erbia Plant
The most recent use of this building was for the special product line making erbium pellets. It was the main pellet area from 1974 through the opening of Building [redacted] in 1989. The process area included agglomeration, which used Cranko and Freon instead of the slugging presses, to increase particle size between the micronization/blending and pellet pressing. Building [redacted] was historically called the [redacted] Plant because the work that was carried out in this room was classified. Products fabricated in this room were only referred to as "[redacted]"

Building [redacted] Pellet Drying [redacted] Workhouse
Building [redacted] was originally used as warehouse space and was later used for pellet drying. Pellet trays were loaded into pans, dried in an electric oven using disassociated ammonia (DA) as a cover gas and either stored or transferred to Building [redacted]

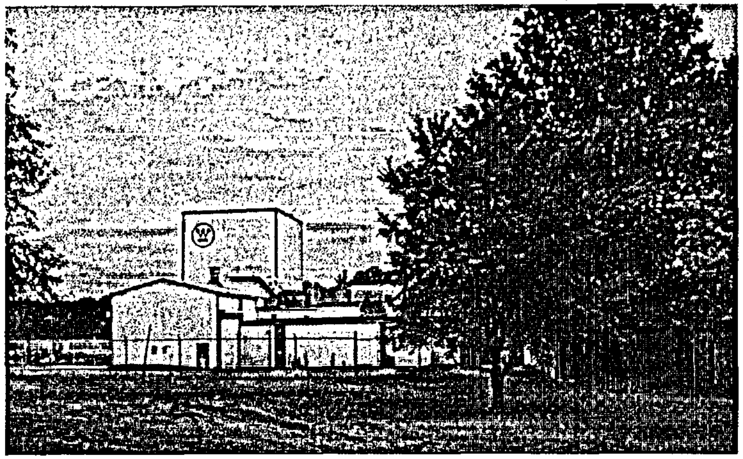
Building [redacted] was the main site warehouse for shipping pellets and powder and for receiving site supplies. The building surfaces are contaminated.

Building [redacted] Oxide and Oxide Loading Dock
The Oxide Building was built in 1968 and is a four-story, Butler-type building. This building was used for the conversion of UF_6 gas of various enrichments into uranium oxide granules. The building surfaces are contaminated.

Building [redacted] Limestone Building
Building [redacted] was used for the storage of unused limestone. Historically the building contained a limestone storage bin, conveyor system, preheat furnace and a heat trace.

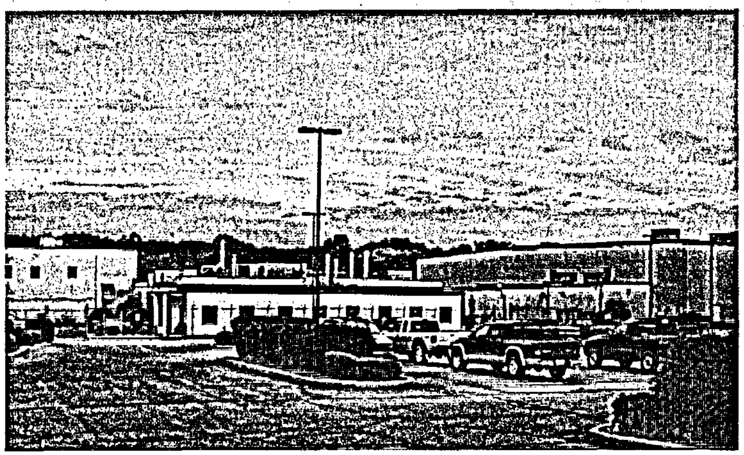
3.9 Visual/Scenic Resources

The viewshed surrounding the Hematite Facility is fairly characteristic of a mixed rural/industrial area (Figure 7). The site is located on a remnant flood terrace of the nearby Joachim Creek. Bottomland forest and Joachim Creek are located to the south of the facility. To the east of the facility is a pasture with a medium sized pond (East Lake). To the north of the facility is an upland forest located on a small bluff. The upland forest area also contains two small stream valleys and a limited amount of pasture land. The upland and bottomland portions of the site are divided by Route P. The upland areas to the north of the plant would provide the best viewshed within the property; however, access to the bluffs is limited. The majority of persons passing through the site do so on Route P. Consequently, the viewshed is limited to the portions of the property that are visible from Route P. These views consist of the bottomland forest, pasture fields, East Lake and plant facilities located south of Route P and the forested bluffs and stream valleys located north of Route P. Route P is not a major Missouri route and the average annual daily traffic count for 2002 was 2,570 vehicles per day (Ref. 7).

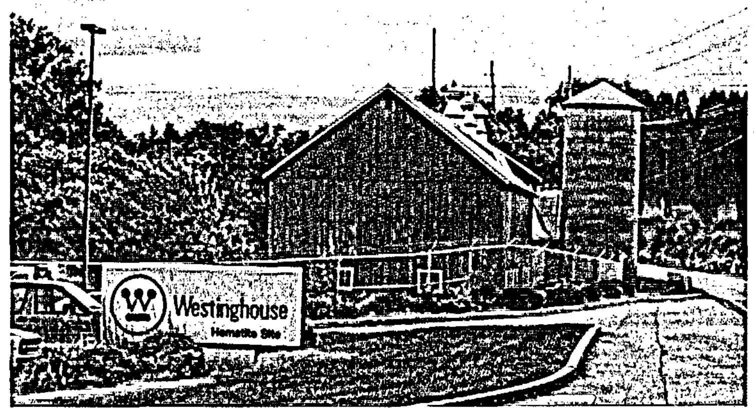


[redacted] side of Main Buildings, facing [redacted]

Building [redacted] and [redacted] side of [redacted] and [redacted] facing [redacted]



Facilities, facing [redacted]



Wood Barn and Sign in front of facilities, facing [redacted].

Westinghouse

SAIC
An Employee-Owned Company

Visual Resources
Westinghouse Facility
Hematite, MO

FIGURE
7

W:\Westinghouse\ER\Maps\Visual Resources.mxd

3.10 Socioeconomics

Jefferson County was historically a rural county but its close proximity to St. Louis has created a large influx in population in the last fifty years. Comparison of the 1990 and 2000 census indicates a 16 percent increase in population during the ten-year census period (Table 5). The 2000 U.S. Census indicated that the population is predominantly white (98%). Unemployment in the county dropped from 7.7 percent in 1990 to 3.2 percent in 2000. The majority of the work force is employed in the retail, service and government sectors. Significant employment sectors include manufacturing (16.6%), educational, health and social services (16.5%), retail trade (12.7%) and construction (10.4%) (Table 6). The median household income for the county was $46,338 in 1999 (Ref. 23 and 24).

Table 5 Population Trends, 1990-2000

Location	1990 Population	2000 Population	Percent Change
State of Missouri	5,116,901	5,595,211	9.3%
Jefferson County	171,380	198,099	15.6%
Census Tract 7009	3,848	4,501	17.0%
Census Tract 7010	6,716	7,757	15.5%

Table 6 Number of Employees by Industrial Sector, 2000

	Number of Employees			
Industry	**Missouri**	**Jefferson County**	**Census Tract 7009**	**Census Tract 7010**
Agriculture, Forestry, Fishing, Hunting and Mining	58,415 (2.2%)	556 (0.6%)	5 (0.2%)	27 (0.7%)
Construction	182,858 (6.9%)	10,414 (10.4%)	184 (9.1%)	405 (10.8%)
Manufacturing	393,440 (14.8%)	16,563 (16.6%)	285 (14.1%)	652 (17.5%)
Wholesale Trade	97,021 (3.7%)	4,045 (4.1%)	56 (2.8%)	153 (4.1%)
Retail Trade	315,872 (11.9%)	12,680 (12.7%)	306 (15.1%)	426 (11.4%)
Transportation, Warehousing and Utilities	150,641 (5.7%)	5,921 (5.9%)	108 (5.3%)	274 (7.3%)
Information	80,623 (3.0%)	2,711 (2.7%)	61 (3.0%)	93 (2.5%)
Finance, Insurance, Real Estate and Rental and Leasing	177,651 (6.7%)	6,701 (6.7%)	133 (6.6%)	210 (5.6%)
Professional, Scientific, Mgmt., Admin. and Waste Mgmt. Services	198,547 (7.5%)	7,979 (8.0%)	106 (5.2%)	188 (5.0%)
Educational, Health and Social Services	541,715 (20.4%)	16,459 (16.5%)	376 (18.6%)	722 (19.3%)
Arts, Entertainment, Recreation, Accommodation and Food Services	206,295 (7.8%)	7,206 (7.2%)	166 (8.2%)	251 (6.7%)
Other Services	132,940 (5.0%)	5,843 (5.9%)	113 (5.6%)	186 (5.0%)
Public Administration	121,906 (4.6%)	2,763 (2.8%)	122 (6.0%)	146 (3.9%)
Total	**2,657,924**	**99,837**	**2,021**	**3,733**

Source: U.S. Bureau of the Census 2000

The nearest populated settlement to the Hematite Facility is the community of Hematite, Missouri. During the 1990 census, Hematite had a population of 125 people. The closest community of significant size, located 3.5 miles northeast of the Hematite Facility, is the combined cities of Festus and Crystal City. The 2000 combined population of the two communities is 13,900 people. The Hematite Facility is within the boundaries of two census tracts (Tract 7009 and Tract 7010). Census data from these two tracts was used to compare localized socioeconomic data with data at state and county levels and is summarized in the tables below.

Employment trends for the two census tracts surrounding the Hematite Facility are more closely related to the state of Missouri than to Jefferson County. Jefferson County experienced a 4.5 percent decline in unemployment during the last census period while the two census tracts, 7009 and 7010 experienced a 0.6 percent and a 1.0 percent increase, respectively (Table 7).

Table 7 Employment Trends, 1990-2000

Location	1990 Unemployment Rate	2000 Unemployment Rate	Percent Change
State of Missouri	6.2	5.3	-0.9%
Jefferson County	7.7	3.2	-4.5%
Census Tract 7009	5.8	6.4	0.6%
Census Tract 7010	5.0	4.0	-1.0%

3.11 Public and Occupational Health

Numerous radiological and chemical constituents have been used in the activities of the Hematite Facility. The presence of these constituents present potential occupational and public health risks during the demolition of the buildings at the Hematite Facility. The primary radionuclides at the Hematite Facility include uranium-234 (^{234}U), uranium-235 (^{235}U), uranium-238 (^{238}U), and technetium-99 (^{99}Tc). Additional potential contaminants of concern include, thorium-232 (^{232}Th) (and progeny), americium-241 (^{241}Am), neptunium-237 (^{237}Np), and plutonium-239 (^{239}Pu) due to the historical use of reprocessed uranium at the site. Production and support activities involving Radiological Constituents of Potential Concern (RCOPCs) occurred within most of the current buildings on site. A summary of the type of activity in each building can be found in Section 3.8. Historical chemical usage and storage at the Hematite Facility is summarized in Section 3.12 Waste Management.

Available accident reports for the Hematite Facility are limited to 2000 through 2004 during Westinghouse's ownership. The facility ceased manufacturing operations in June of 2001. There has been a significant decrease in the number of workers present and man-hours worked since the completion of manufacturing operations. In fiscal year (FY) 2001 the Hematite Facility had a total of 438,404 work hours with 67 non-OSHA injury or illness, 50 OSHA cases and no fatalities. In FY 2002, there were 115,832 work hours with 11 non-OSHA injury or illness, five OSHA cases and no fatalities. In FY 2003 there were 86,736 work hours with one non-OSHA injury or illness and no OSHA cases or fatalities. In FY 2004 there were 52,208 work hours with no non-OSHA injury or illness, OSHA cases or fatalities. In April and May of 2004 there were 8,888 work hours with no non-OSHA injury or illness, one OSHA case and no fatalities.

3.12 Waste Management

In 2001, Westinghouse ceased fuel production operations of the Hematite Facility and has no future plans of operating the site as a nuclear fuel processing facility. Therefore the only potential waste streams from the facility will result from the demolition process and are described in Section 4.12.

Section 3.11 describes the radionuclides that were used during operation of the facility. In addition, numerous chemicals were used. These chemicals included anhydrous ammonia, liquid nitrogen, potassium hydroxide, hydrochloric acid, nitric acid, hydrogen peroxide, isopropyl alcohol, hydrogen fluoride (HF), trichloroethane (TCA), trichloroethylene (TCE) and perchloroethylene (PCE). A summary of the type of activity in each building can be found in Section 3.8.

Historically, prior to 1974, wastes were disposed of in the on-site burial pits outside of the ten-acre central site tract. The burial pits are being addressed under separate characterization activities and decommissioning plan. The following provides a summary of the wastes generated within the process buildings other than that associated with the burial pits:

3.12.1 Liquid Waste

The only production process that routinely generated liquid waste with measurable radioactivity was the wet recovery process. The wastewater filtrate from this process was collected in tanks and sampled to assure that the average concentration was less than the effluent release limits prior to transfer for off-site for disposal. Radioactive liquid wastes such as mop water, cleanup water and other liquids from the wet recovery process, were separated, evaporated and analyzed for uranium content and then either recovered or disposed at a licensed low level radioactive waste burial facility offsite. Liquid wastes were analyzed for uranium and shipped for deep well injection or disposal with sanitary sewage at a Publicly Owned Treatment Works (POTW) when the concentration was less than the 10 CFR 20 Appendix B release limits of 3E-7 μCi/ml for uranium (Ref. 18).

Trace amounts of radioactivity have been found in laundry, sink, shower water, and liquids from cleaning glassware in the laboratory. Laundry water was filtered and sampled prior to discharge to the sanitary waste system. Water from change room sinks and showers was also routed to the sanitary waste system. The sanitary waste effluent enters the Site Creek immediately below the Site Pond.

3.12.2 Solid Waste

Potentially contaminated solid wastes were generated throughout the restricted area of the facility. These wastes consisted primarily of rags, papers, packaging materials, worn-out shop clothing, equipment parts, and other miscellaneous materials that resulted from plant operations. Non-combustible radioactive wastes were shipped to a licensed low-level radioactive waste burial site or decontamination facility. Combustible solid wastes were fed to a gas-fired incinerator to reduce volume. The ash was either processed to recover uranium or disposed of at a licensed low-level radioactive waste burial facility offsite. The incinerator was equipped with a wet scrubber system to clean off gases prior to discharge. Certain areas of the Hematite Facility are known to contain residual contamination. These areas are described below.

[redacted] Room, [redacted] Plant and Related Areas

Because these areas were used for high enrichment fuel production processes from at least the 1950s to the early 1970s, they are highly likely to contain radioactive contamination above currently applicable release limits. In fact, these areas were identified as contaminated or "hot" areas during the transition of ownership of the Plant from Gulf to CE in 1974. At that time, partial decontamination was undertaken. Specifically, equipment was removed, duct work and exhaust fans were removed, the floors were scarified and both rooms were vacuumed, steam cleaned and painted. In the [redacted] Room, three inches of concrete was added to the floor and the roof was removed and supposedly buried on the WEC property outside of the ten-acre central site tract. However, these decontamination efforts do not meet current free release requirements. Moreover, additional contamination has been identified in the areas under the [redacted] Room floor and immediately outside the [redacted] Room.

High Enrichment Storage Areas

Three buildings, as well as an outside area at the Plant, have been identified as potentially contaminated storage areas. Specifically, Building [redacted] housing up to 600 storage units) in the [redacted] of the Plant, was used for high enriched filter storage and high enriched UF_6 cylinder storage. Building [redacted] was also used to store high enriched product and waste in a similar fashion. The [redacted] was used as a high enriched scrap holding area.

4.0 ENVIRONMENTAL IMPACTS

This section of the Environmental Report provides a description and analysis of the potential environmental consequences associated with the implementation of the Proposed Action as described in Section 2. The basis for the evaluation of the potential social, economic and environmental impacts was established and defined as the baseline condition in Section 3 – Description of the Affected Environment.

4.1 Land Use Impacts

Demolition of the buildings at the Hematite Facility could directly or indirectly impact local land uses and land use trends. Direct, indirect or secondary impacts resulting from implementation of the Proposed Action could be beneficial or adverse. Building demolition would not represent a significant land use change, and could potentially lead to alternative beneficial long-term uses of the site. Since demolition activities are limited to the central portion of the site, no impacts to land uses in surrounding areas are anticipated to result from implementation of the Proposed Action.

Although WEC would continue to hold a license for the ten-acre site tract, secondary development along Route P, outside of the WEC property, could occur independently in the future and future land use changes would follow. However, because no formal land use plans have been established, secondary development is not likely to occur in the near term.

4.2 Transportation Impacts

Implementation of the Proposed Action would require the use of local, regional and national transportation facilities, not only for the transfer of workers and equipment to the site for demolition but also for the transport of demolition debris from the site to approved disposal facilities. Although implementation of the Proposed Action would require the use of transportation facilities such as roads, bridges and highways, only minimal impacts to them would be anticipated. The transportation facilities in and around the Hematite Facility have served well for previous similar transportation activities and have sufficient capacity to serve future traffic related to the demolition and the transport of materials from the Hematite Facility to the selected disposal facilities.

Traffic increases from the staffing required to conduct the Proposed Action would have minimal impact on the local and regional traffic conditions. The staffing levels for the Proposed Action would likely be less than staffing levels during historical full operation of the facility.

Potential routes for transporting contaminated building demolition debris from the Hematite Facility are discussed in Section 3.2.2. The likely routes include roads and highways with sufficient capacity to handle the transportation of materials from the Hematite Facility to the selected disposal or handling facility. The routes have been previously used for radioactive waste shipments. The designated shippers will be required to have the appropriate state permits and licenses for the transportation of radioactive/hazardous materials and will be required to comply will applicable Department of Transportation (DOT) regulations and directives.

4.3 Geology and Soils Impacts

The overall impacts of demolition to site geology and soils would be temporary in nature and minor in scope. Because concrete slab removal is not part of the Proposed Action, no subsurface excavation would occur as part of this project. Prior to demolition, measures would be implemented to minimize soil disturbance and erosion, and include specifications for erosion control measures and devices and best management practices. Among other things, the following will be considered:

- Recommendations surrounding each work zone with straw bales and/or silt fencing to minimize migration of disturbed soil and sediment;

- Making reasonable attempts to minimize the amount of soil disturbance during demolition activities;
- Making reasonable attempts to divert stormwater run-on from entering areas of significant soil disturbance.

The demolition contractor will be required to submit a work plan that describes the building demolition processes and activities. The work plan will present the specific methods planned for minimization of soil disturbance and erosion. In general, standard erosion and sediment controls will be established at each work zone prior to, and during, building demolition activities.

4.4 Water Resources Impacts

Potential minor impacts to water resources at the Hematite Facility would occur from surface water runoff that occurs during the demolition process. This surface water runoff may be a result of natural precipitation or from water used to control fugitive dust emissions. Applicable erosion and sedimentation controls will be evaluated to mitigate the potential entry of any pollutants into the storm drain system. The existing stormwater drains would be utilized and monitored per the existing NPDES permit during the demolition of any buildings. Best management practices will be utilized such as placing hay bales at the perimeter of construction activities, covering stormwater inlets, and monitoring outfalls.

Buildings will be demolished down to the concrete slabs and any contamination on the slabs will be cleaned or fixed in place to prevent additional migration of contamination prior to demolition. Erosion and sedimentation would not be a significant source of contamination because the building slabs will be left intact during this phase of the project, and major soil excavation is not anticipated. Where no concrete slabs are present (Bldgs. [redacted] and [redacted] additional mitigative measures would be used to stabilize potentially contaminated soils.

A review of Federal Emergency Management Agency (FEMA) flood maps and an on-site wetland survey indicated that no floodplains or wetlands were present within the ten-acre central site tract. Consequently, the implementation of the Proposed Action would have no impacts on these resources.

Due to the impermeable nature of the central site tract and the best management practices that will be implemented during demolition, no significant impacts are anticipated to either surface water or groundwater resources.

4.5 Ecological Resources Impacts

Because no unique, rare, threatened or endangered species are known to occur in the area where the buildings are located and because no ecological resources or other potential habitat for these species exists, adverse impacts to ecological resources are not anticipated to result from implementation of the Proposed Action. Although consultation with state or federal natural resource agencies has not occurred for the building demolition activities, observations made during pedestrian surveys of this portion of the site indicate that it contains neither sensitive nor unique ecological resources or the types of habitat to support these resources.

4.6 Air Quality Impacts

Emissions associated with building demolition and resulting from construction vehicles and equipment will have an insignificant impact on the air quality of the region. Emissions resulting from implementation of the Proposed Action are not anticipated to approach the emission levels observed during operation of the facility. Under certain meteorological conditions, there could be slightly higher concentrations of pollutants such as SO_2 and NO_2 and fugitive dust in the vicinity of the demolition, but those emissions will be addressed as described below.

4.6.1 Mitigation Measures

To ensure that construction equipment emissions are controlled, demolition equipment will be required to contain the manufacturers' recommended emission control systems. To prevent the airborne spread of residual particulate matter and contamination and to facilitate further characterization efforts, process equipment located inside of buildings will be removed prior to commencement of building demolition activities. Contamination remaining within the buildings will be sealed, removed or fixed with a lock down agent on surfaces of steel, concrete, and siding, if necessary.

Demolition of the site buildings will be conducted in a manner that will minimize and control fugitive dust emissions. During demolition activities water will be applied as necessary to the building structure in general, and the area being actively demolished to minimize such emissions. The area around the building being dismantled may also be wetted prior to and during demolition activities.

4.6.2 Monitoring

The current program for monitoring facility air quality will be utilized, and increased, during the time of demolition activities. This monitoring program will be in accordance with the site license and the Hematite Radiation Protection Plan. The additional monitoring will be described, as necessary, in amendments to the existing environmental monitoring and control program and applicable scopes of work. In general, perimeter air monitoring will be used around the central site portion of the site, supplemented by additional temporary monitoring stations upwind and downwind of demolition activities.

4.7 Noise Impacts

Implementation of the Proposed Action is not anticipated to adversely impact existing ambient noise levels. Although operation of demolition equipment will cause minor temporary noise increases, noise levels during demolition are not anticipated to be louder than the noise levels experienced when the plant was operating routinely. In addition, noise levels will be mitigated by the use of proper noise attenuation controls on the demolition equipment. The demolition contractor will be required to only operate during normal working hours, which would cause no increases to evening and nighttime noise levels. Upon completion of demolition of the buildings, it is anticipated that ambient noise levels would return to pre-demolition levels.

4.8 Historic and Cultural Resources Impacts

Historic and cultural resources (including prehistoric or historic sites, buildings, districts, structures, and objects) are protected under the *National Historic Preservation Act* (16 USC 470a-470w), Executive Order 11593, *Protection and Enhancement of the Cultural Environment* and the *Archaeological and Historic Preservation Act* (16 USC 469-469c), and the *Historic Sites Act* (16 USC 461-467) (Ref. 25, 26 & 27). These regulations require that federal agencies take into account the effects of their actions (including permitting and licensing activities) on potential historic or cultural resources and if necessary, resolve potential impact issues with appropriate state and federal agencies.

The historical significance of the Hematite Facility relates to the role that the facility filled during the "Cold War" era. From 1956 to 1974 the Hematite Facility supplied highly-enriched nuclear fuel for the Navy Nuclear Submarine program and other reactor programs. The Hematite Facility was also the first commercial nuclear fuel processing plant in the United States.

Implementation of the Proposed Action would directly impact the potentially historical resources at the Hematite Facility. The plan to remove these buildings would result in the permanent loss of these buildings from the historical record. Due to the potential historical significance and the proposed impacts to these buildings, the National Park Service (NPS) and State Historic Preservation Officer (SHPO) required that a Historic American Engineering Record (HAER) be compiled for each of the buildings at this facility. The HAER (HAER file No. MO-311) (Ref. 21) process has been completed for the site including photographic documentation of both the process equipment and buildings. The National Park Services has provided their concurrence for both the equipment removal and building demolition and have no further issues concerning the historical aspects of the site. The completion of the HAER will adequately document the historical resources and will satisfy the requirements of Section 106 of the National Historic Preservation Act (Ref. 25).

No impacts to potential archeological resources are anticipated from the demolition of the buildings as the existing foundations and below ground structures will be left in place and no excavation of soils will occur.

4.9 Visual/Scenic Resources Impacts

Visual impacts are determined by the degree of visual change introduced by project components, the degree to which those changes could be visible to surrounding viewers and the general sensitivity of the viewers to landscape alterations. Visual change is determined by the amount of visual contrast that a particular project component may create (e.g., changes to form, line, color, texture and scale in the landscape); the amount of obstruction (i.e. loss of view); and degradation of specific scenic resources (e.g., construction of a facility that blocks views of a scenic landscape). In the case of this demolition project, implementation of the Proposed Action is anticipated to have beneficial long-term impacts to visual/scenic resources. Once the buildings have been demolished, motorists on Route P would be able to clearly see the bottomland floodplain portion of the site near Joachim Creek. However, during demolition, views of the facility would be temporarily degraded as the buildings are demolished and removed and debris is shipped from the site. The degradation of these views would not be considered significant and would be temporary in nature expecting to last approximately six months contingent on the demolition method selected. The long-term visual character of the Hematite Facility would be improved by implementation of the Proposed Action.

4.10 Socioeconomic Impacts

Implementation of the Proposed Action is not anticipated to adversely impact the socioeconomic environment surrounding the Hematite Facility. Although three residences are located on the eastern portion of the site, no residences or businesses would be displaced and/or adversely impacted by implementation of the Proposed Action. The demolition project would however create the opportunity for construction and equipment operator jobs, which would result in a short-term positive impact to the local socioeconomic environment. Demolition of the buildings would move the site closer to the long-term goal of reaching unrestricted use and ultimate conversion of the site into a productive use for the local economy. Future uses of the site could include agricultural or industrial and either of these uses would contribute to the local economy. Therefore, demolition of the buildings would contribute to a long-term positive impact to the local economy.

4.10.1 Environmental Justice

Implementation of the Proposed Action is not anticipated to disproportionately impact minority or low-income populations. In addition, degradation of local air quality and significant increases in local traffic and noise are not anticipated to result from implementation of the Proposed Action.

4.11 Public and Occupational Health Impacts

The Hematite Facility demolition activities have the potential to present minor safety and health hazards related to the building demolition and radiological and non-radiological waste handling, packaging and transport. Potentially impacted populations could include site workers, site visitors, local community residents and members of the public adjacent to the transportation routes. However, implementation of the required plans and controls would reduce the potential for public and occupational health impacts.

4.11.1 Radiological Impacts

Hematite buildings or rooms where radiological processing, packaging or storage occurred will most likely present higher concentrations of radiological contamination. Future building characterization activities will document the extent of radiological contamination throughout the Hematite Facility.

External radiological exposure hazards are generally not significant, because uranium is a weak gamma emitter and the gamma emitting decay products are at lesser concentrations.

Internal exposure, through inhalation, ingestion, or injection through open wounds, is the primary hazard associated with these contaminants. Inhalation of radioactive airborne particulates may present the greatest concern because radioactive material may be deposited inside the body where tissues are more sensitive to the types of radiation emitted by uranium and its decay products. In addition, internal radiation exposure continues until the material has been eliminated from the body. Chronic exposure to radiation is associated with an increased lifetime risk of cancer. Soluble uranium in high concentrations is also associated with toxic kidney effects.

Provided that effective engineering and administrative controls, dust controls, respiratory protection (as applicable), and protective clothing measures are implemented and strictly adhered to, radiation exposures due to inhalation and ingestion of airborne radioactive contamination will be maintained below the respective administrative limits.

Work involving ionizing radiation will be performed in compliance with applicable Health Physics procedures. The guiding philosophy will be to keep exposures As Low As Reasonably Achievable (ALARA).

4.11.2 Non-radiological Impacts

Asbestos within the buildings has been abated with the exception of a pipe bridge in Building [redacted] in the bulk drying room (Ref. 28). The pipe bridge has been encapsulated with a metal liner. Personnel shall wear PPE as outlined in the appropriate Health and Safety Plans (H&SP). To prevent the airborne spread of asbestos containing material (ACM) during demolition, the contractor will be required to implement specific demolition techniques. Such emissions will be controlled following the ALARA approach through the use of mitigating measures as described below. There is also lead paint throughout the site. Asbestos and lead paint handling and removal is subject to OSHA regulations 29 CFR 1910 and 1926 (Refs. 27 and 28), and EPA regulations 40 CFR 61, Subpart M (Ref. 31). The generation, storage and transportation of hazardous waste is subject to the regulations outlined 40 CFR 260 through 272 of the Resource Conservation & Recovery Act (RCRA) (Ref. 32).

4.11.3 Mitigation Measures

A Site Safety and Health Plan (SSHP) will be implemented during demolition activities. The SSHP will provide safety guidelines to protect workers during the demolition activities. A Radiation Protection Plan (RPP) will be implemented during demolition activities. The RPP will be used to establish safe radiological work practices and ensure compliance with the requirements of the NRC. The SSHP and RPP documents also establish practices to protect the public and the immediate environment from hazards caused by the demolition.

An RWP will be developed and implemented prior to the work. The RWPs will include applicable Westinghouse Electric Company (WEC) RPP safety, health, and environmental protective measures.

Hematite's radiological environmental monitoring program will be conducted in accordance with License No. SNM-33 and the Hematite Site's *Radiation Protection Plan* (Ref. 33).

The environmental monitoring and control program will be reviewed and revised as necessary during the demolition process. The license commitment for environmental monitoring and control serves as a minimum commitment. As demolition activities begin, the monitoring program will be revised as necessary to ensure adequate environmental monitoring and controls are in place. These revisions will be made to the current Environmental Monitoring Plan as needed.

Factors involving primary occupational safety and health issues are addressed in 29 CFR of the OSHA (Ref. 34). Protection standards for radiological concerns are addressed in Nuclear Regulatory Commission 10 CFR 20 (Ref. 35).

Permits necessary for the safe execution of this project will be obtained prior to performing the work requiring the permit. At a minimum, activities such as digging or drilling will be preceded by an investigation to preclude encountering sub-surface utilities.

Impacts and associated mitigation measures related to health concerns from the transportation of radiological and hazardous wastes during implementation of the Proposed Action are covered in Transportation Sections 3.2 and 4.2. Impacts and associated mitigation measures related to health concerns from air quality during demolition are covered in the Meteorology, Climatology, and Air Quality Section 3.6 and 4.6.

4.11.4 Summary of Proposed Action Impacts

- Positive long-term improvement to human health and the environment by minimizing the release or threat of release of radioactive contaminants from buildings and equipment.

- Positive long-term impact by allowing for characterization and remediation, if necessary, of soil and/or groundwater beneath the buildings.

- Potential negative short-term impact due to the potential increased radiation exposure and increased inhalation risk of workers during the demolition and transportation.

- Potential short-term negative impact to the public due to transportation of the radiological waste to the proper disposal facility.

- Potential negative short-term impact to the public due to the potential for radiological release through fugitive dust during demolition.

4.12 Waste Management Impacts

Implementation of the Proposed Action will result in a short-term negative impact through the creation of large quantities of wastes and debris produced during building demolition. However the Proposed Action would result in a long-term benefit by removing potentially contaminated buildings.

The waste streams anticipated to be generated during the demolition of the buildings may include, but would no be limited to RCRA or Toxic Substances Control Act (TSCA) (Ref. 36) wastes, low-level radioactive waste (LLW), mixed waste, sanitary waste, and demolition and construction debris. Waste treatment activities are not anticipated.

Metal items removed during demolition including beams, doors, framing, etc., will be radiologically surveyed and disposed of accordingly. Plans for radiological/chemical decontamination will be developed if anticipated for use. Concrete will be broken to manageable size chunks and appropriately disposed. Demolition debris will be sized as necessary, containerized, characterized, and disposed.

The waste streams generated as a result of the demolition effort will be characterized by sampling and analysis to establish profile, packaging and disposal criteria. Characterization may encompass a combination of process knowledge, radiological survey, volumetric sampling and direct sampling. Direct sampling may be performed utilizing direct radiological and hazardous constituent reading instruments to survey the material before and after removal. Characterization data will provide information to support health and safety operations, as well as waste packaging and transportation requirements. The sampling protocol will be adequate to meet the Waste Acceptance Criteria (WAC) of the approved disposal facility.

The waste streams that are expected to be generated as a result of the demolition efforts are listed below. Each waste stream is unique and will require specific handling, containerization, labeling, transportation and disposal requirements.

Based on characterization data, the waste will be segregated and analyzed as required by the disposal facility site's WAC. If the analytical results determine an out of compliance result, an alternate disposal facility will be used.

4.12.1 Sanitary Waste

Sanitary waste (office trash) will be containerized in roll-off or sanitary dumpsters and transported to the sanitary landfill for disposal. This waste stream will be disposed of in accordance with the facility requirements and will not contain hazardous constituents that cannot be accepted at a sanitary landfill.

4.12.2 Clean Debris

Demolition debris that is released and free of hazardous contamination is defined as clean debris. Clean debris may include brick, concrete, masonry, paper, wood, glass, metal, plastics, sheetrock, mineral material, soil, equipment, tables, chairs, desks, wire, pipe, ductwork, roofing, filing cabinets, and any other items or materials normally found in the facilities being demolished. Clean debris will be characterized, meet radiological free-release criteria for radiological and hazardous contamination, containerized, transported and disposed at a permitted facility.

4.12.3 Low Level Radioactive Waste ACM

ACM found to be contaminated with radiological constituents would be handled as radioactive waste. The ACM will be double wrapped, labeled with both ASBESTOS and RADIOLOGICAL warnings in accordance with regulatory guidance, containerized, transported and disposed at a permitted facility. ACM that is bagged will be stored/staged in the appropriate container depending on the volume of waste. Metal boxes and drums may be utilized for small volumes while roll-offs or intermodal containers may be utilized for large volumes. ACM such as transite should be double wrapped, placed on pallets or packaged and staged for transport.

4.12.4 Low Level Radioactive Waste Solids

Demolition debris that is radiologically contaminated above the WAC for volumetric release as construction debris will be disposed of as low-level radioactive waste (LLRW). LLRW may include soil, brick, concrete, masonry, paper, wood, glass, metal, plastics, sheetrock, mineral material, equipment, tables, wire, pipe, ductwork, chairs, desks, roofing, filing cabinets, laboratory fume hoods, and any other item or material normally found in the facilities being demolished. LLRW will be sized, characterized, containerized, transported and disposed at a permitted disposal facility as described in the waste profile. LLRW will be stored/staged in the appropriate container.

4.12.5 LLRW Liquids

LLRW liquids, if any, such as sludge, oil, and wastewater will be sampled, characterized, containerized, labeled, transported, and disposed at a permitted disposal or process facility. LLRW liquids will be stored/staged in the appropriate container depending on the volume and type of waste. The containers will be filled so that the weight does not exceed the maximum weight specified by the manufacturer.

4.12.6 Polychlorinated Biphenyl Waste

Polychlorinated biphenyl (PCB) waste, if any, will be containerized, labeled, transported and disposed at a permitted disposal facility. PCB waste will be stored/staged in the appropriate container depending on the volume and type of waste. One-gallon containers may be utilized for small volumes while 55-gallon drums may be utilized for large volumes. The containers will be filled so that the weight does not exceed the maximum weight specified by the manufacturer.

4.12.7 Hazardous Waste

Demolition waste that meets the Environmental Protection Agency (EPA) definition of a hazardous waste will be disposed of at a permitted Treatment Storage and Disposal Facility (TSDF). Hazardous waste may include any of the material listed under demolition debris. Hazardous waste will be identified via process knowledge as well as characterization and volumetric sampling. Analytical data may delineate the specific hazardous material and the levels of contamination. In the event the material exceeds the

Land Disposal Restrictions (LDRs) set forth by the EPA or the MDNR, the material will be treated at a permitted TSDF prior to disposal at a permitted TSDF. Hazardous waste will be stored/staged in the appropriate container depending on the volume and type of waste. One-gallon containers, 55-gallon drums or B-12 boxes may be utilized for small volumes of hazardous waste while rolloff boxes or intermodal containers may be utilized for larger volumes.

4.12.8 Mixed Waste

Demolition debris that meets the EPA definition of a hazardous waste and is also radiologically contaminated (mixed waste) will be disposed of at a permitted TSDF. Mixed waste will be identified via characterization and volumetric sampling. Analytical data will delineate the specific hazardous material, the levels of contamination and the radioactive isotopes. In the event the material exceeds the Land Disposal Restrictions (LDRs) set forth by the EPA, the material will be treated at a permitted TSDF prior to compliant disposal at a permitted TSDF. Mixed waste will be stored/staged in the appropriate container depending on the volume and type of waste. One-gallon containers, 55-gallon drums or metal boxes may be utilized for smaller volumes of hazardous waste while intermodal containers may be utilized for larger volumes.

4.12.9 Investigative Derived Waste (IDW)

IDW will be handled, containerized, labeled and dispositioned in accordance with the Hematite Site IDW Management Plan.

4.12.10 Management of Hazardous Waste Containers

A hazardous waste label should be applied to each container as the waste is accumulated in the container that identifies the contents by the applicable proper shipping name as outlined in the Hazardous Materials Data Table located in 49 CFR 173.101 (Ref. 37). Each label should show the date that the accumulation began and, if applicable, the date the container was placed into storage. Storage areas for hazardous and mixed waste containers shall be designated, as necessary. Liquid storage areas should be equipped with secondary containment having a capacity of 110% of the volume of the containers, or the volume of the largest container which ever is greater. Prevention of precipitation run-off or infiltration should be incorporated into the design of the containment.

Satellite accumulation areas for containers being filled with hazardous waste should be designated. Liquid accumulation areas should be equipped with secondary containment. Accumulation containers should be moved to a storage area not more than three days after being filled, or after not more than one year of accumulation time, which ever comes first. Hazardous waste containers should remain closed unless waste is being added to or removed. Hazardous waste container storage area should be identified by "Danger, Unauthorized Personnel Keep Out", signs which are visible from each direction of approach. Additional signs that communicate the appropriate hazard information may also be posted. Each hazardous waste container area should be inspected weekly to check for container or containment deterioration, operator errors, or discharges which may lead to a release of hazardous waste or a threat to human health.

4.12.11 Management of Tanks

If tanks are used for hazardous waste storage they should be sound and compatible with the waste. Each hazardous waste tank should be provided with secondary containment designed to prevent infiltration or migration of the waste, and having a capacity at least equivalent to that of the tank. Each hazardous waste tank should be equipped with an automatic volume-sensing device, which activates a transfer cutoff to prevent overfilling.

Hazardous tank storage areas should be identified by "Danger, Unauthorized Personnel Keep Out" signs which are visible from each direction of approach. Additional signs that communicate appropriate hazard information may also be posted. Each hazardous waste tank, its ancillary equipment, and its secondary containment should be inspected daily for tank and containment deterioration, operator errors, or conditions which may lead to a discharge of hazardous waste or a threat to human health.

4.12.12 Waste Minimization

An active commitment will be made to minimize the amount of radioactive and hazardous waste generated during the demolition activities. Materials that have not been exposed to hazardous constituents will be removed or protected to avoid cross contamination or co-mingling. Waste minimization techniques may include taking only tools needed into a contaminated area, re-using tools, decontaminating and free releasing, and providing a containment toolbox that can be moved to different radiological areas as needed.

Recycle materials and equipment will be salvaged to the extent possible, prior to demolition, to minimize clean debris waste volumes. Upon removal of the salvageable material and equipment, pre-demolition segregation activities such as removing mercury switches, self-contained refrigeration units, oil filled pumps, oil filled transformers, mercury bulbs and thermometers, capacitors, asbestos, fluorescent lights and ballasts will be conducted to prevent contamination of clean materials.

Selective demolition techniques will be used to minimize the volume of clean materials that are mixed with contaminated materials. Whenever feasible walls, floors, ceilings or structural members or sections thereof, identified with elevated levels of activity, will be removed and segregated from the clean non-contaminated materials. Upon removal and segregation of the contaminated sections the clean materials will be demolished and the materials segregated.

4.12.13 Waste Segregation

Demolition debris and the various waste streams will be segregated, size reduced if necessary, packaged in accordance with the appropriate WAC.

Demolition, radiological, and hazardous materials may not be containerized immediately but may be staged for sampling and characterization prior to being placed in the appropriate shipping container. Radiological wastes will be containerized in intermodal containers, B-12 boxes, or rolloff boxes. Staged material that is stored outside will be staged in such a way as to minimize run-off. Erosion controls will be established, as required, around the staged waste materials.

Co-mingling will be strictly prohibited and controlled through containerization and segregation. Co-mingling will be prevented to the extent possible through the use of tarps, discrete barriers, and containerization. Staging areas will be established to control waste packages that are ready for transportation and disposal. Staging areas will be identified and posted in accordance with approved procedures.

4.12.14 Requirements for Hazardous/Radioactive Waste Storage

Prior to the commencement of demolition of a building, hazardous materials will be collected and segregated according to waste type. Known hazardous materials such as PCB ballasts, lead, mercury switches and light bulbs will be segregated and containerized. Suspect hazardous wastes such as liquids from sink traps, tank sediment and unmarked containerized solids or liquids will be segregated according to similar type. The suspect/unknown material will be sampled and sent to a laboratory for analysis for hazardous materials outlined in Table 1 of 40 CFR 261.24 (Ref. 38). Upon receipt of the analytical data and in the event the suspect/unknown material meets the definition of a hazardous waste or a mixed waste, the material will be managed in a Site Accumulation Area (SAA) near the point of generation until a quantity of 55 gallons is generated. While being stored in the SAA, the container will be labeled and the label will consist of the containers contents, the start date, contaminants, and the contaminant waste code(s). Within three days of generating 55 gallons of waste, the waste should be moved to a "less than 90-day storage area" or transported for treatment and/or compliant disposal.

Mixed wastes (LLRW/RCRA or LLRW/TSCA), will be managed in an area that meets the requirements of a LLRW Staging Area and SAA as stated in this plan or LLRW Staging Area/PCB Storage Area according to waste characterization. PCB waste will be treated within one year of generation unless covered by a regulatory agreement allowing longer storage.

LLRW liquid and hazardous liquid wastes will be stored in an area that provides secondary containment or drums of such size so as to contain at least 110 percent of the volume of the largest container (whichever is greater). LLRW liquid and hazardous liquid wastes will be segregated from uncontaminated wastes to minimize the amount of contaminated liquid generated.

Hazardous wastes should not accumulate for longer than one year following the first time an item is placed into storage or a quantity greater than 5,000 kilograms is generated. Hazardous waste storage areas will have boundary markings, be identified with appropriate posting, and have a log to record when wastes are added or removed.

5.0 MITIGATION MEASURES

This section provides a summary of mitigation measures that have been mentioned throughout this Environmental Report. Demolition activities will be conducted in a manner that protects the environment and the health and safety of the public and employees. Mitigation measures would be implemented to offset any potential adverse impacts associated with the Proposed Action. Mitigation measures can be separated into three main categories: 1) decontamination and contamination control, 2) erosion control and surface water runoff and 3) air and noise. These mitigation measures are discussed by category.

Decontamination and Contamination Control

Prior to implementation of the Proposed Action, the equipment will be removed from each of the buildings and size reduced as described in Section 1.2. Once the equipment has been removed, remaining contamination inside the buildings would be removed and/or fixed on the surfaces of steel, concrete and metal siding. The interior of each building would be sealed as necessary with a lock down agent to fix the contamination to the steel, wood or concrete.

Contaminated and non-contaminated debris, wastes, liquids and solids will be properly characterized and stored/staged in approved containers. Radioactive waste management will be performed in accordance with *Hematite's Waste Management and Transportation Plan*. Radioactive waste shipments will be made in accordance with procedural controls and Department of Transportation and Nuclear Regulatory Commission regulations. To the extent practical, the number of waste packages and waste shipments will be minimized.

Erosion Control and Surface Water Runoff

Prior to implementation of the Proposed Action, an engineering evaluation will be performed to evaluate the stormwater impact of operataions. The evaluation will include both procedural and engineering controls to reduce impacts associated with erosion control and surface water runoff. In addition, Best Management Practices will be utilized to prevent erosion and sedimentation into adjacent creeks and tributaries. Effluent will be monitored through the normal outfalls per the existing facility NPDES permit. Structural features such as use of barriers, dams, erosion control blankets, sediment barriers, silt fence, or straw bales will be evaluated for use to minimize sediment migration. Storm sewers and grates will be covered during demolition, as necessary, to prevent the migration of waterborne contamination.

Air and Noise

Potential impacts to air and noise will be mitigated with both procedural and engineering controls. Procedural controls, such as the use of less aggressive decontamination or demolition techniques, where effective, will be used to minimize the generation of fugitive emissions. When necessary, engineering controls such as use of a water spray or filtration will be used to minimize dust and airborne activity generation.

Perimeter air monitoring will be used to document levels of airborne radioactive materials during demolition. Workplace air will also be sampled with low and high volume samplers to provide reliable information on airborne radioactivity levels during demolition activities in close proximity to work that could potentially release airborne radioactivity. During demolition activities, air emissions are not anticipated to approach the emission levels observed during normal plant operations. Execution of the radiological air model COMPLY may be implemented if deemed appropriate.

Activities that generate excessive noise will be identified and monitored. The contractor will ensure that demolition equipment retains the original manufacturer's noise attenuation controls. Workers will be protected through work planning and scheduling and the use of personal protective equipment.

6.0 ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAMS

Westinghouse has committed to conduct the demolition activities in a manner that protects the health and safety of the public, site workers, and the environment. This commitment includes the development of programs and procedures that provide for monitoring and detection, and control of potential releases of radioactive material to the environment.

The Site radiological environmental monitoring program will be conducted in accordance with License No. SNM-33 and Hematite's *Radiation Protection* Plan (Ref. 33). The environmental monitoring and control program will be reviewed and revised as necessary during the demolition process. The license commitment for environmental monitoring and control serves as a minimum commitment. As demolition activities begin, the monitoring program will be revised as necessary to ensure adequate environmental monitoring and controls are in place.

Supplemental information relevant to environmental monitoring and control is provided as follows:

<u>ALARA Goals for Effluent Control</u>
In accordance with Hematite policy, every effort will be made to ensure that operations are conducted in accordance with ALARA principles. Effluent radiological constituent levels are historically extremely low. Even so, effluent sampling events occur according to approved procedures and with the use of proper PPE and/or engineering controls to minimize exposure to contaminants by workers.

<u>Background and Baseline Concentrations of Radionuclides in Environmental Media</u>
Background and baseline concentrations will be determined during planned site characterization. A significant amount of environmental monitoring data has been accumulated during the history of the site license. The environmental monitoring data was prepared and generally reported without subtracting natural background. Subsequently, the historical environmental monitoring data may be used to supplement the results obtained during the planned characterization efforts.

<u>Known or Expected Concentrations of Radionuclides in Effluents</u>
Gross alpha and gross beta analyses are performed on liquid effluent samples. Gross alpha analysis is performed on air effluent (stack) samples. The average concentrations for 2003 are as provided in Table 8.

Table 8: Average 2003 Effluents

Effluent	Gross Alpha	Gross Beta	10 CFR 20 App. B Limit
Liquid	1.52E-8 μCi/ml	2.07E-8 μCi/ml	3.00E-7 μCi/ml
Air (stacks)	2.27E-15 μCi/ml	N/A	6.00E-14 μCi/ml

Analyses of Physical and Chemical Characteristics of Radionuclides in Effluents
Air samples are analyzed for particulates. Water samples will be analyzed for filtered and unfiltered fractions.

Effluent Sample Collection and Analysis
Effluent samples are collected in accordance with site procedures.

Doses to the Public
Environmental air emissions were monitored for 19 stacks during operations of the facility. The 2002 radiological results for the air emissions were loaded into COMPLY Code–V1.6 and executed at Level 1, the most conservative level. The results of the COMPLY run indicated that the Hematite Facility was in compliance with 40 CFR 61, National Emissions Standards for Hazardous Air Pollutants (Ref. 31) and 10 CFR 20.1101 (Ref. 18). During demolition activities, air emissions will not approach the release levels observed during plant operations. Execution of the COMPLY Code may be implemented if deemed appropriate.

7.0 COST BENEFIT ANALYSIS

In the EE/CA (Ref. 1), Westinghouse evaluated several removal alternatives for the ultimate disposition of the buildings at the Hematite Facility. As a result, Westinghouse has concluded that demolition of the buildings at this phase of the project is the best option. Although there will be certain costs associated with this alternative, as discussed in greater detail in the EE/CA (Ref. 1), the benefits achieved through implementation of this alternative outweigh the identified costs.

8.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Based on a review of the issues discussed in this document, implementation of the Proposed Action is not anticipated to cause significant environmental or socioeconomic impacts to either the environment or the communities surrounding the Hematite Facility. As discussed in Section 4.0 of this document, implementation of the Proposed Action is anticipated to cause more beneficial impacts than adverse impacts.

8.1 Land Use Impacts

No adverse impacts to land use are anticipated from implementation of the Proposed Action. Upon full demolition of the buildings and upon unrestricted release, the site could be converted to a beneficial use such as an industrial park. Although secondary development would benefit the local economy, it would have the potential to impact environmental resources otherwise not impacted.

8.2 Transportation Impacts

Impacts to transportation resources from implementation of the Proposed Action are not anticipated. Sufficient transportation resources to support such a project surround the site and the number of vehicles entering and leaving the facility on a daily basis would not be likely to impact traffic on local regional transportation facilities.

8.3 Geology and Soils Impacts

Overall impacts to geology and soils associated with implementation of the Proposed Action would be temporary in nature and minor in scope. Potential impacts would be mitigated by implementation of the proper erosion control measures, devices and best management practices.

8.4 Water Resources Impacts

Surface water runoff from the building demolition site would be monitored in accordance with the existing NPDES permit for the site. Impacts to water resources are not anticipated.

8.5 Ecological Resources Impacts

Because no habitat for ecological resources exists in the area of the building demolition, impacts to ecological resources are not anticipated.

8.6 Air Quality Impacts

Impacts to air quality are not anticipated from implementation of the Proposed Action. Engineering and procedural controls will be implemented during demolition to avoid impacts to air quality. These could include the use of a water mist to prevent the spread of fugitive dust.

8.7 Noise Impacts

Because noise levels associated with the demolition are not anticipated to be louder than normal plant operations, impacts to local ambient noise levels are not anticipated to occur. In addition, procedural controls will be implemented to avoid impacts to ambient noise levels during non-working hours.

8.8 Historic and Cultural Resources Impacts

Although the buildings at the site would be demolished, Westinghouse has conducted the appropriate mitigation (Ref. 18) for these structures. Impacts to other historic or cultural resources not evaluated during the HAER analysis, are not anticipated.

8.9 Visual/Scenic Resources Impacts

Although the demolition of the buildings would create a change in the viewshed from Route P, the viewshed would be enhanced without the buildings and a clear view of the

Joachim Creek floodplain. Therefore adverse impacts to visual/scenic resources are not anticipated to occur with implementation of the Proposed Action.

8.10 Socioeconomic Impacts

Adverse impacts to socioeconomic resources are not anticipated to result from implementation of the Proposed Action. Beneficial impacts in the form of job creation and economic stimulus resulting from the project are anticipated.

8.11 Public and Occupational Health Impacts

No impacts to public and occupational health are anticipated to occur from implementation of the Proposed Action.

8.12 Waste Management Impacts

Although implementation of the Proposed Action would result in short-term negative impacts through the creation of various wastes and debris, long-term benefits would result from the removal of the buildings. In addition, the proper implementation of waste management plans, policies and procedures will prevent additional adverse impacts.

9.0 LIST OF REFERENCES

1. Westinghouse Electric Co. (WEC), Engineering Evaluation and Cost Analysis for Removal Action on Buildings and Equipment at the Westinghouse Former Fuel Cycle Facility Site Festus, Missouri. DO-04-007. Rev. 0.

2. United States Nuclear Regulatory Commission, August 2003, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs,* NUREG-1748.

3. National Environmental Policy Act (NEPA), 42 U.S.C. 4321-4347.

4. United States Nuclear Regulatory Commission, Environmental report, 10 CFR 51.45.

5. United States Nuclear Regulatory Commission, Radiological criteria for unrestricted use, 10 CFR 20.1402.

6. United State Department of Labor, Occupational Safety and Health Administration, Safety and Health Regulations for Construction: Removal of steel construction, 29 CFR 1926.858.

7. Missouri Department of Transportation, 2002, District 6 Traffic Volume Map.

8. Wagner, Judy, MoDOT Area Engineer for South Jefferson County, Missouri, June 4, 2004. Personal Communication.

9. "Missouri Geologic Map," 1979.

10. Missouri Department of Natural Resources, Division of Geology and Land Survey, 1979. *Bedrock Geologic Map of the Festus 7.5 Minute Quadrangle*, Jefferson County, Missouri.

11. Martin, J.A. et al, *The Stratigraphic Succession of Missouri*, Missouri Geological Survey and Water Resources, Second Series, V. 40, p. 20-32.

12. Leggette, Brashears & Graham, Inc., April 28, 1998. Hydrogeologic Investigation and Ground-Water/Surface Water Monitoring Work Plan for the Combustion Engineering, Hematite , Missouri Site.

13. Westinghouse Electric Co. (WEC), Hematite Former Fuel Cycle Facility Decommissioning Plan. DO-04-004. Rev. 0.

14. Leggette, Brashears & Graham, Inc., March 8, 1999. Combustion Engineering Hydrogeologic Investigation and Ground-Water, Soil and Stream Characterization.

15. United States Geological Survey, 1974. Water Resources Report No. 30.

16. *Missouri Water Atlas*, 1986.

17. Clean Air Act, 42, U.S.C. 1857h(f).

18. United States Nuclear Regulatory Commission, Standards for Protection Against Radiation, Subpart B, Radiation Protection Programs, 10 CFR 20 Appendix B.

19. National Emissions Standards for Hazardous Air Pollutants, 40 CFR 61.

20. Global Environmental, Inc., December 1992, Building Inspection Summary.

21. Westinghouse Electric Co. (WEC), 2003. Historic American Engineering Record Hematite Facility Hematite Facility, HAER No. MO-113.

22. Leggette, Brashears & Graham, Inc., May 9, 2003. Remedial Investigation/Feasibility Study Work Plan, Rev. 0.

23. United States Census Bureau, United States Census 1990.

24. United States Census Bureau, United States Census 2000.

25. National Historic Preservation Act, 16 USC 470a-470w.

26. Protection and Enhancement of the Cultural Environment and Archeological and Historic Preservation Act, 16 USC 469-469c.

27. Historic Sites Act, 16 USC 461-467.

28. Leggette, Brashears & Graham, Inc., May 9, 2003. Community Relations Plan.

29. United State Department of Labor, Occupational Safety and Health Administration, Occupational Safety and Health Standards, 29 CFR 1910.

30. United State Department of Labor, Occupational Safety and Health Administration, Occupational Safety and Health Standards, 29 CFR 1926.

31. National Emissions Standards for Asbestos, 40 CFR 61 - Subpart M.

32. Resource Conservation and Recovery Act (RCRA), 40 CFR 260-272.

33. Westinghouse Electric Co. (WEC), Hematite Site's *Radiation Protection Plan*.

34. United State Department of Labor, Occupational Safety and Health Administration, 29 CFR.

35. United States Nuclear Regulatory Commission, 10 CFR 20.

36. Toxic Substance Control Act, 15 U.S.C. s/s 2601 et seq. (1976).

37. Hazardous Materials Data Table, 49 CFR 173.101.

38. Identification and Listing of Hazardous Wastes, 40 CFR 261.24.

10.0 LIST OF PREPARERS

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St. Louis, MO 63114

APPENDIX A
SITE PHOTOGRAPHS

Westinghouse Facility Exterior Building [redacted]

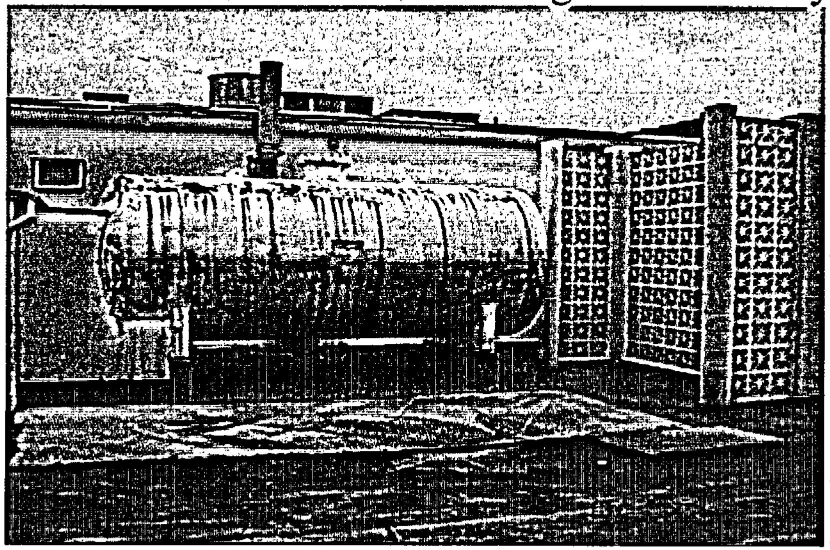


Photo 1. North half of east wall, facing west.

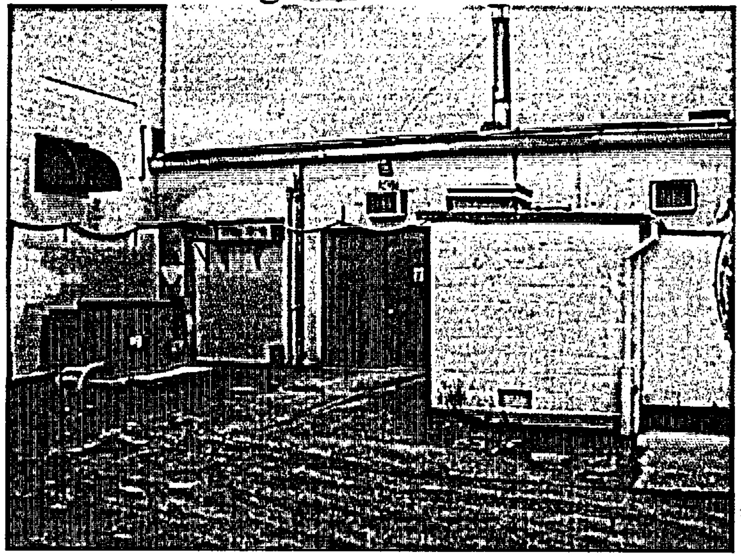


Photo 2. South half of east wall, facing west.

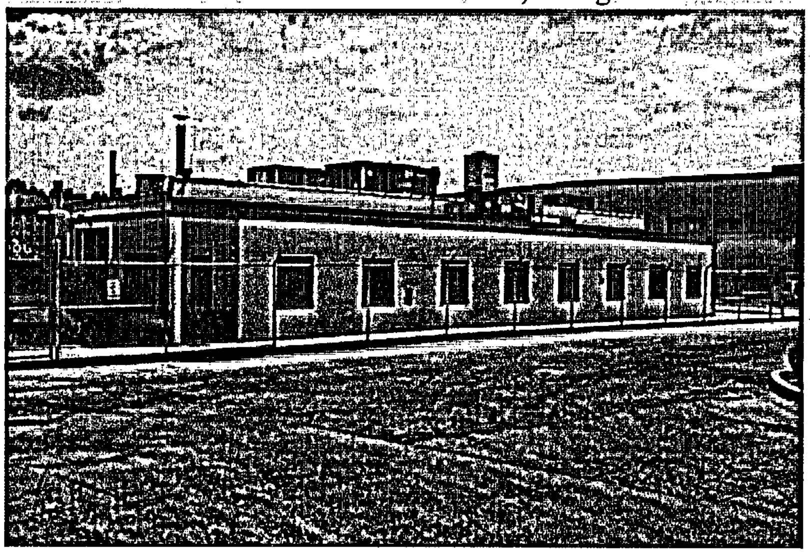


Photo 3. Entire north wall, facing southwest.

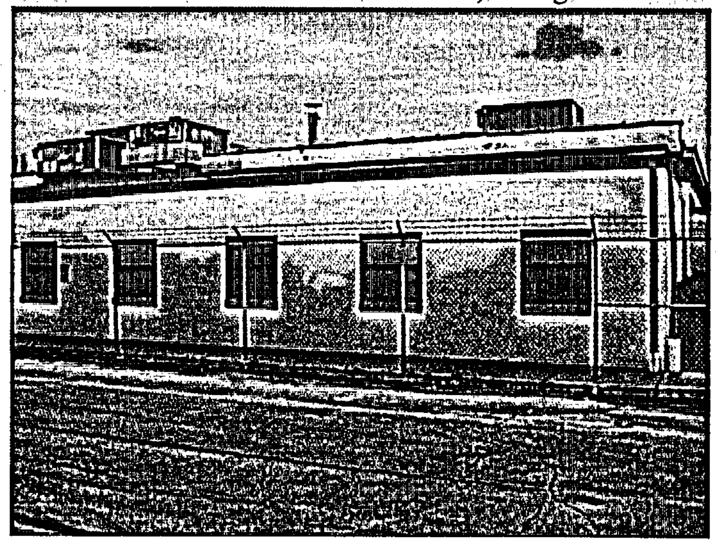


Photo 4. West half of north wall, facing south.

Westinghouse Facility Exterior Building [redacted] continued

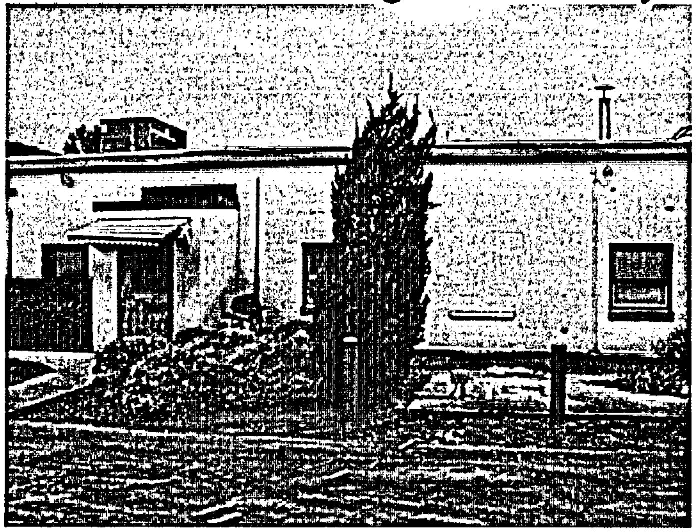


Photo 5. Northern half of west wall, facing east.

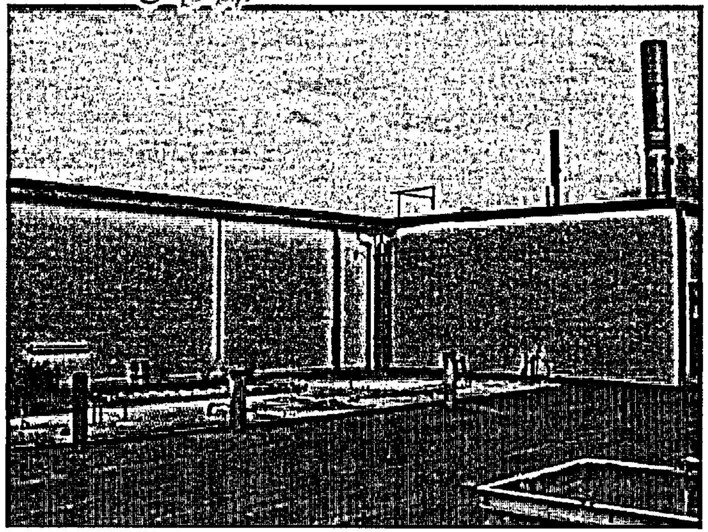


Photo 6. Southern half of west wall, facing east.

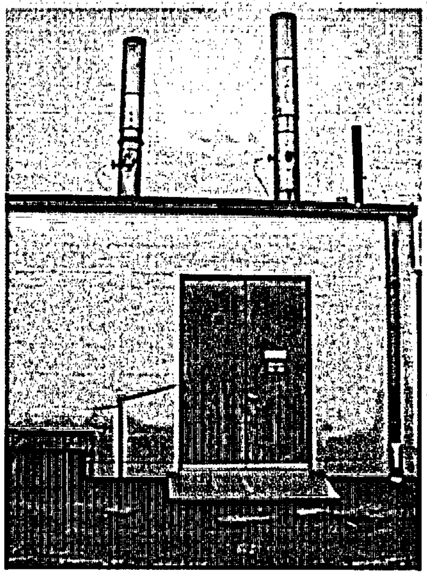


Photo 7. Outside of Hepa Room on west wall, facing east.

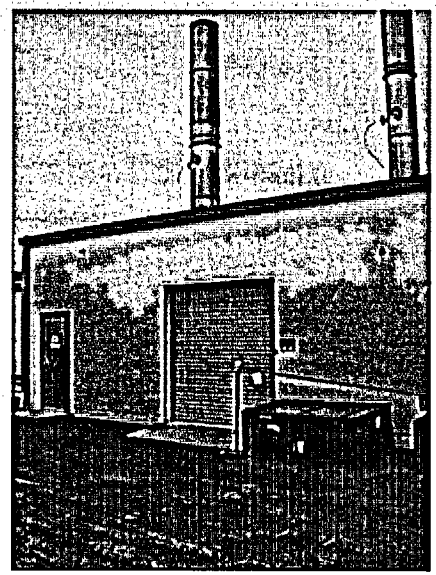


Photo 8. Outside of Hepa Room on west wall, facing northeast.

Westinghouse Facility Exterior Building [redacted] continued

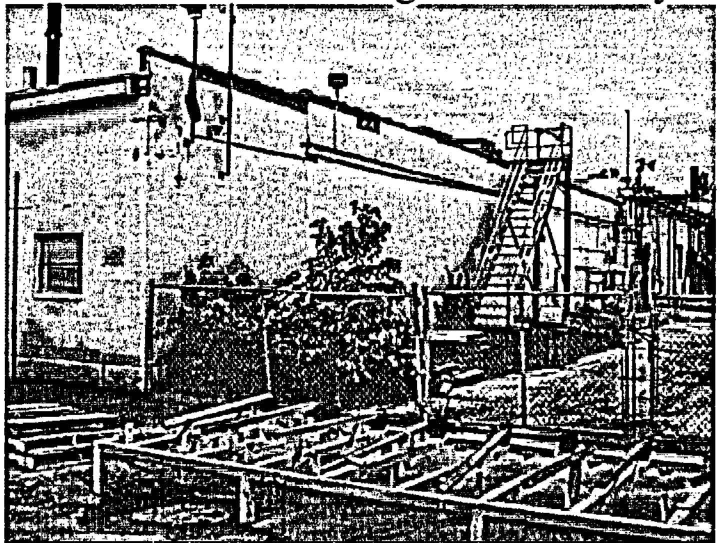


Photo 9: Southwest corner of [redacted] facing northeast.

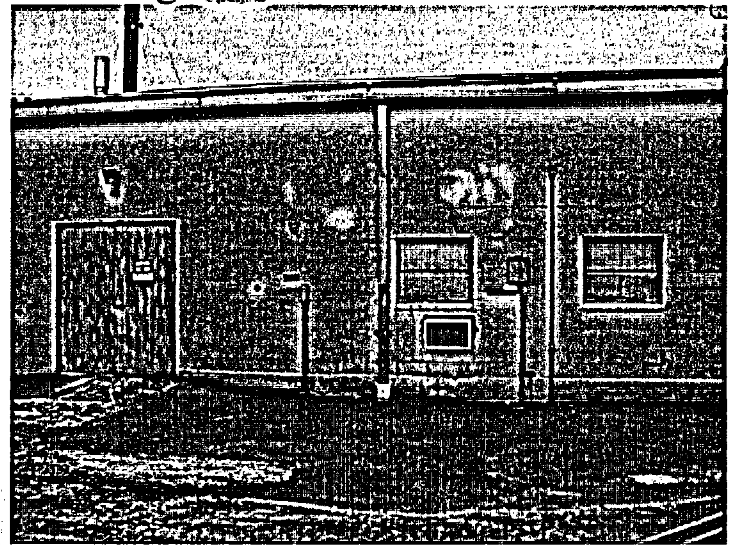


Photo 10: South portion of west wall, facing east.

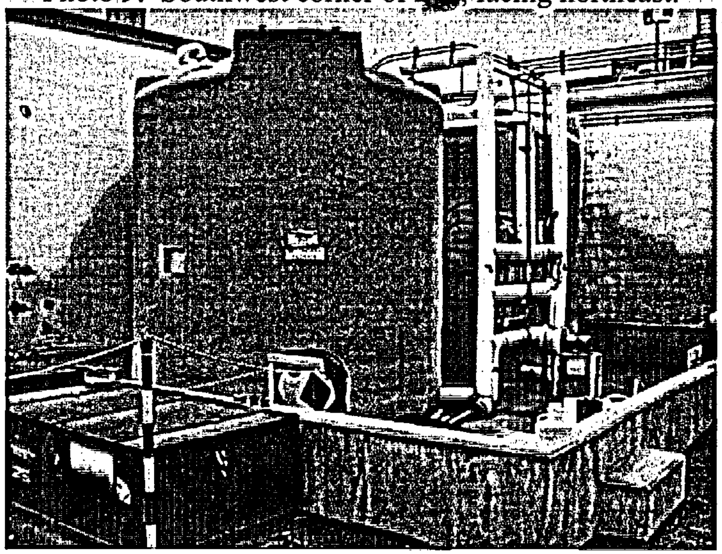


Photo 11: Tank on west wall, facing northeast.

Photo 12: West wall, facing west.

Westinghouse Facility Exterior Building [redacted]

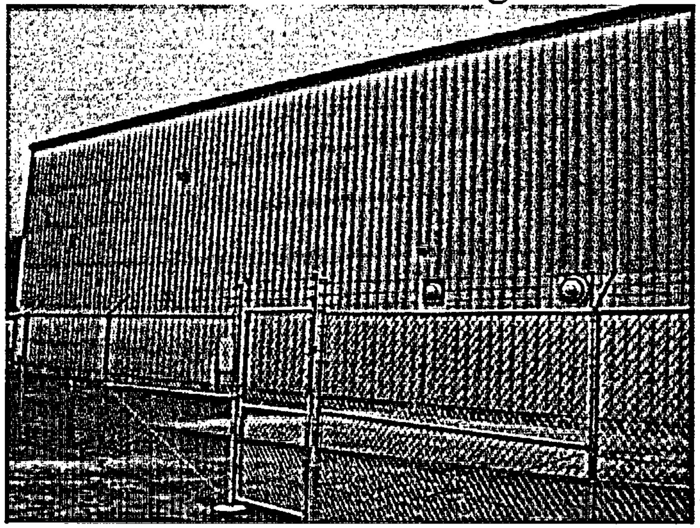


Photo 13: South portion of east wall, facing southwest.

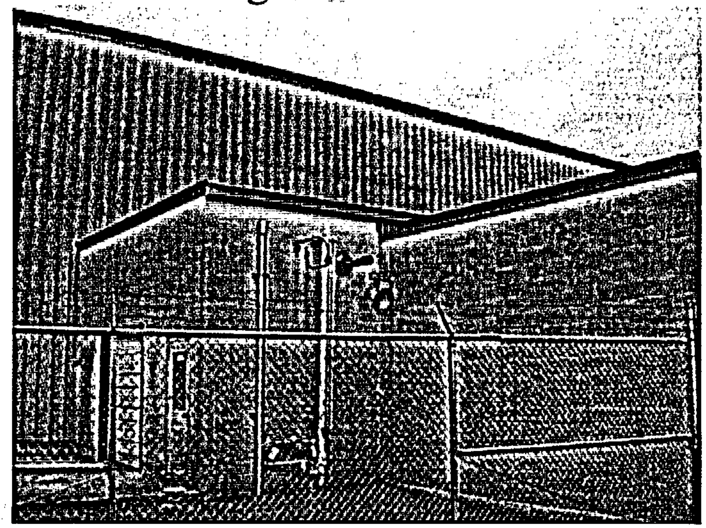


Photo 14: East wall and HEPA room, facing west.

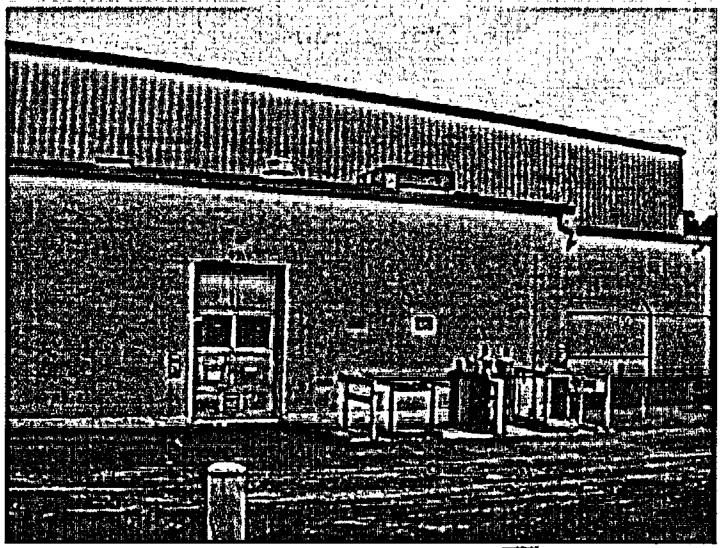


Photo 15: HEPA room on east wall of [redacted], facing west.

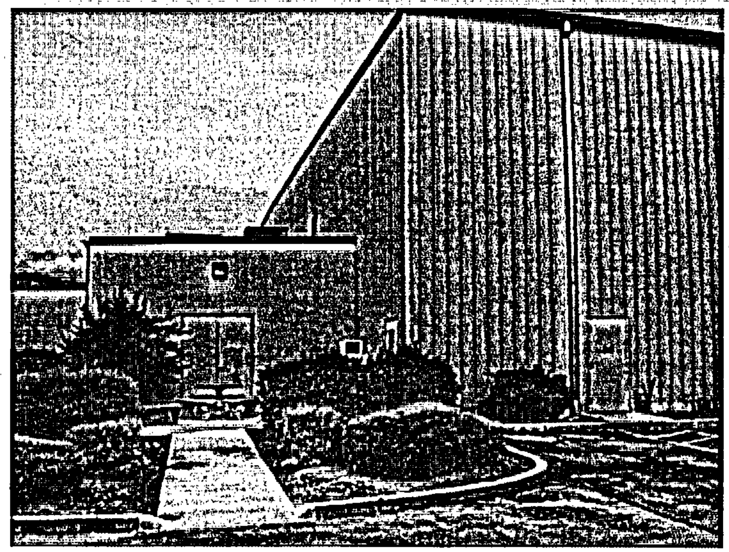


Photo 16: Northeast corner, facing south.

Westinghouse Facility Exterior Building [redacted] continued

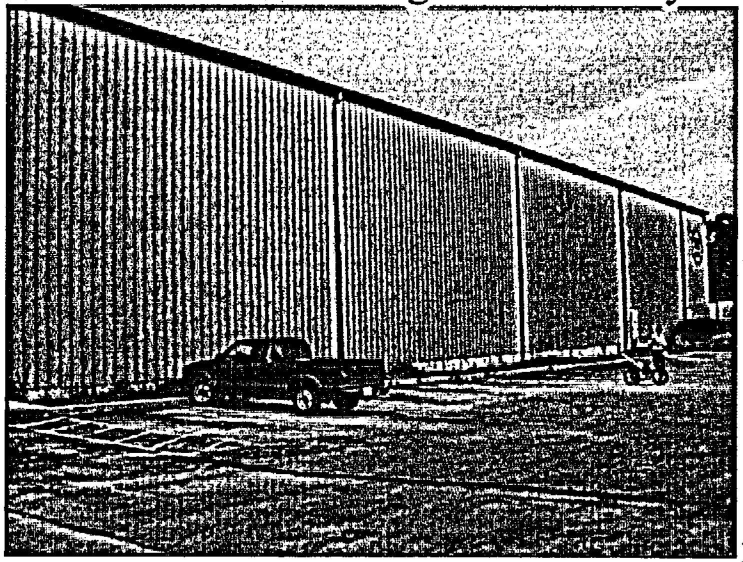


Photo 17: Entire north wall, facing southwest.

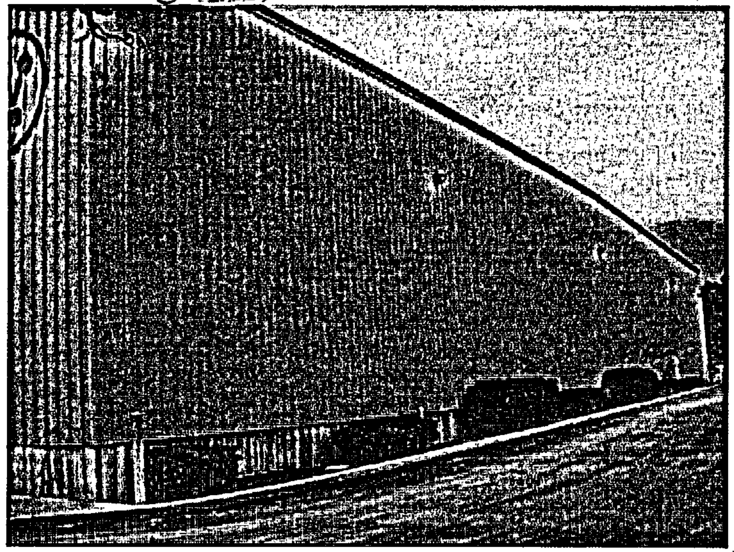


Photo 18: Entire west wall, facing southeast.

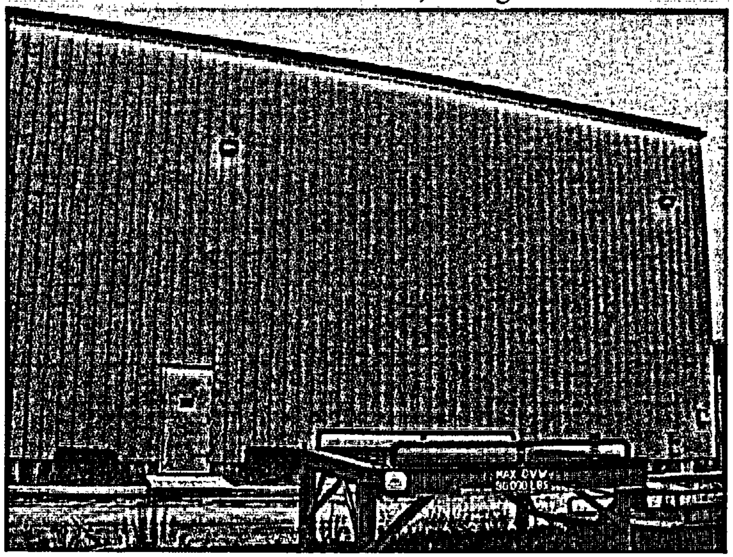


Photo 19: South portion of west wall, facing east.

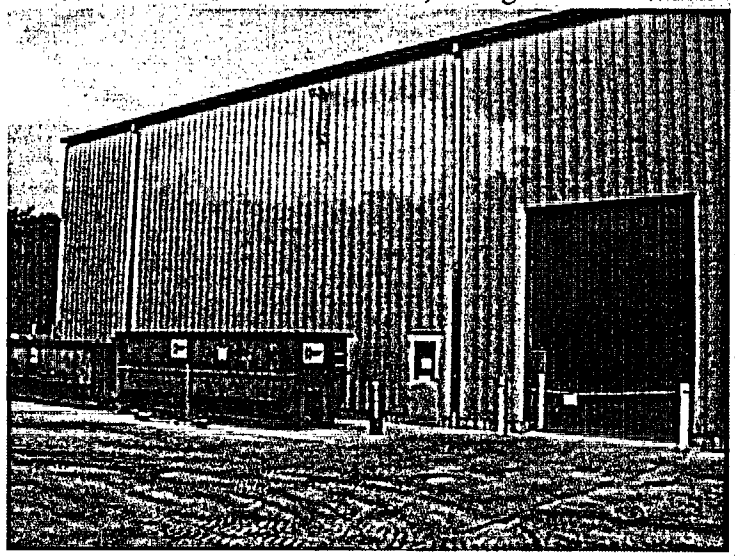


Photo 20: West half of south wall, facing northwest.

Westinghouse Facility Exterior Building [redacted], continued

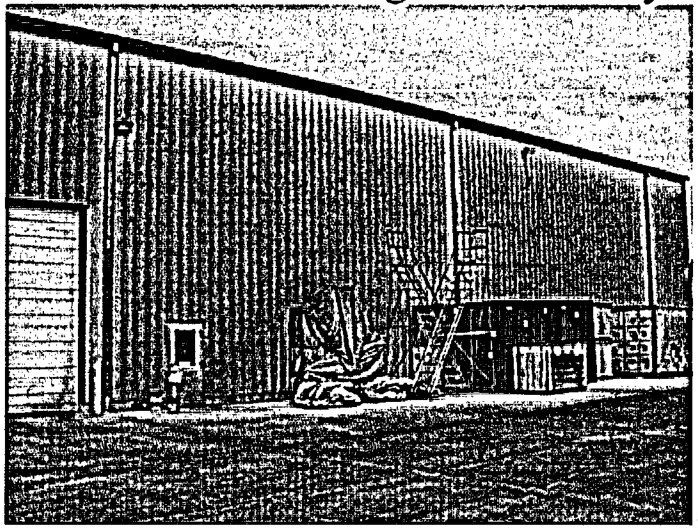


Photo 21: Eastern half of south wall, facing northeast.

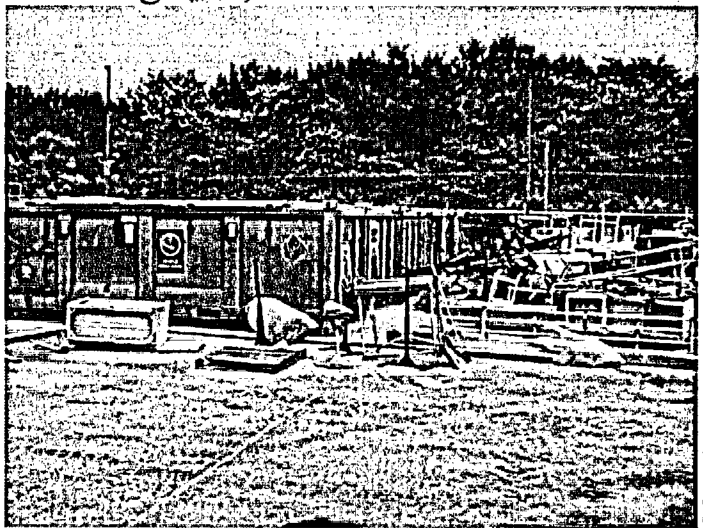


Photo 22: Intermodals behind BLD [redacted], facing south.

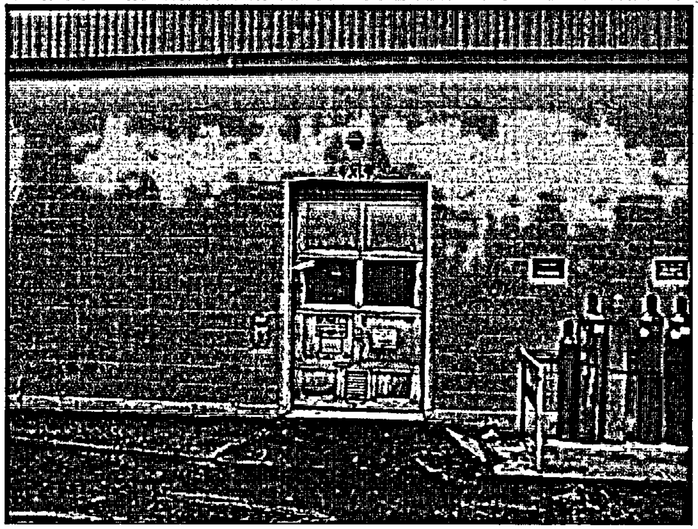


Photo 23: Door to [redacted] which connects to HEPA room on east wall, facing west

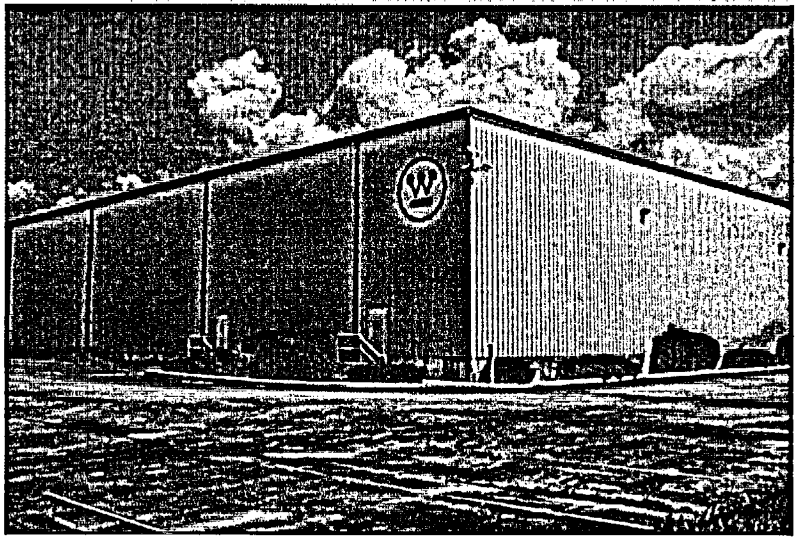


Photo 24: Northwest corner, facing southwest.

Westinghouse Facility Exterior Building [redacted]

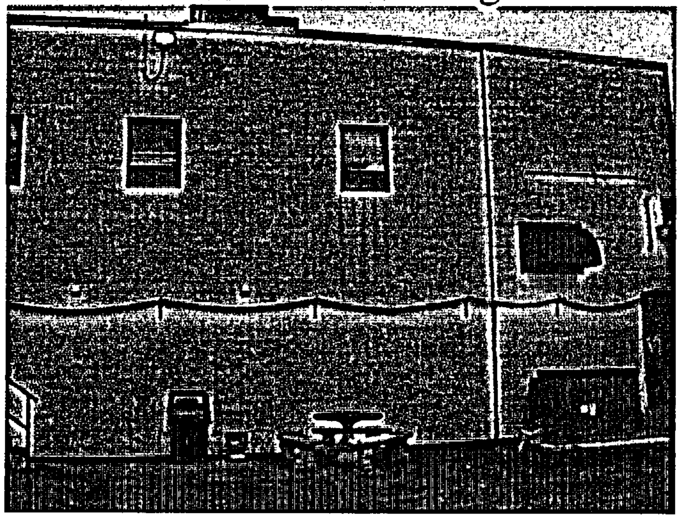


Photo 25: Western half of north wall, facing south.

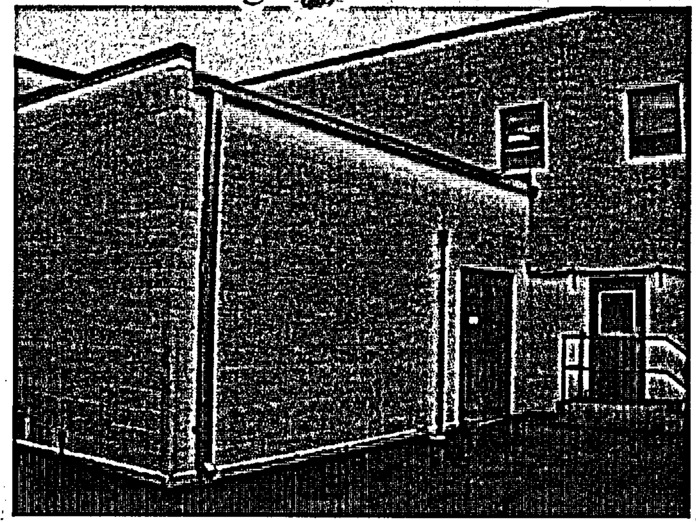


Photo 26: Eastern half of north wall and pump room, facing southwest.

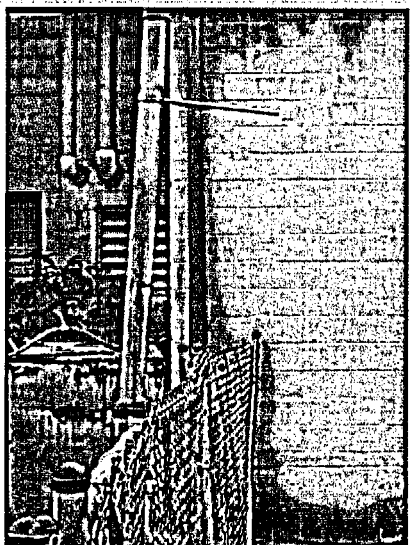


Photo 27: Corner between [redacted] and [redacted] facing north.

Photo 28: South wall of [redacted], facing north.

Westinghouse Facility Exterior Buildings [redacted] and [redacted]

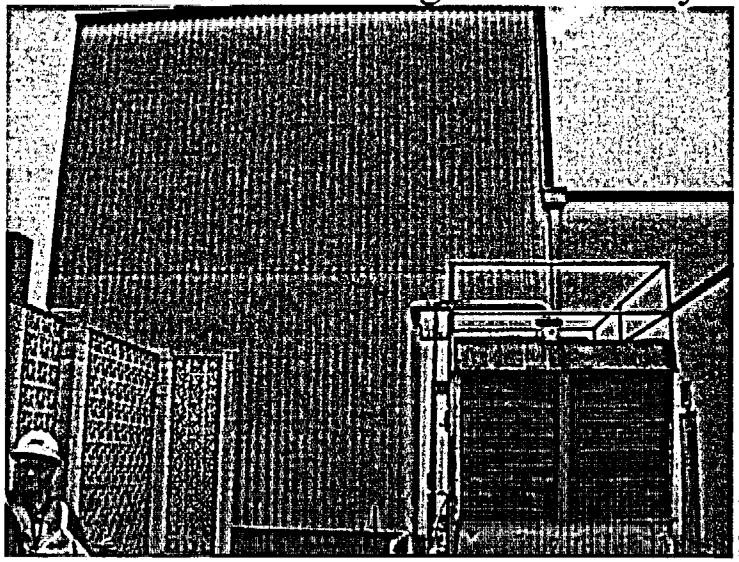


Photo 29: West wall, facing east.

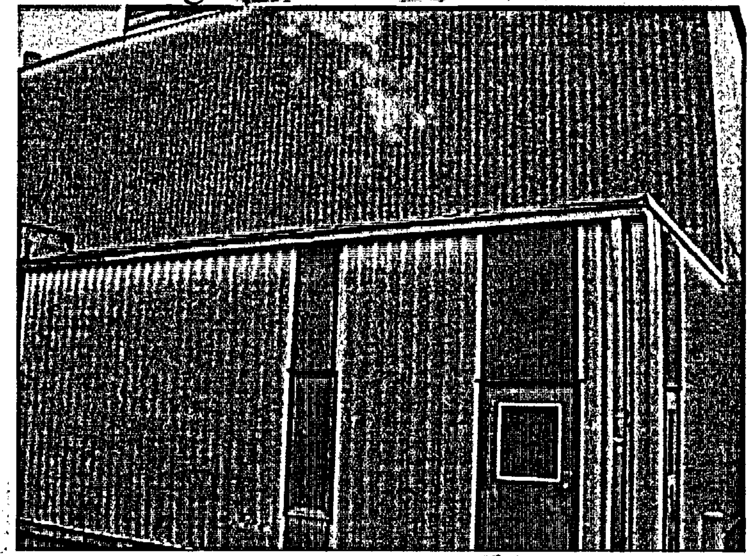


Photo 30: Northwest corner of [redacted] facing south.

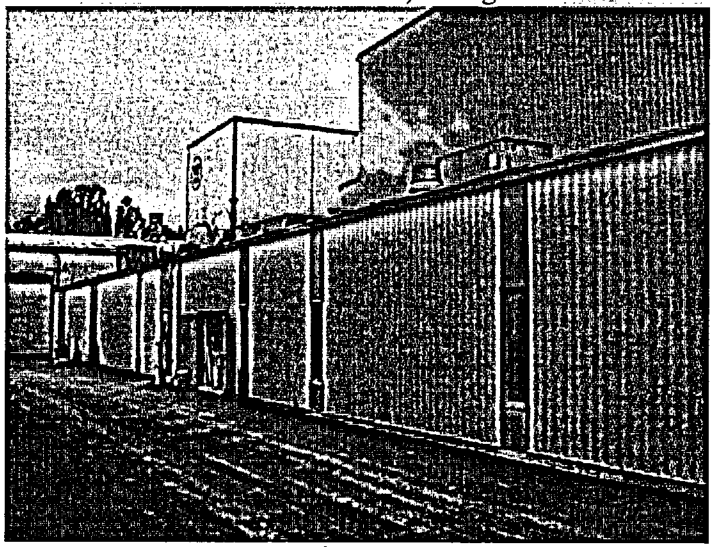


Photo 31: North wall of [redacted] and [redacted] facing southeast.

Photo 32: Corner of [redacted] and [redacted] facing southeast.

Westinghouse Facility Exterior Building [redacted]

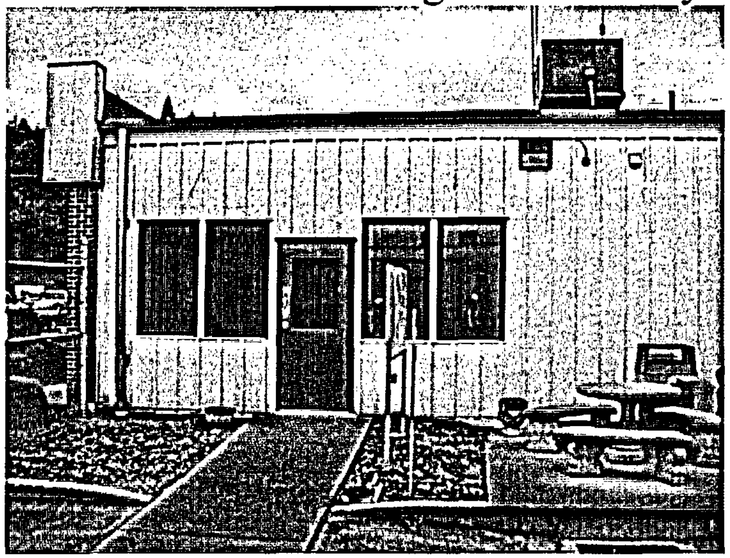


Photo 33: South wall and entrance from security area, facing north.

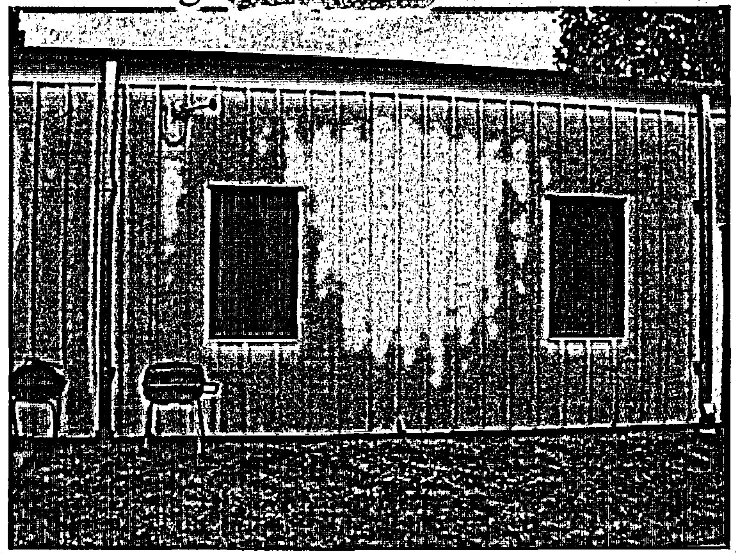


Photo 34: Center of south wall, facing north.

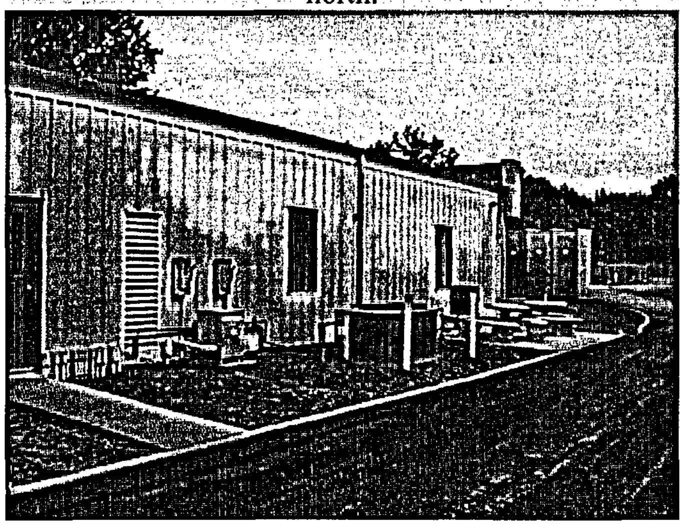


Photo 35: East portion of south wall, facing northeast.

Photo 36: West wall of offices and main entrance, facing east.

Westinghouse Facility Exterior Building [redacted], continued

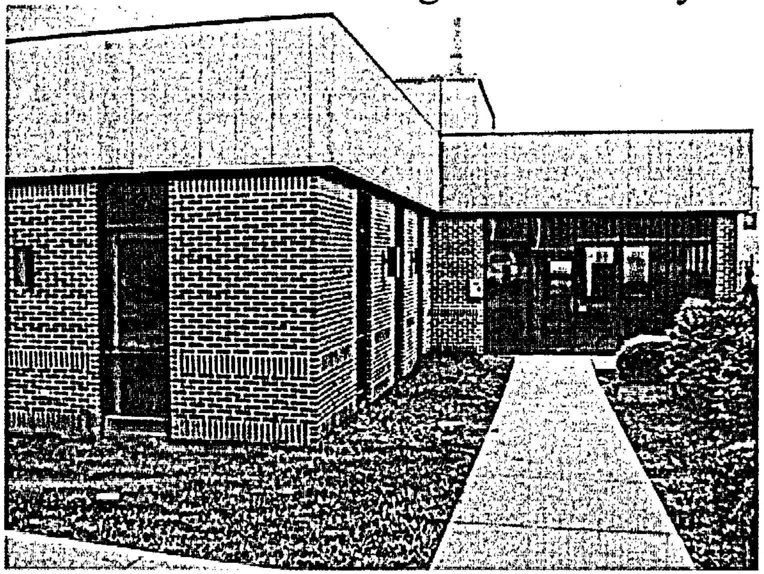


Photo 37: Northwest corner, facing south.

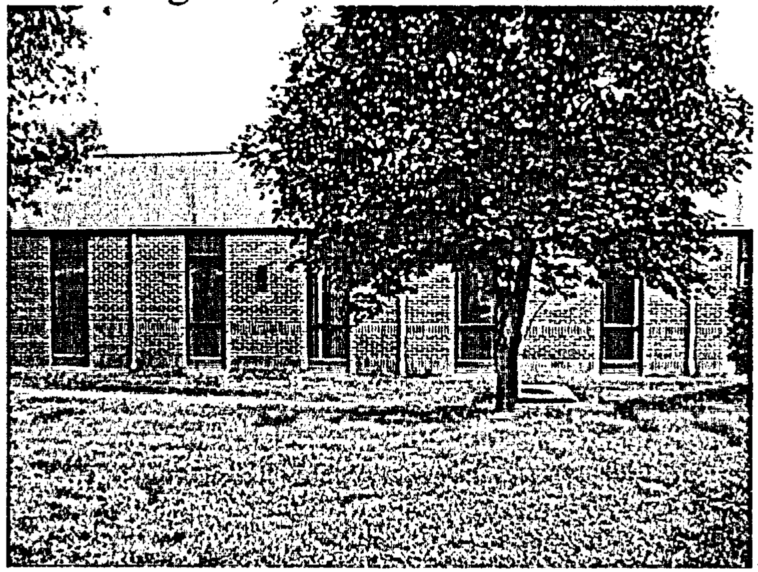


Photo 38: North wall, facing south.

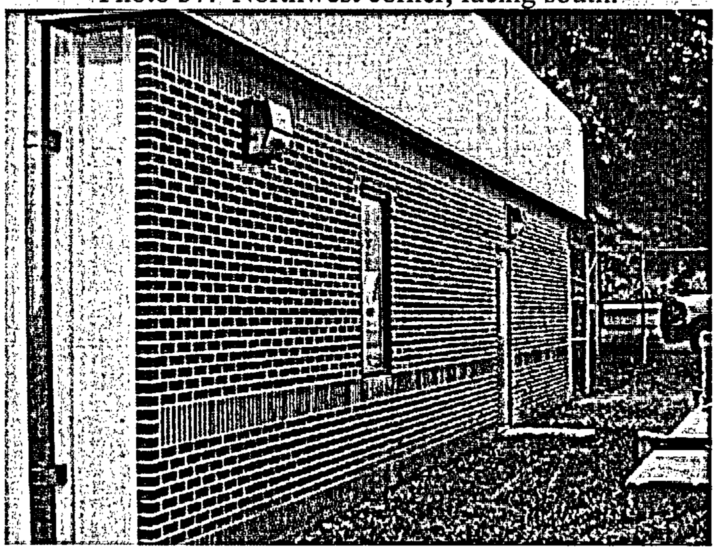


Photo 39: East wall, facing northwest.

Westinghouse Facility Exterior Building [redacted]

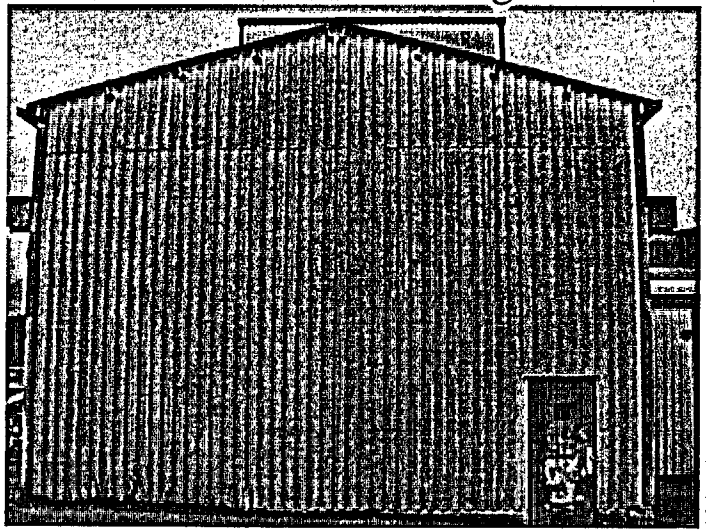


Photo 40: North wall, facing south.

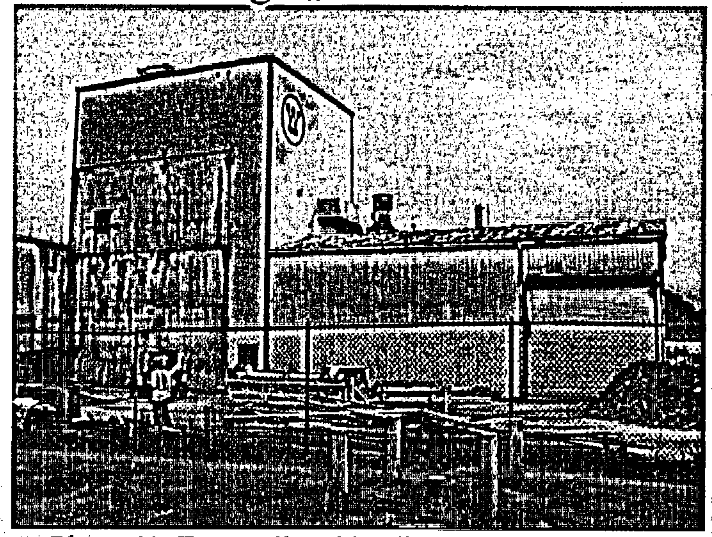


Photo 41: East wall and loading area, facing west.

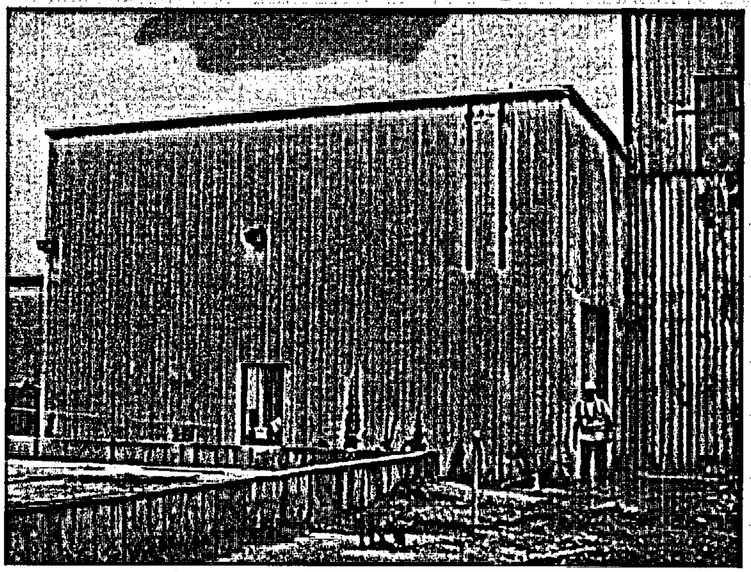


Photo 42: South wall, facing north.

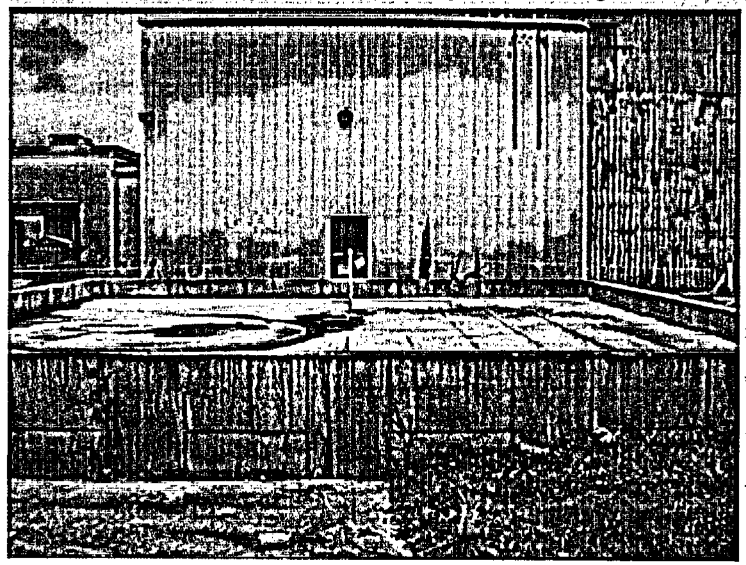


Photo 43: Concrete Pad next to loading dock, facing north.

Westinghouse Facility Exterior Building [redacted]

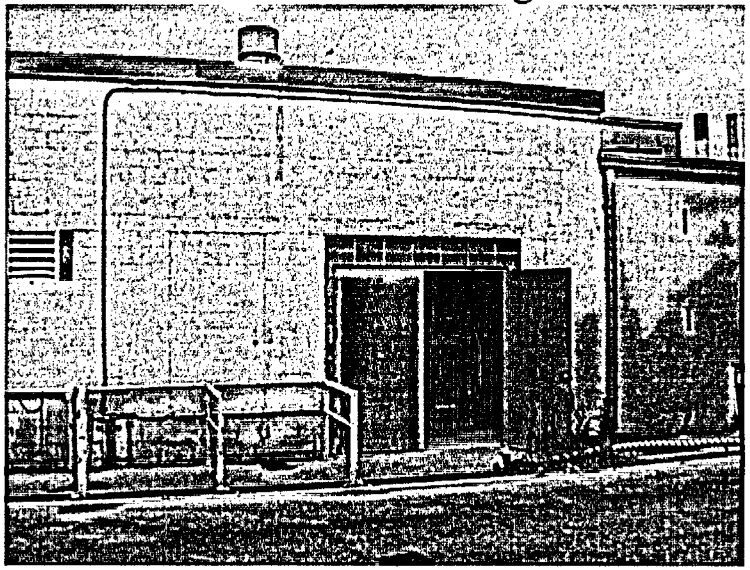


Photo 44: East wall outside HVAC, facing west.

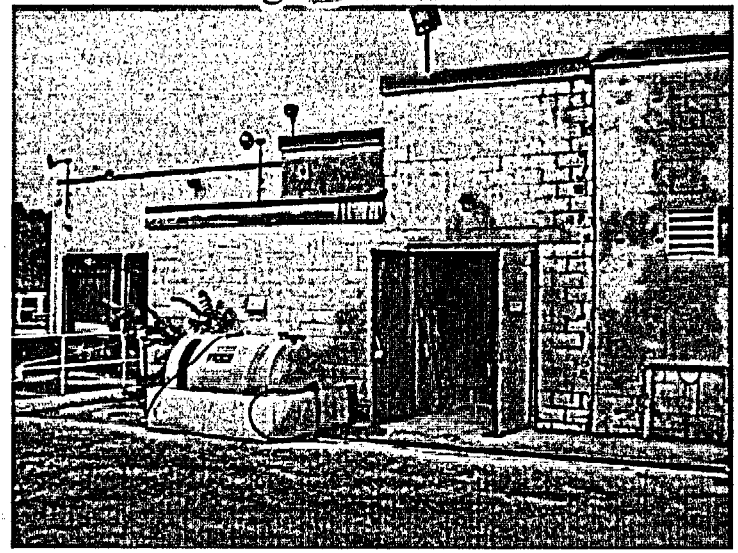


Photo 45: Southern half of east wall, facing west.

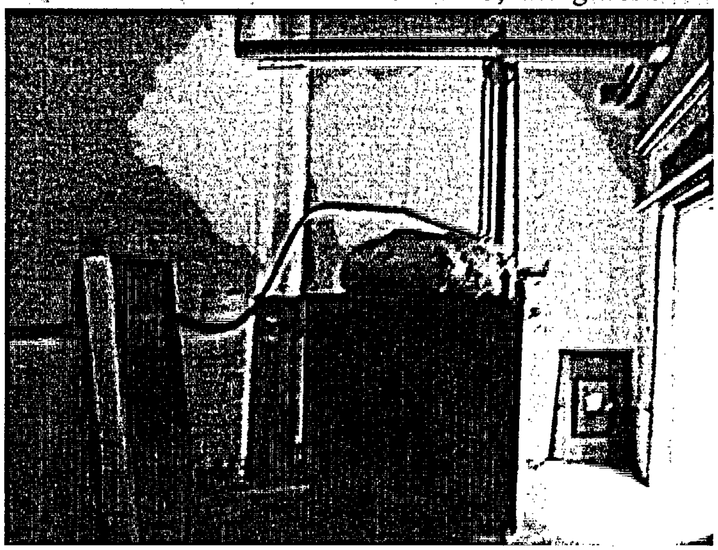


Photo 46: HVAC room interior, facing north.

Westinghouse Facility Exterior Building [redacted], [redacted] and [redacted]

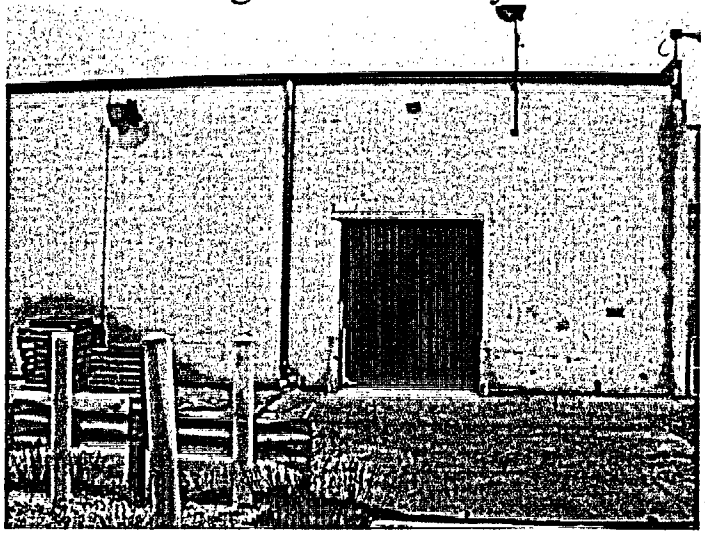


Photo 47: South wall of [redacted], facing north.

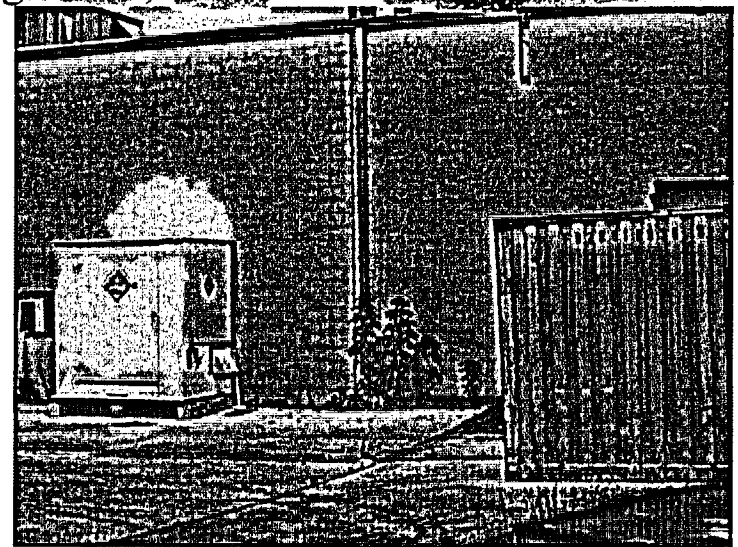


Photo 48: South wall of [redacted] facing north.

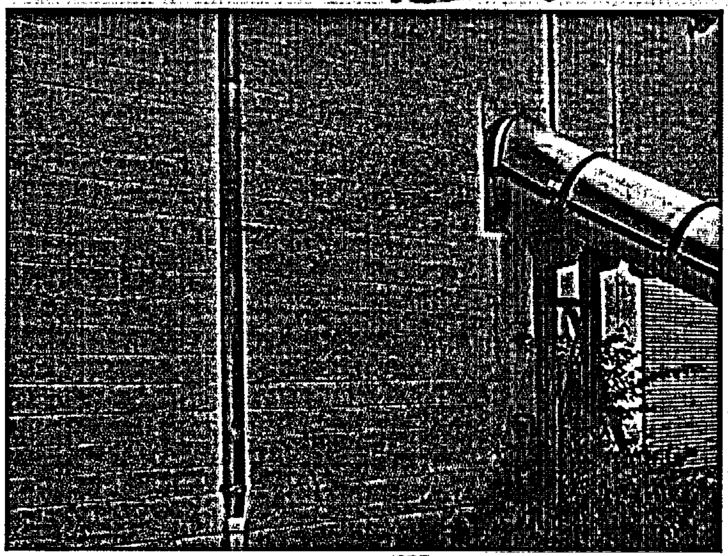


Photo 49: South wall of [redacted] facing northeast.

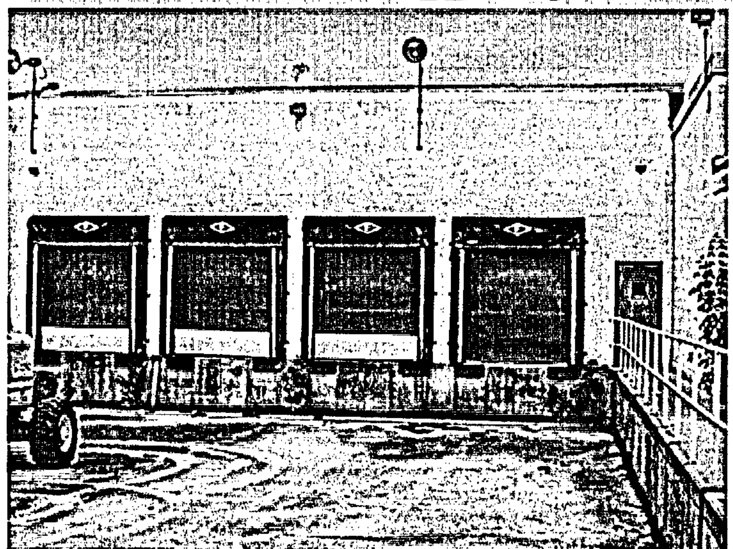


Photo 50: [redacted], facing north.

Westinghouse Facility Exterior Building [redacted]

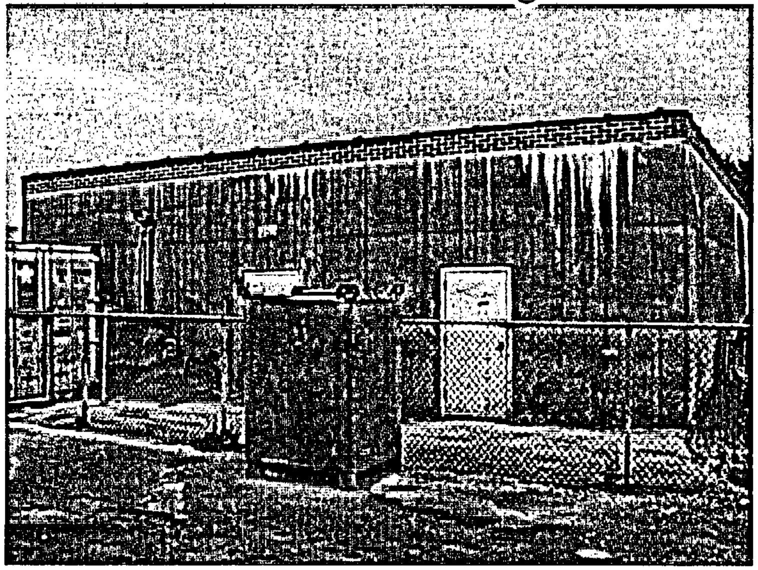


Photo 51: North Wall, facing south.

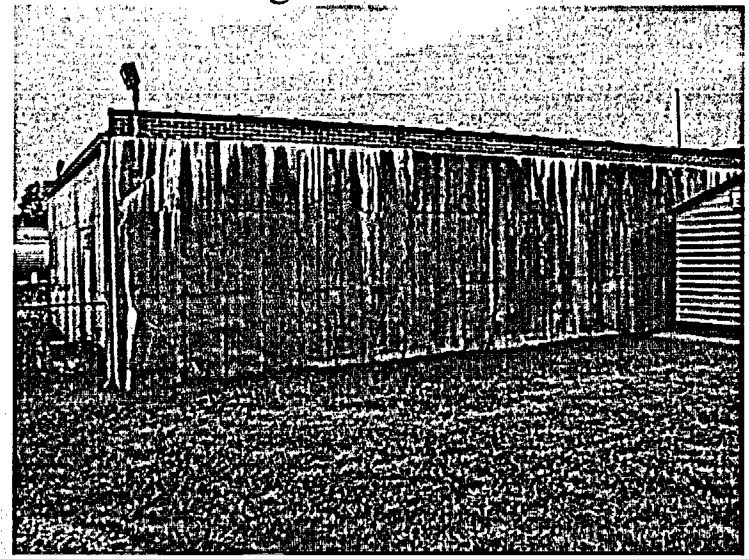


Photo 52: East wall, facing northwest.

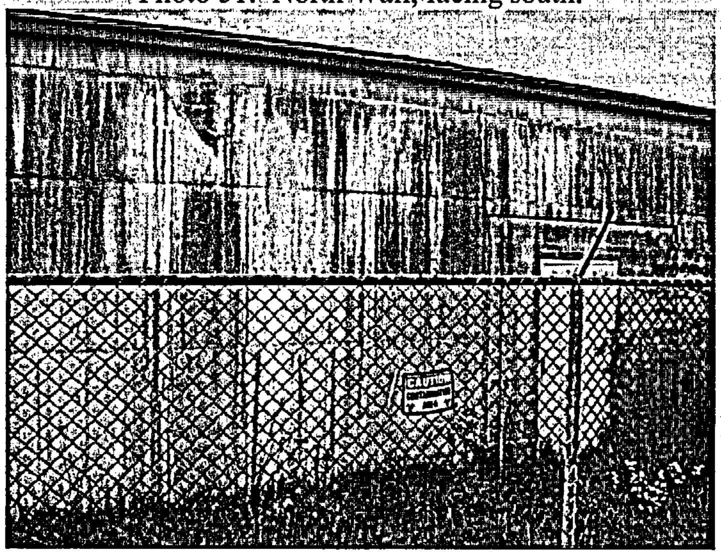


Photo 53: South wall, facing north.

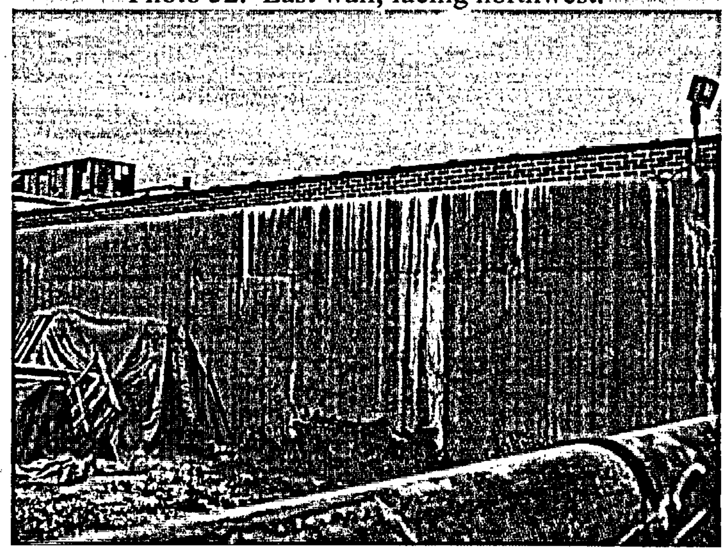


Photo 54: West wall, facing east.

Westinghouse Facility Exterior Building [redacted]

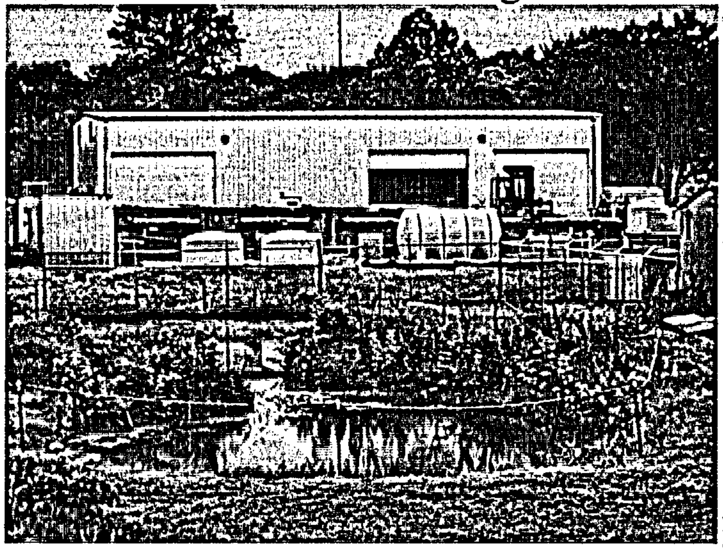


Photo 55: East wall and evaporation ponds, facing west.

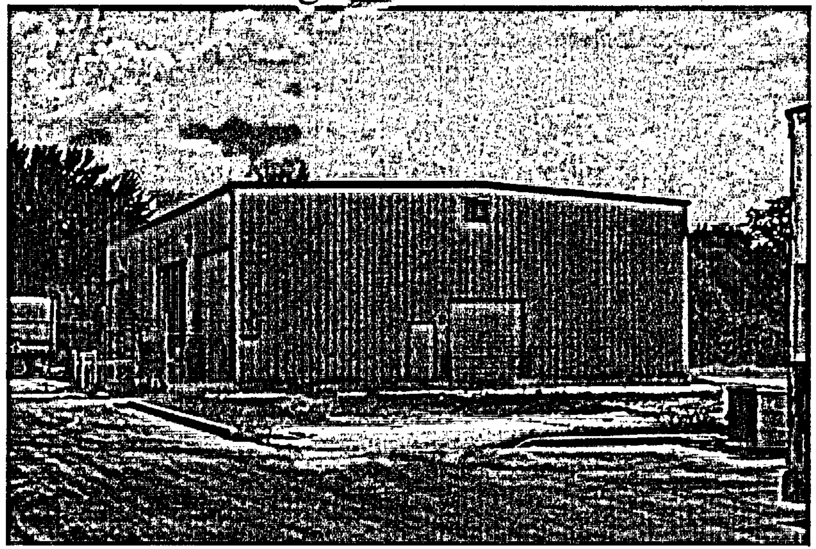


Photo 56: North wall, facing south.

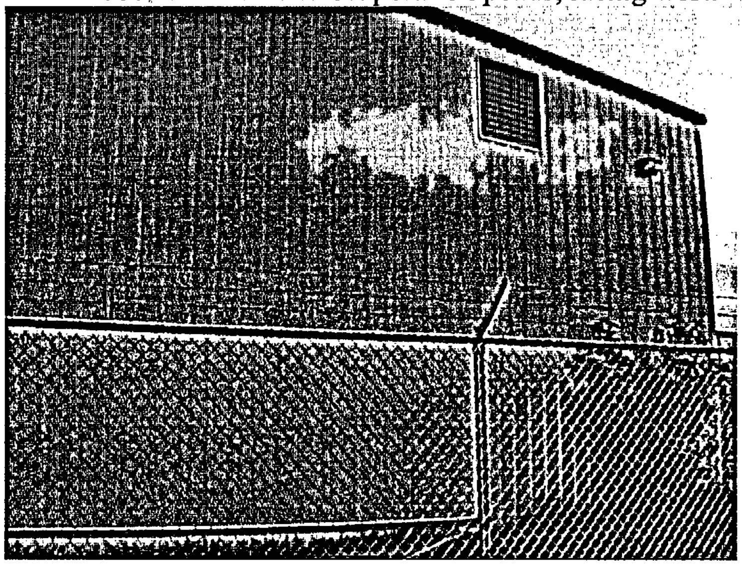


Photo 57: South wall, facing north.

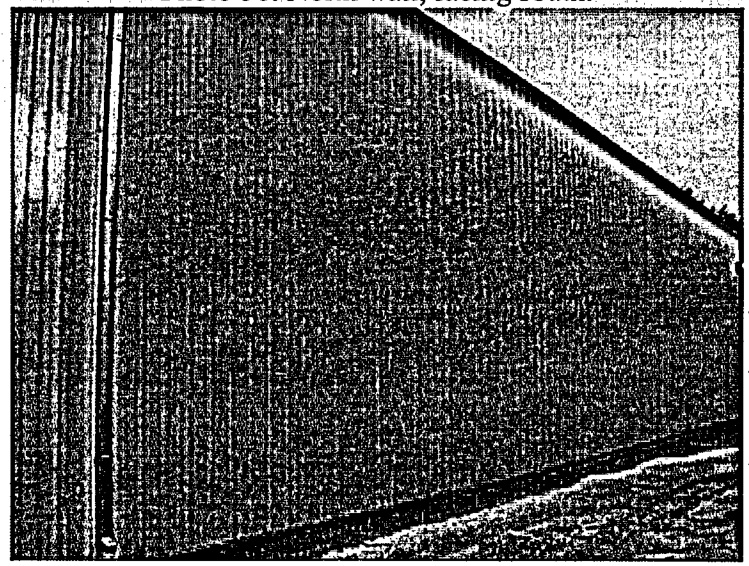


Photo 58: West wall, facing southeast

Westinghouse Facility Exterior Evaporation Ponds and Sewage Plant

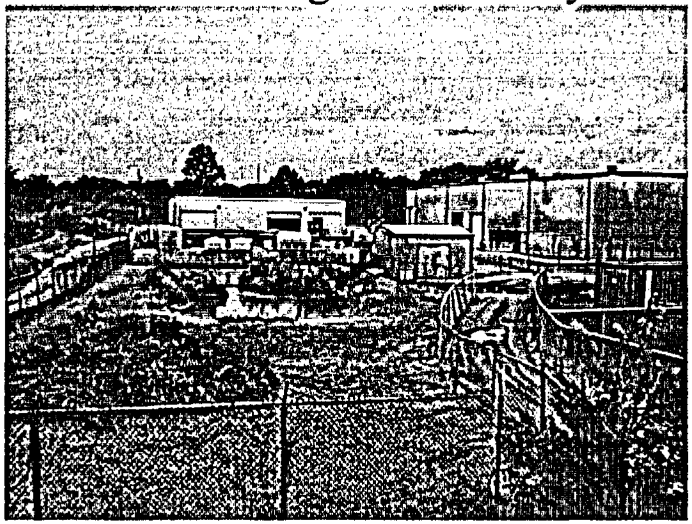


Photo 59: Evaporation ponds with sewage plant immediately to the north, facing west.

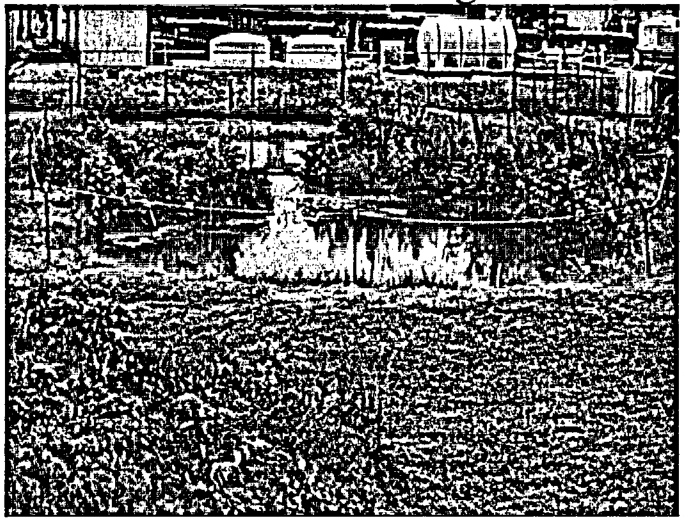


Photo 60: Evaporation ponds, facing west.

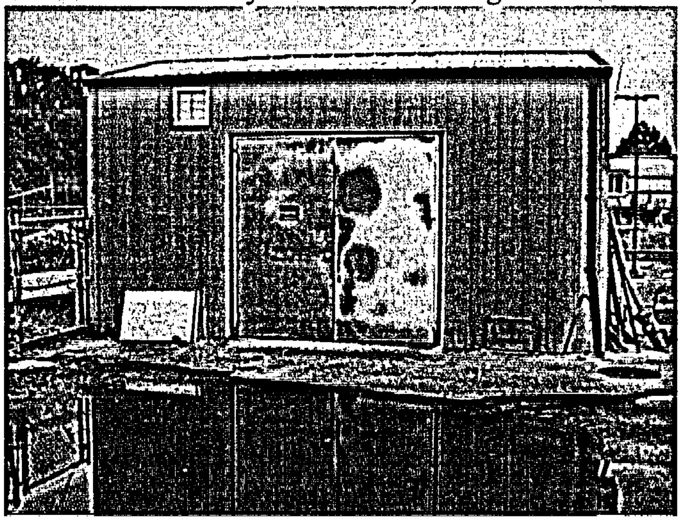


Photo 61: Sewage plant east wall, facing west

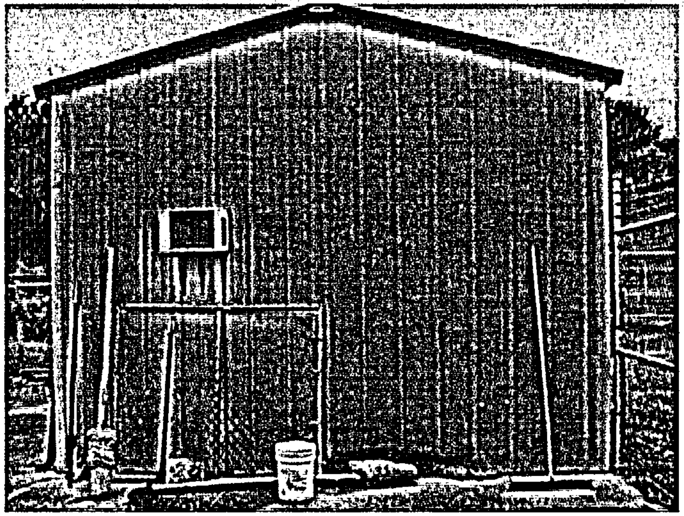


Photo 62: Sewage plant north wall, facing south.

Westinghouse Facility Exterior Building [redacted]

Photo 63: South wall, inside fence, facing north.

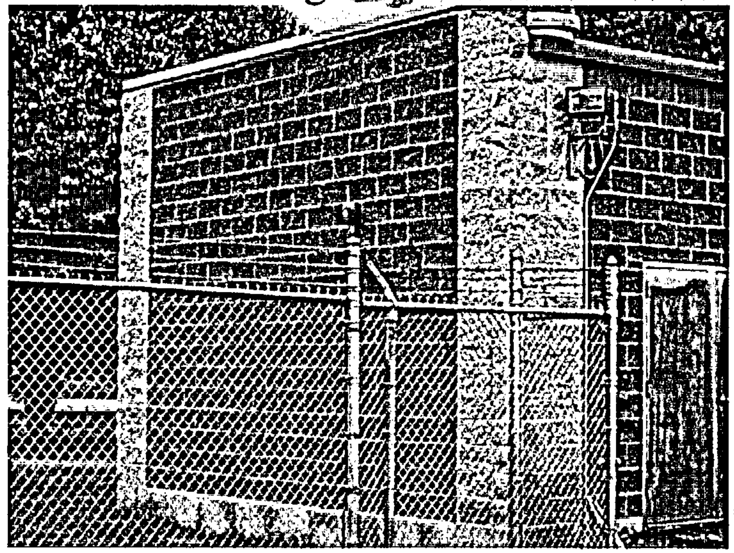


Photo 64: West wall, outside fence, facing east.

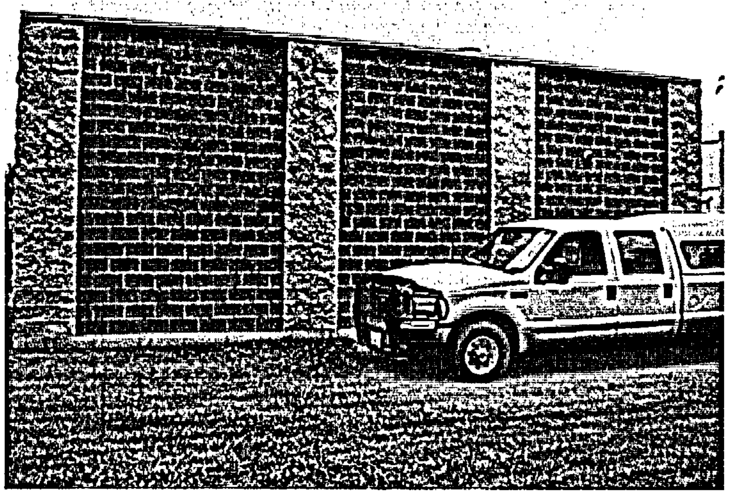


Photo 65: North wall, outside fence, facing south.

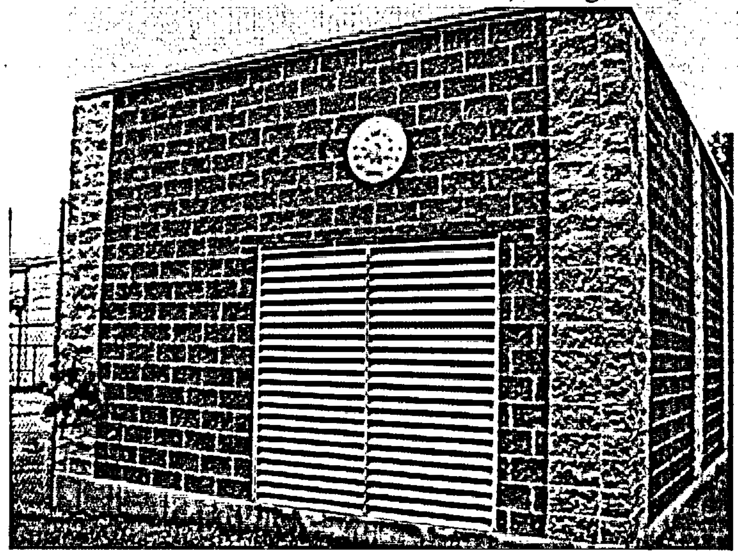


Photo 66: East wall, outside fence, facing west.

Westinghouse Facility Exterior Building [redacted] (Tile Barn)

Photo 67: South wall, facing north.

Photo 68: East wall with doorways, facing west.

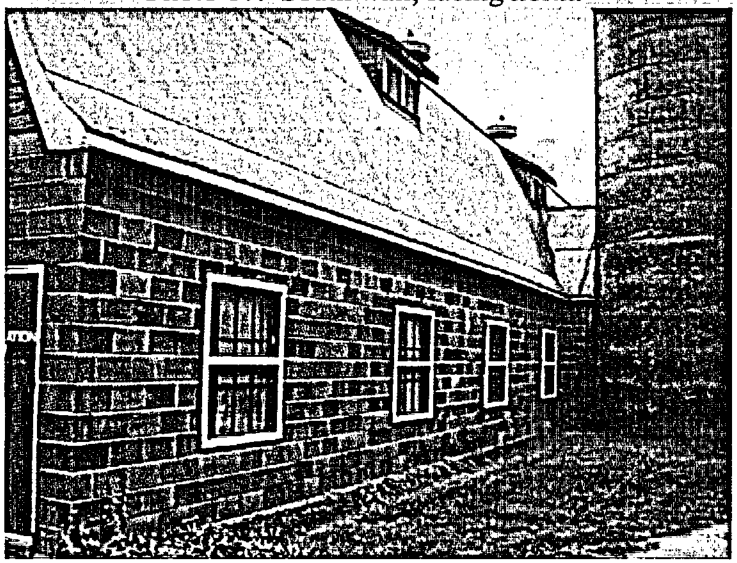


Photo 69: North wall, facing southwest

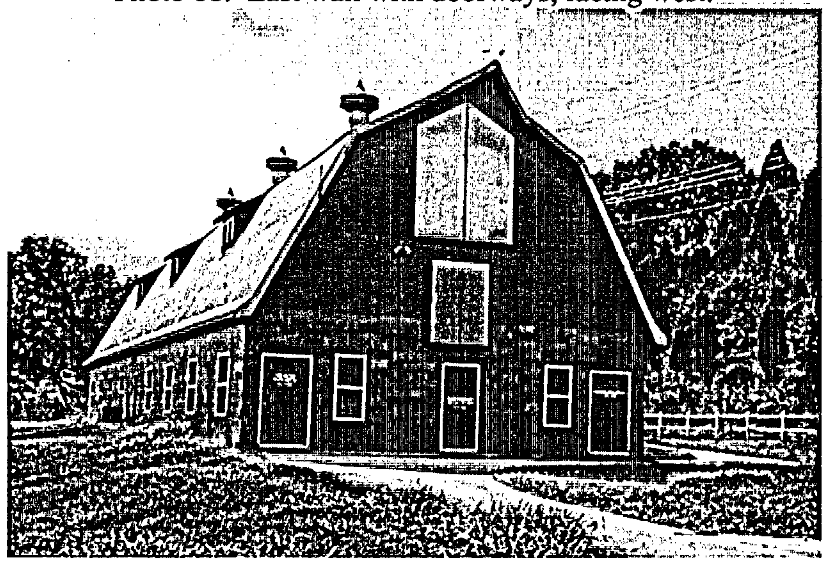


Photo 70: Southeast corner, facing northwest.

Westinghouse Facility Exterior Building [redacted] (Wood Barn)

Photo 71: South wall, facing north.

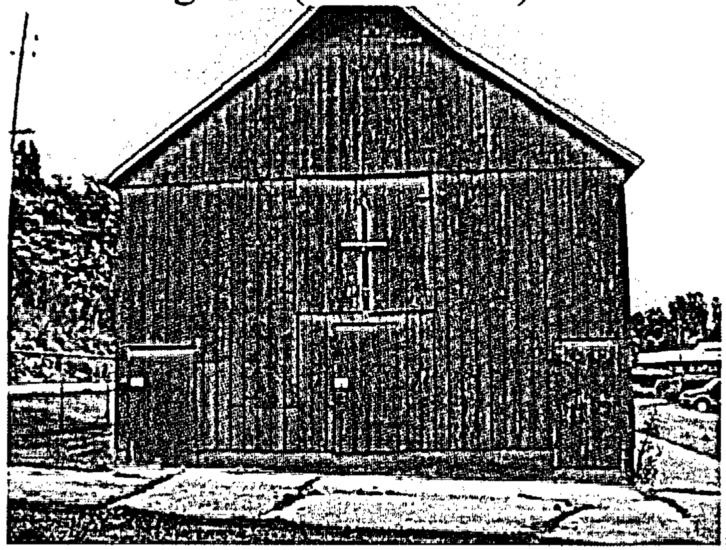


Photo 72: West wall facing east.

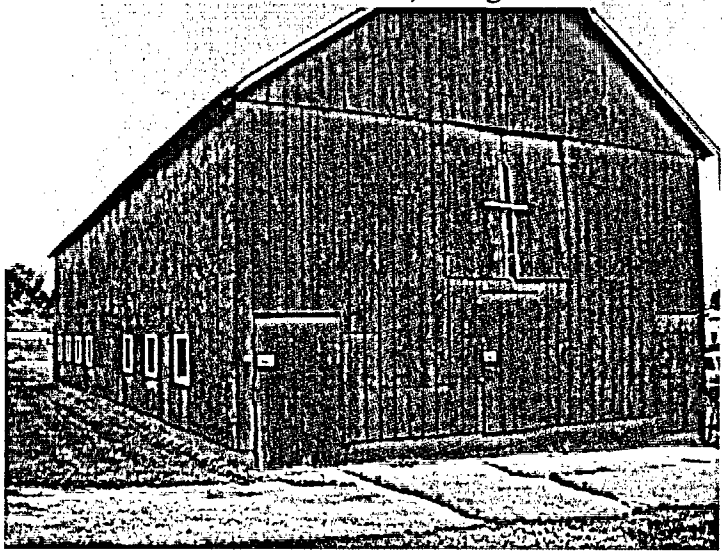


Photo 73: Northwest corner, facing east.

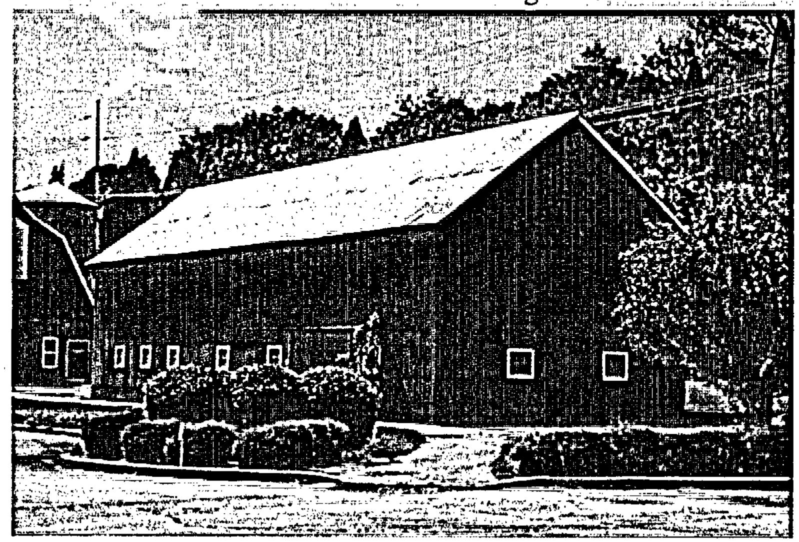


Photo 74: South and east walls of wood barn, facing northwest.

Westinghouse Facility Exterior Miscellaneous

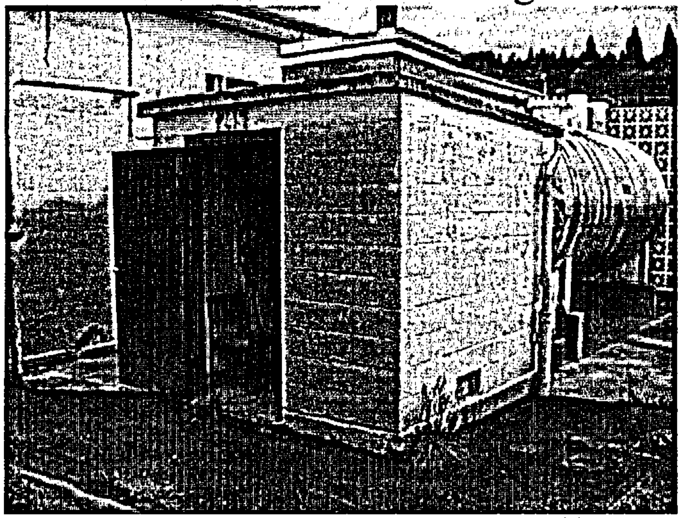


Photo 75: South and East Side of Building [redacted], facing northeast.

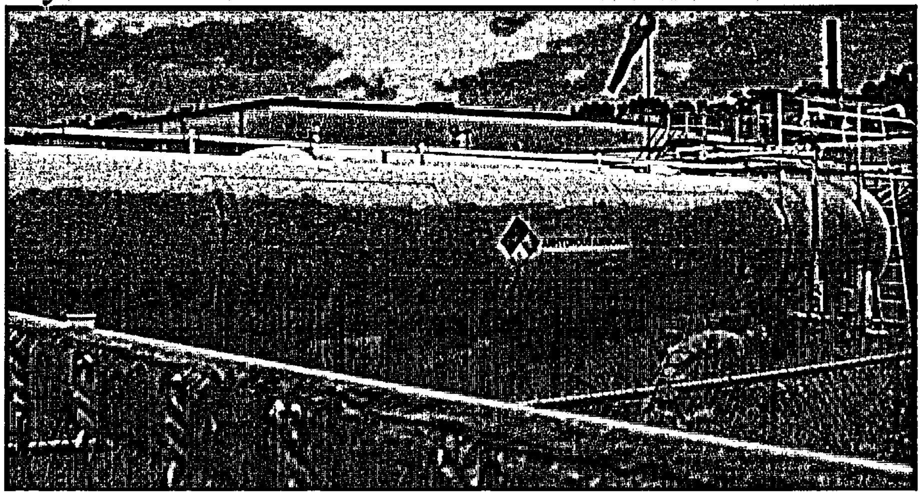


Photo 76: Anhydrous Ammonia tank [redacted] of building, facing [redacted]

Photo 77: Gravel Mounds south of building, facing south.

78: Intermodels south of the facility, facing south.

Westinghouse Facility Exterior Miscellaneous, continued

Photo 79: Deul's Mountain, facing south.

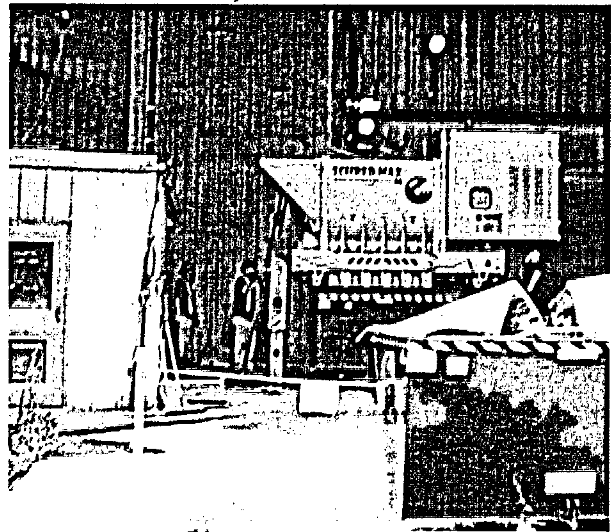


Photo 80: [redacted] Shredder room, facing north.

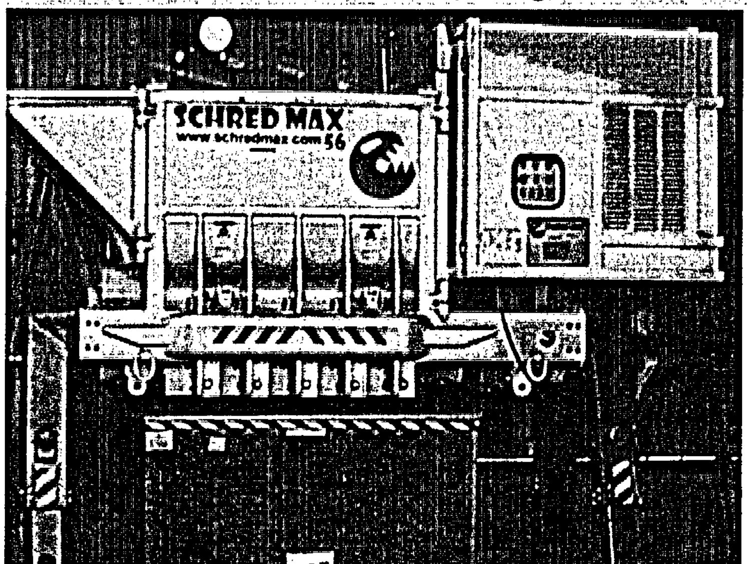


Photo 81: [redacted] Shredder, facing north.

Westinghouse Facility Exterior Full Front View of Facility

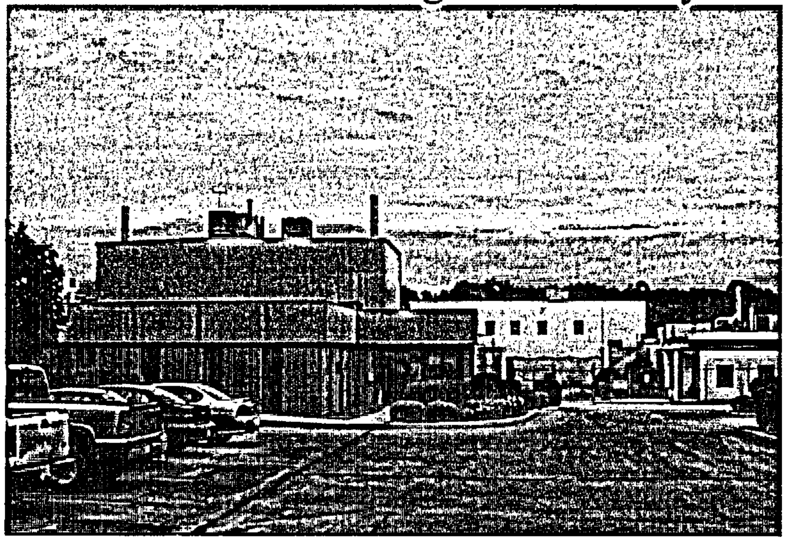


Photo 82: Facilities, facing west.

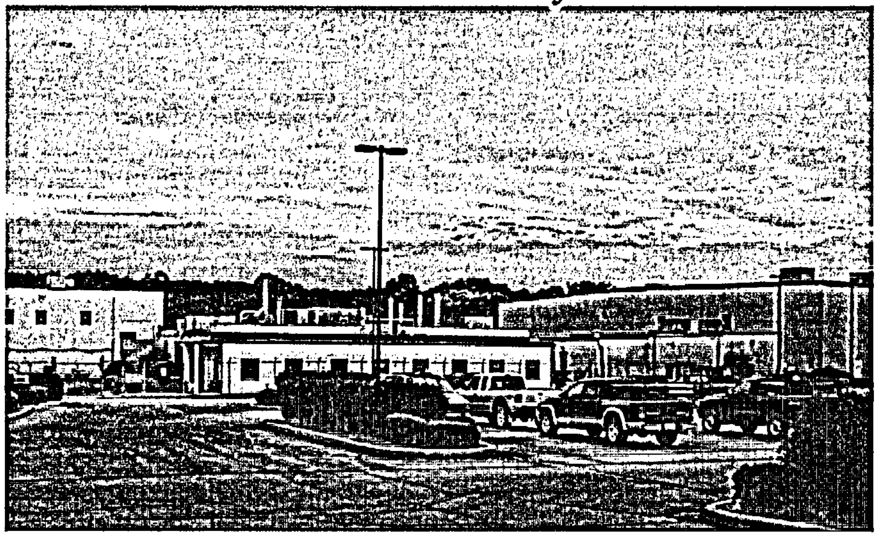


Photo 83: Facilities, facing south.

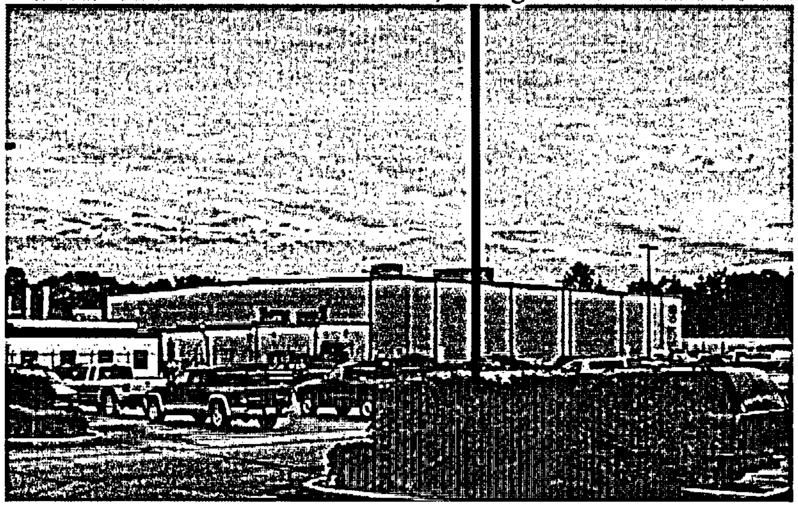


Photo 84: Facilities, facing southwest.

Westinghouse Facility Exterior Full Front View of Facility, continued

Photo 85: Eastern side of Main Buildings, facing west.

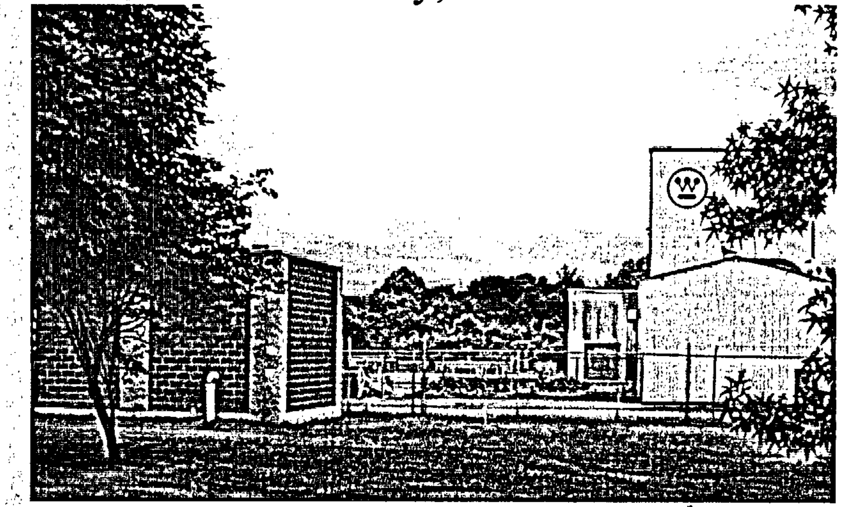


Photo 86: Building [redacted] and east side of [redacted] and [redacted] facing south.

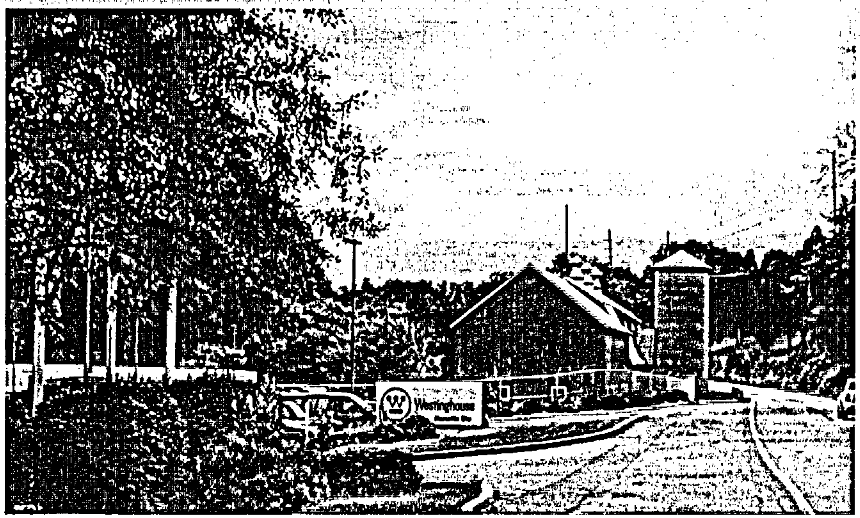


Photo 87: Front of facilities, facing west.

Photo 88: Wood Barn and Sign in front of facilities, facing west.

Westinghouse Facility Exterior Full Rear View of Facility

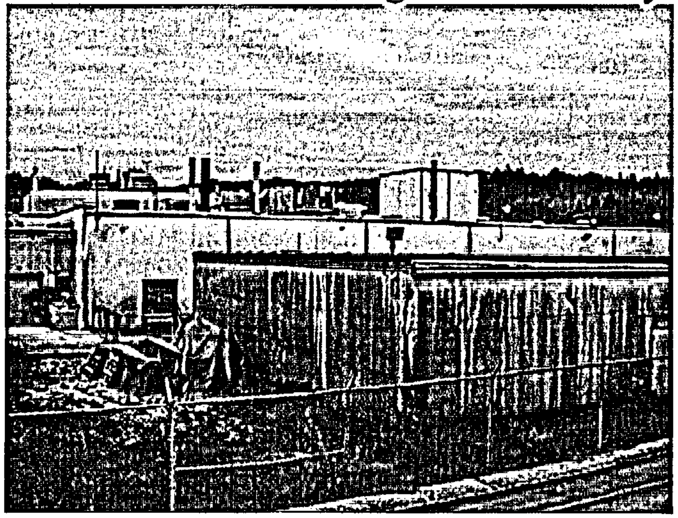


Photo 89: Eastern portion of the south side of the facilities, facing north.

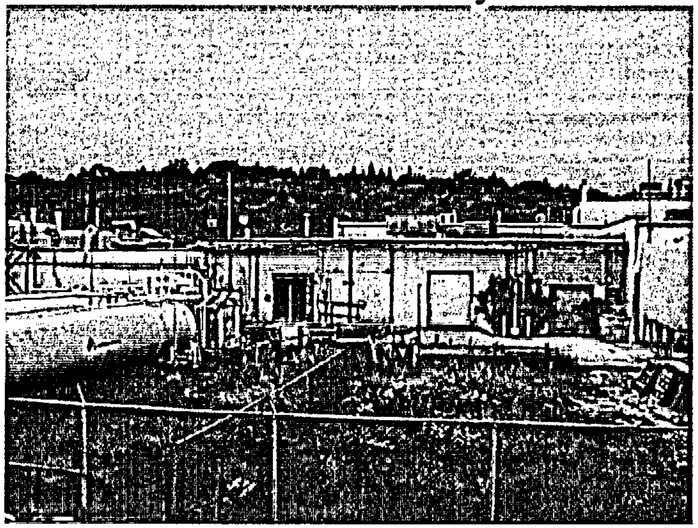


Photo 90: Central portion of the south side of the facilities, facing north.

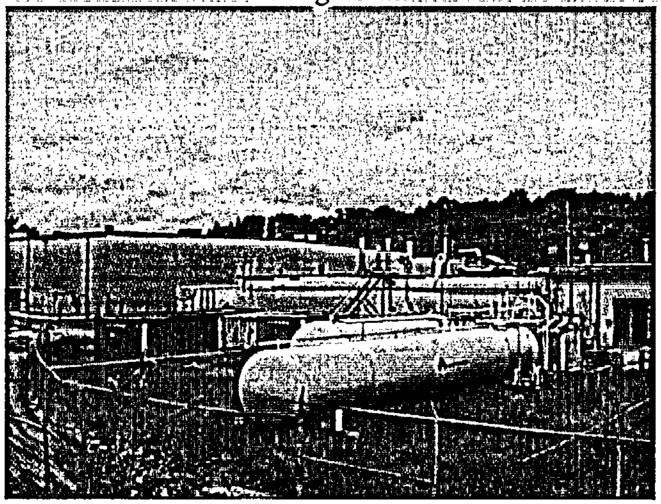


Photo 91: Western portion of the south side of the facilities, facing north.

Westinghouse Facility Interior Building [redacted]

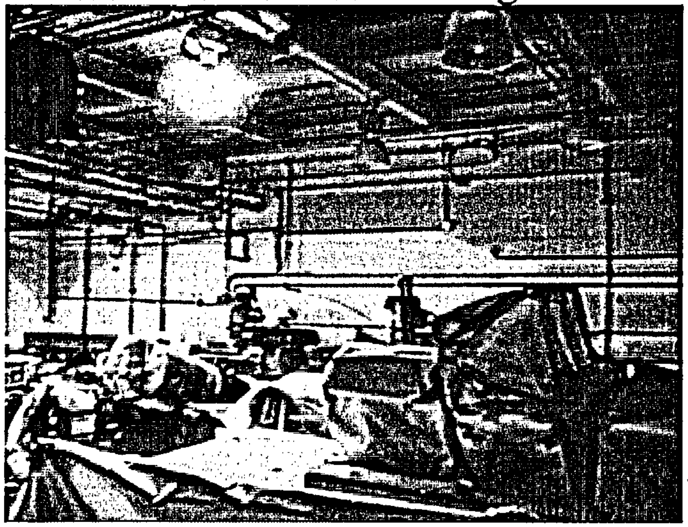


Photo 92: Eastern half of south wall of maintenance shop, facing south.

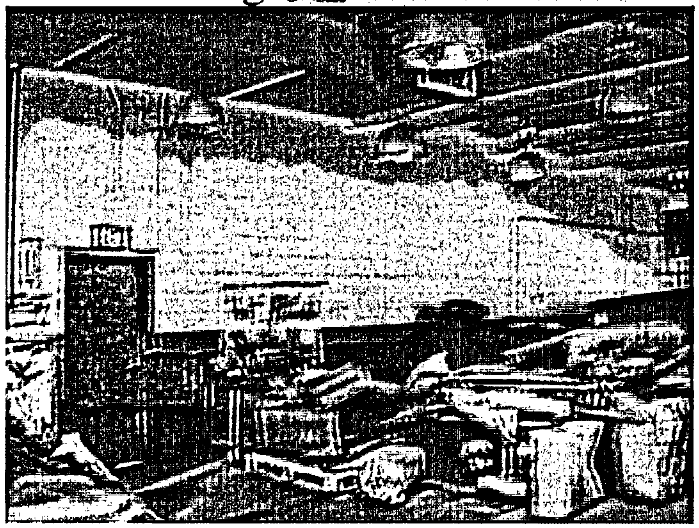


Photo 93: Western half of south wall of maintenance shop, facing north.

Photo 94: Northwest corner of maintenance shop, facing east.

Westinghouse Facility Interior Building [redacted], continued

Photo 95: West wall of hallway outside maintenance shop, facing west.

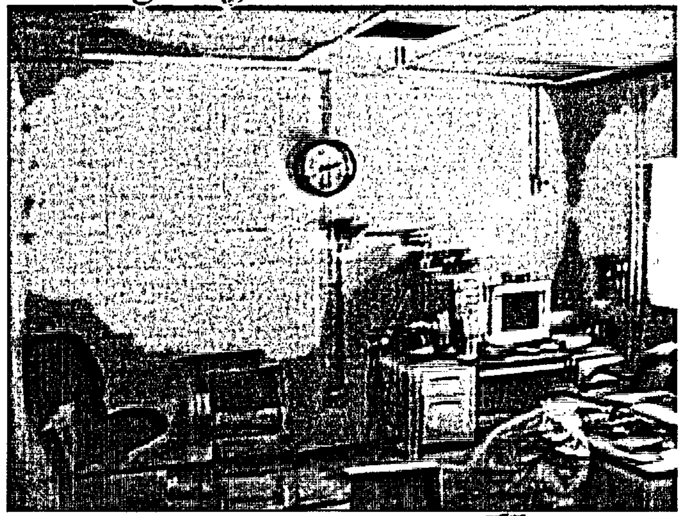


Photo 96: South wall of southwest office in [redacted] facing southwest.

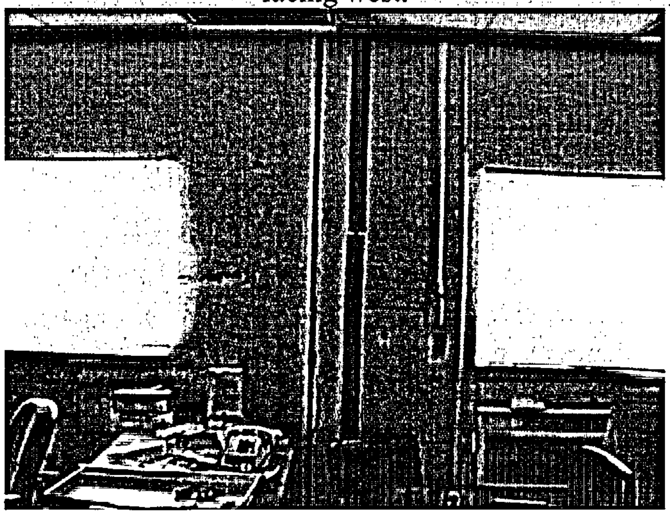


Photo 97: West wall of southwest office in [redacted] facing west.

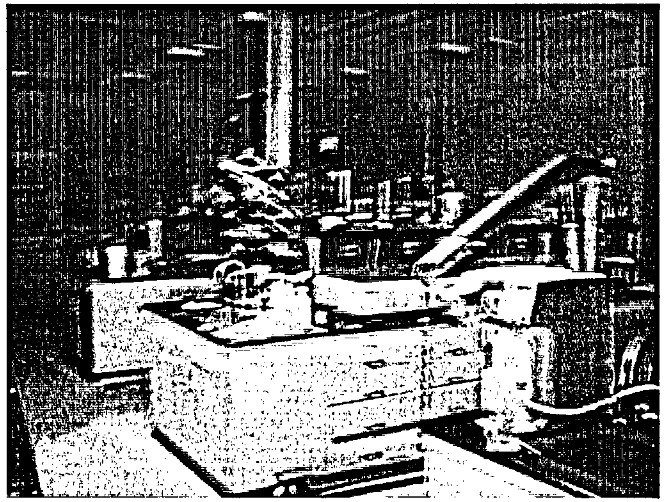


Photo 98: Laboratory, facing south.

Westinghouse Facility Interior Building [redacted] continued

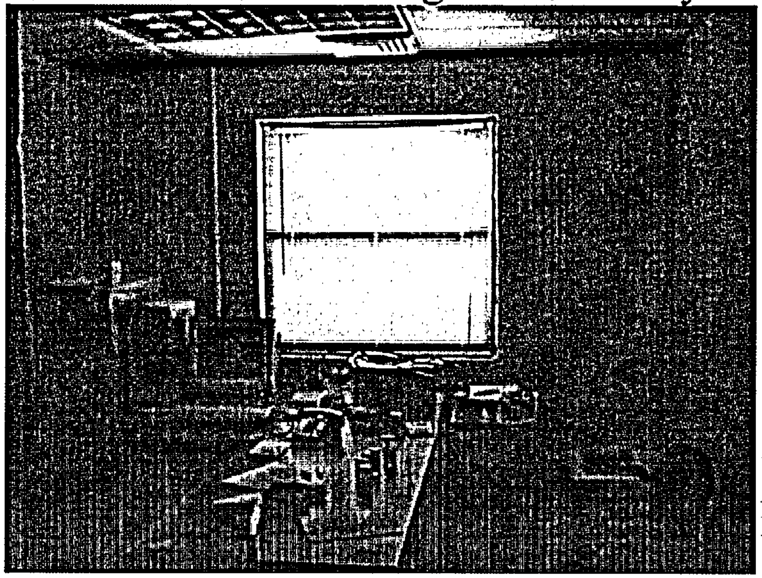


Photo 99: North wall of northwest corner office, facing north.

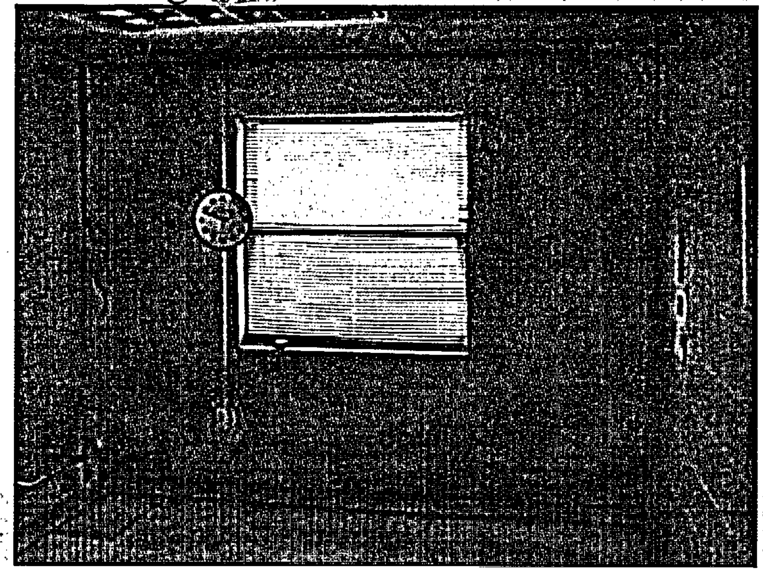


Photo 100: North wall of office, facing north.

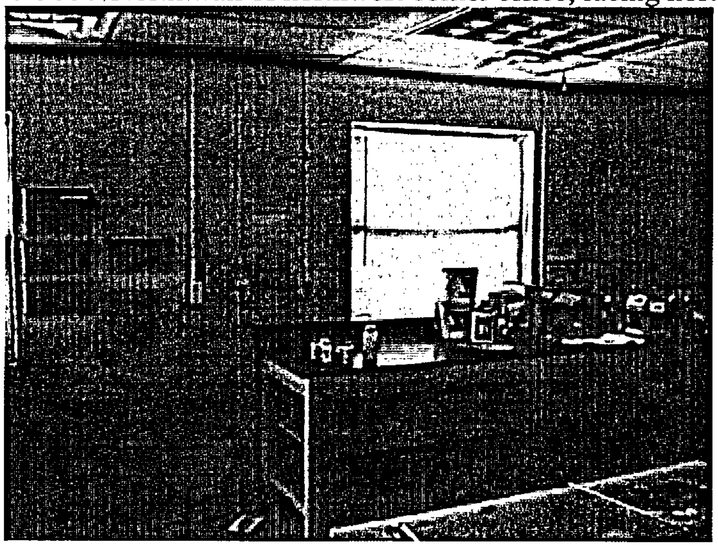


Photo 101: North wall of office, facing north.

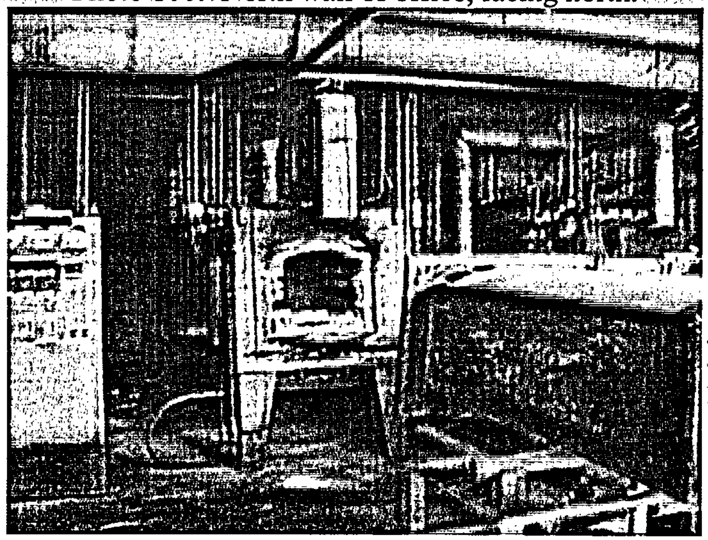


Photo 102: Furnace in recovery room, facing northeast.

Westinghouse Facility Interior Building [redacted]

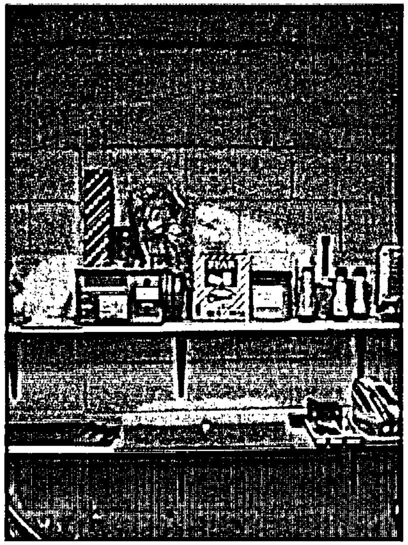


Photo 103: West wall in HP room, facing west.

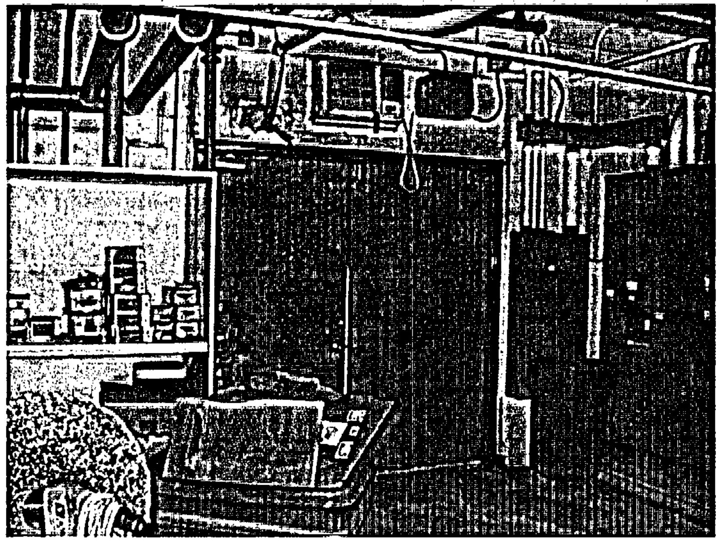


Photo 104: East wall of outer Laundry room, facing east.

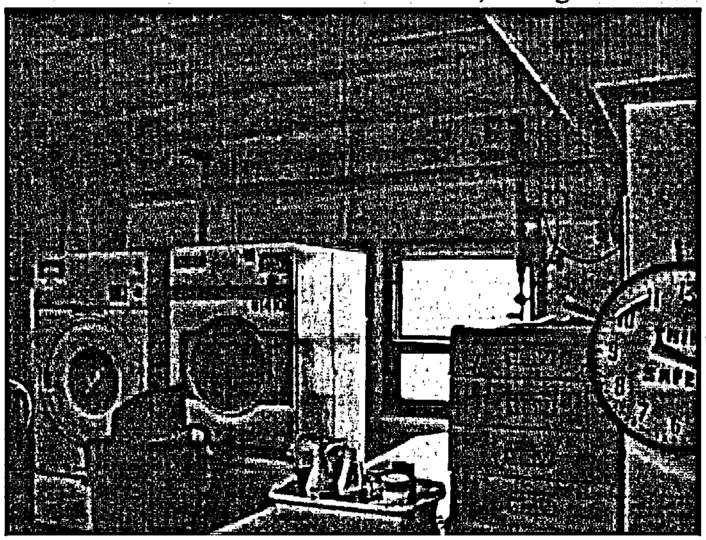


Photo 105: East wall of Laundry room, facing northeast.

Westinghouse Facility Interior Building [redacted] (Cafeteria)

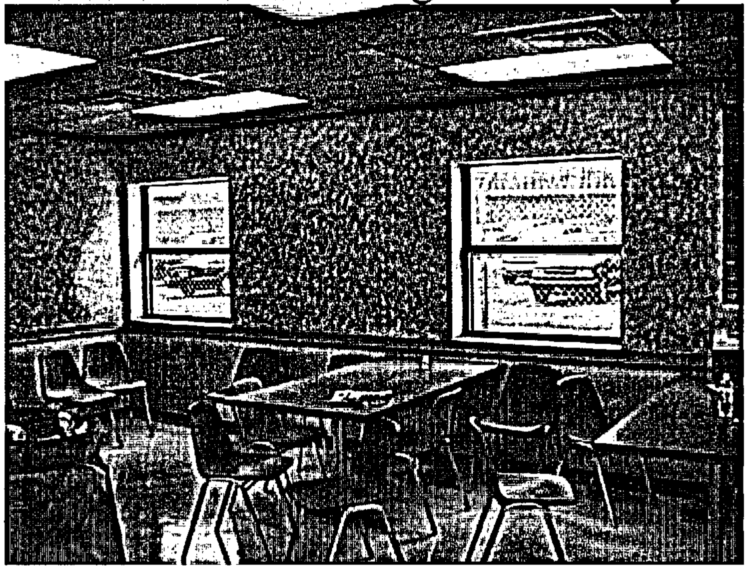


Photo 106: Cafeteria northwest corner, facing northwest.

Photo 107: Cafeteria east wall, facing east.

Photo 108: Cafeteria northeast corner, facing north.

Westinghouse Facility Interior Building [redacted]

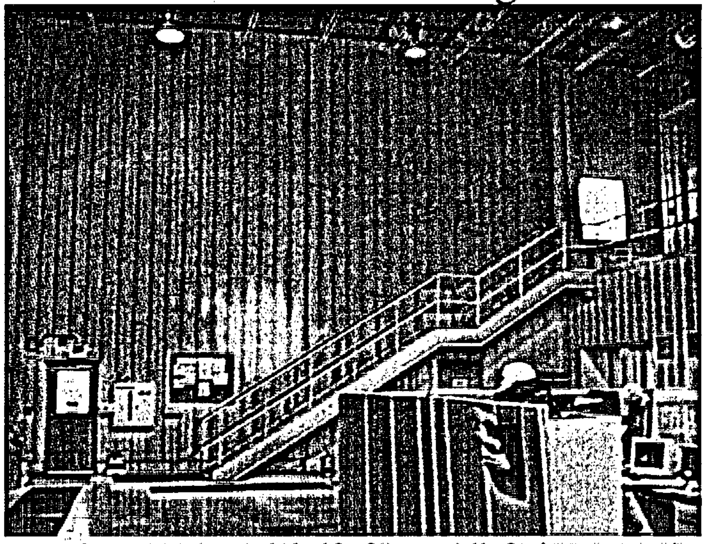


Photo 109: North half of east wall, facing east.

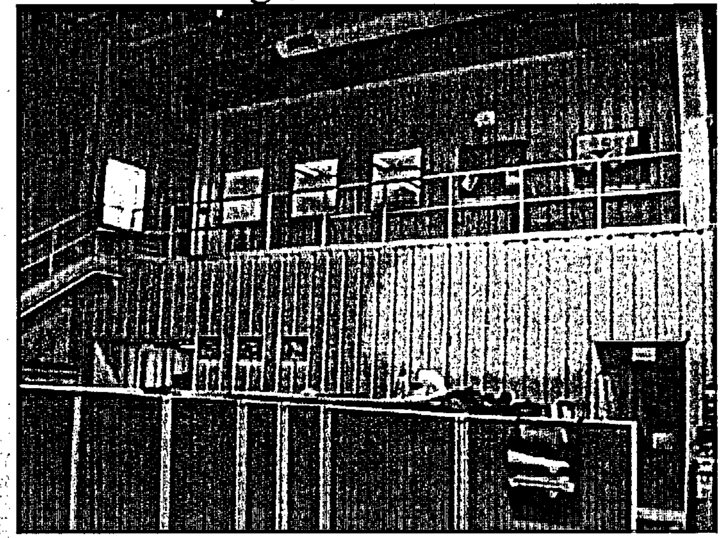


Photo 110: East pellet loading offices, facing south.

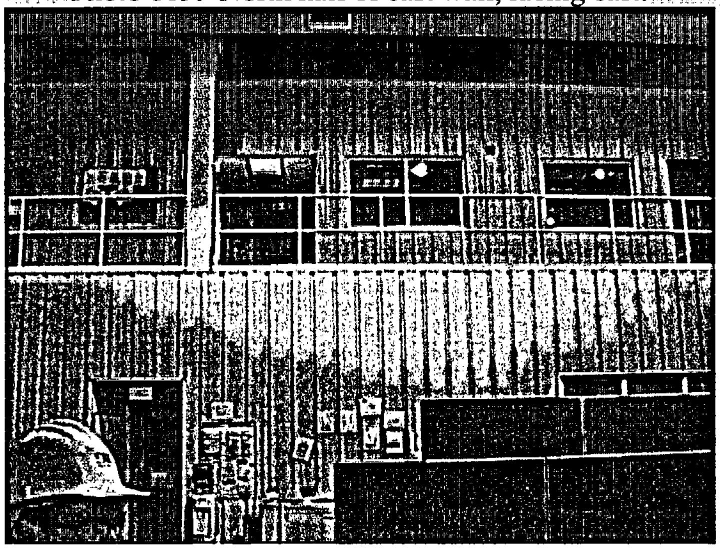


Photo 111: Center pellet loading offices, facing south.

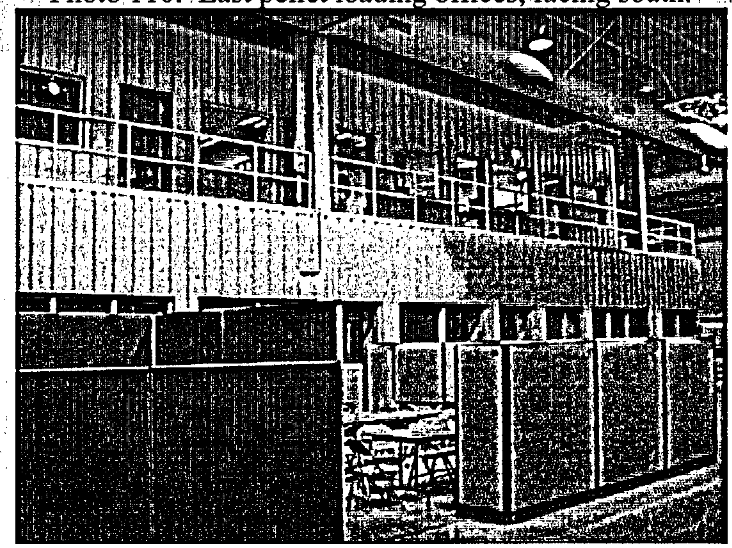


Photo 112: West pellet loading offices, facing southwest.

Westinghouse Facility Interior Building [redacted], continued

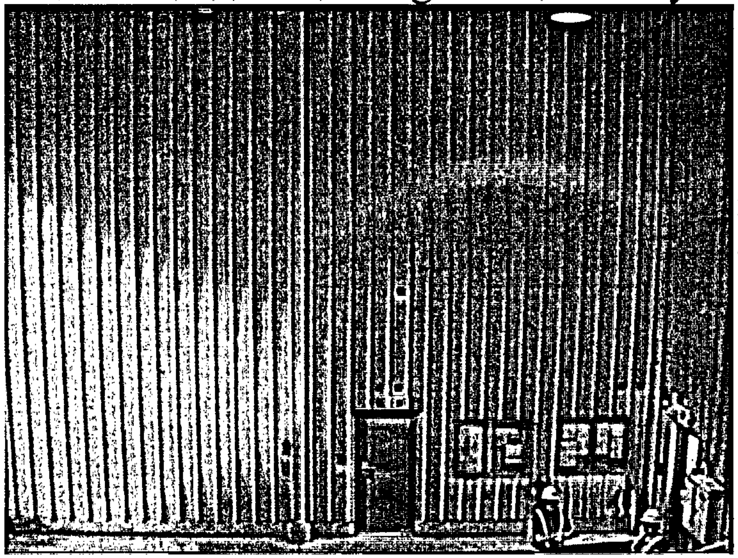


Photo 113: East portion of north outer wall, facing north.

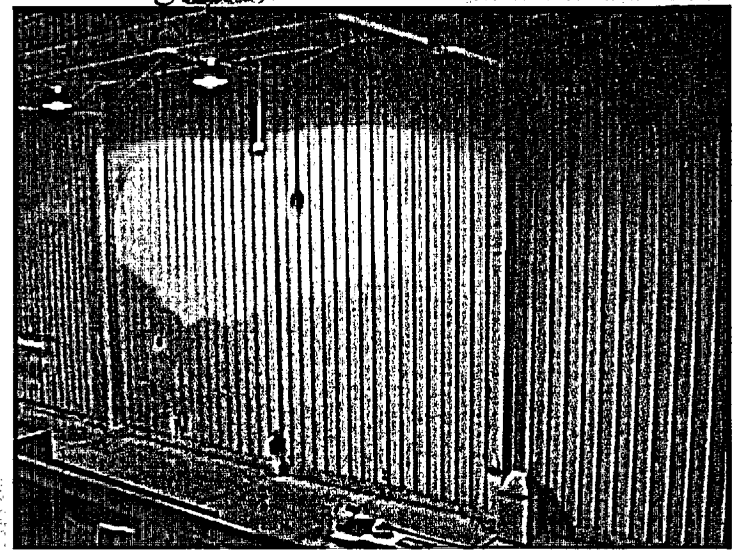


Photo 114: Center portion of north outer wall, facing northwest.

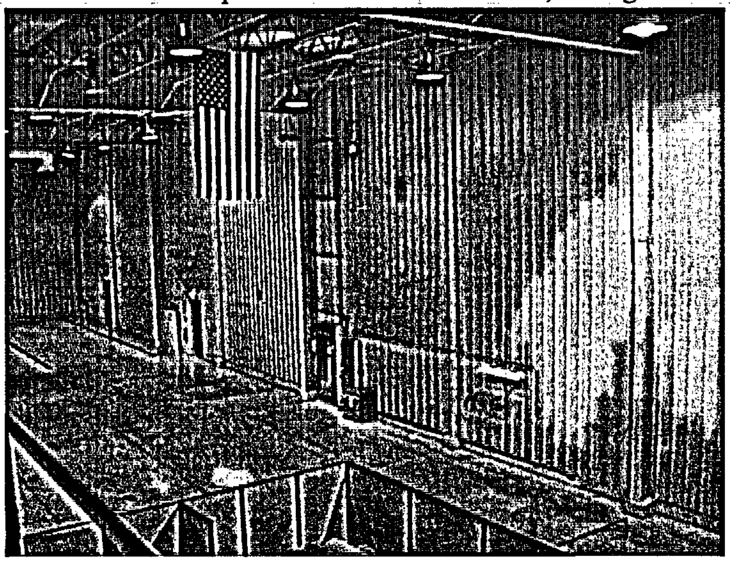


Photo 115: West portion of north outer wall, facing northwest.

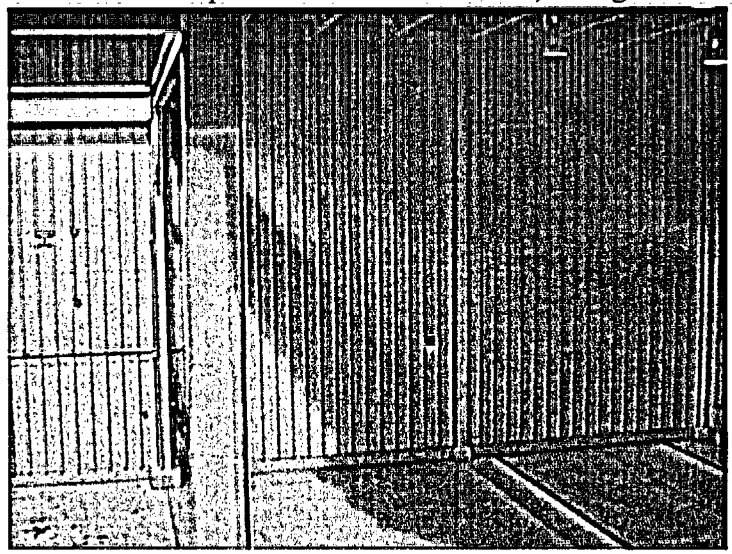


Photo 116: North portion of west outer wall, facing west.

Westinghouse Facility Interior Building [redacted], continued

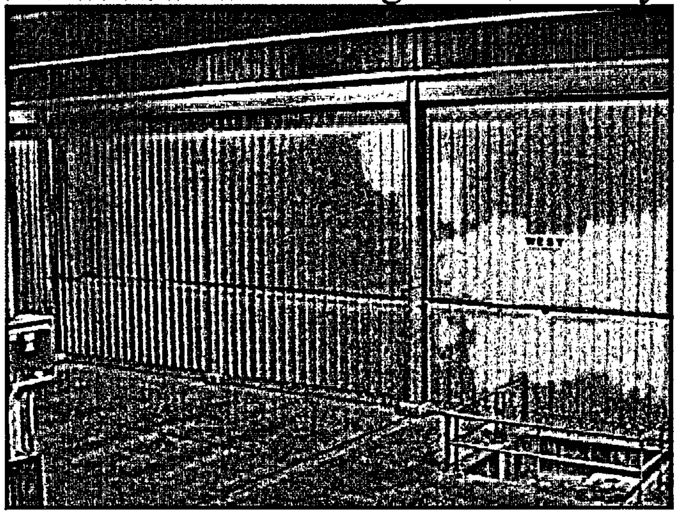


Photo 117: South half of west wall, facing west.

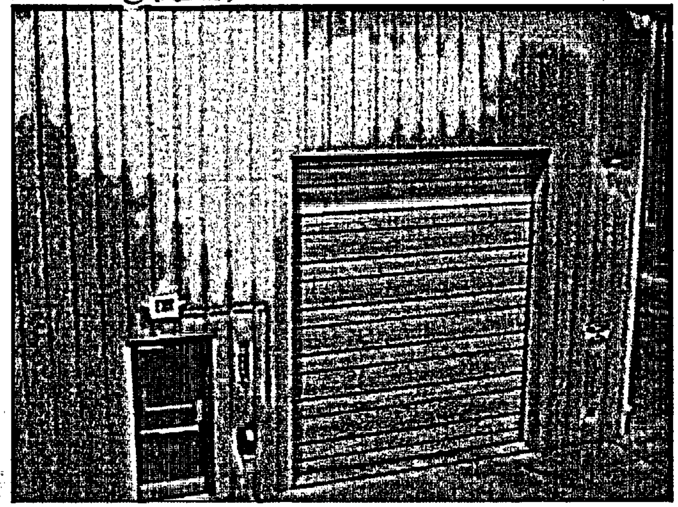


Photo 118: Southwest corner and south interior wall, facing south.

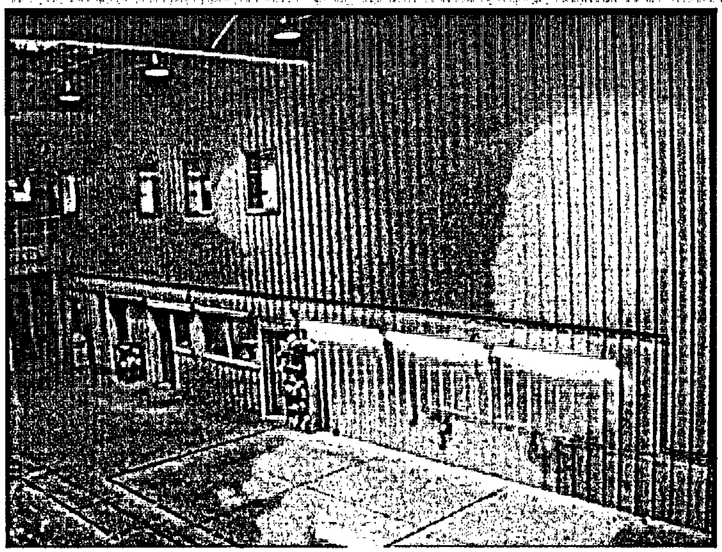


Photo 119: South interior wall, facing southwest.

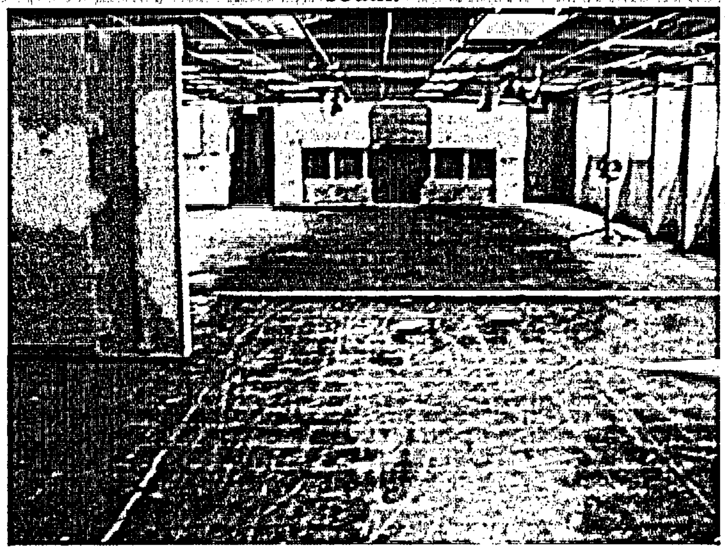


Photo 120: First floor pellet loading office, facing east.

Westinghouse Facility Interior Building [redacted] continued

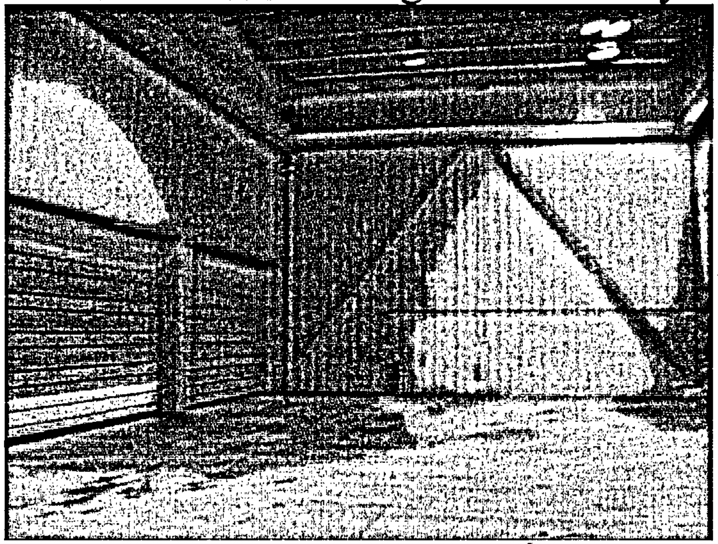


Photo 121: Southeast outer corner of [redacted] facing east.

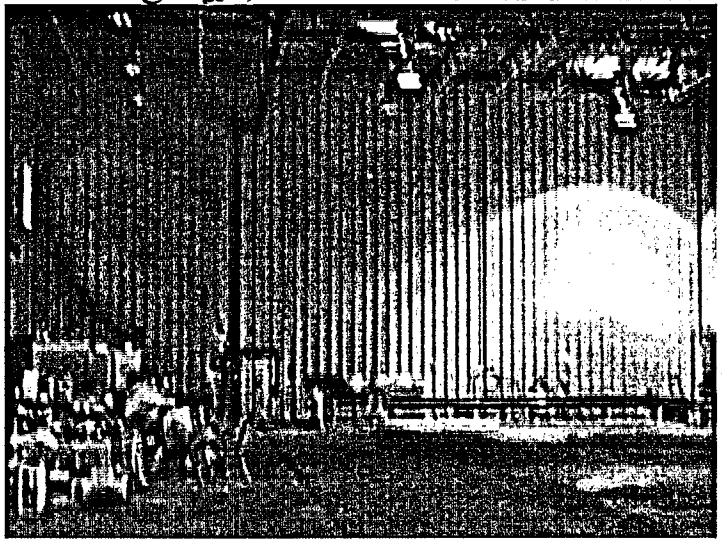


Photo 122: Southern half of east wall, facing south.

Photo 123: Southwest outer corner of [redacted] facing west.

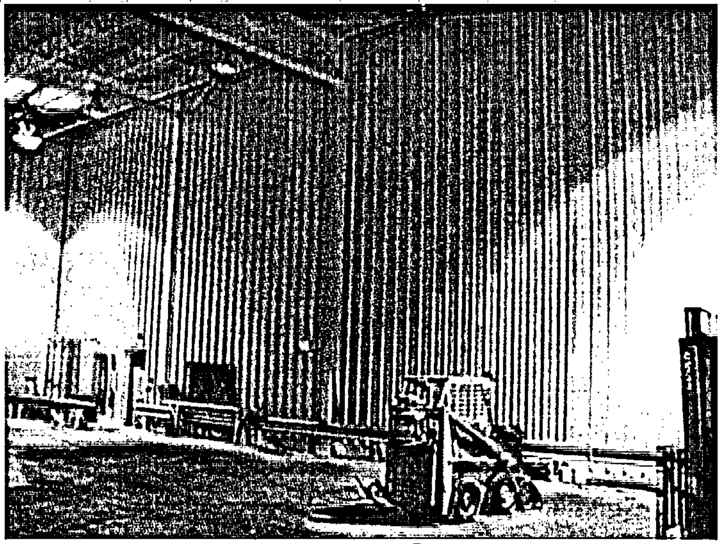


Photo 124: South wall of [redacted] facing southeast.

Westinghouse Facility Interior Building [redacted] continued

Photo 125: East portion of south wall, facing south.

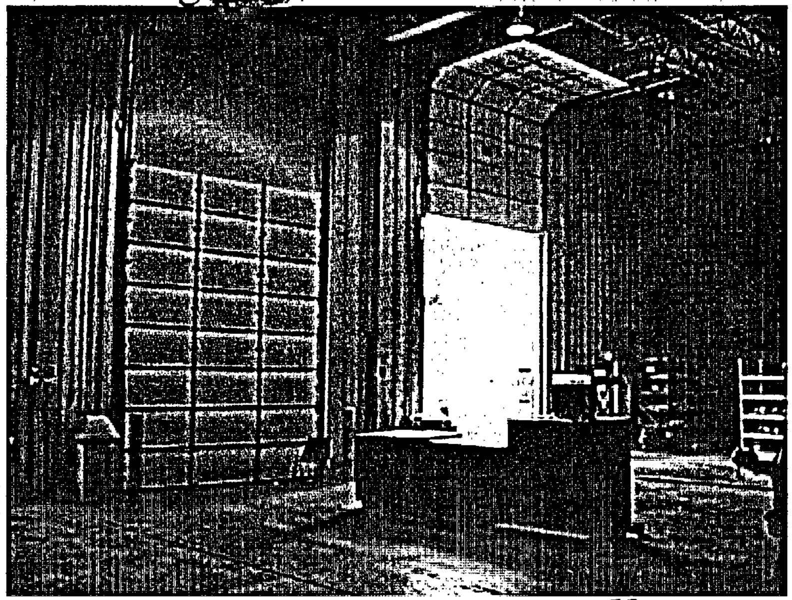


Photo 126: Central portion of south wall of [redacted], facing southwest.

Westinghouse Facility Interior Building [redacted]

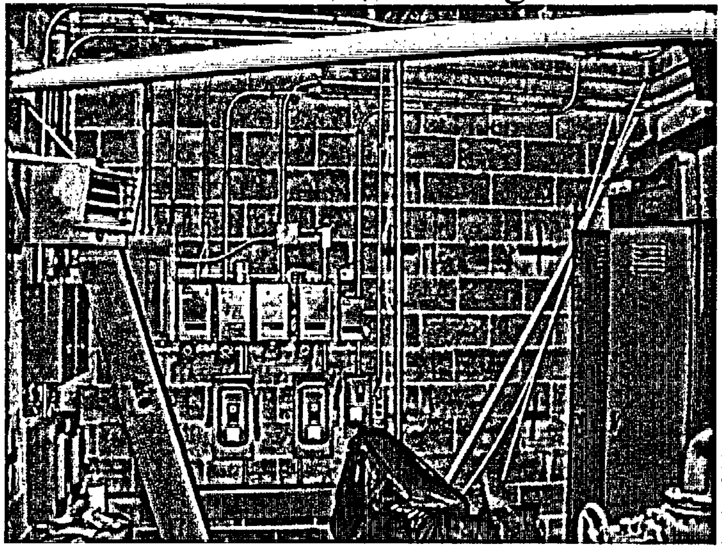


Photo 127: West wall of Pump room, facing west.

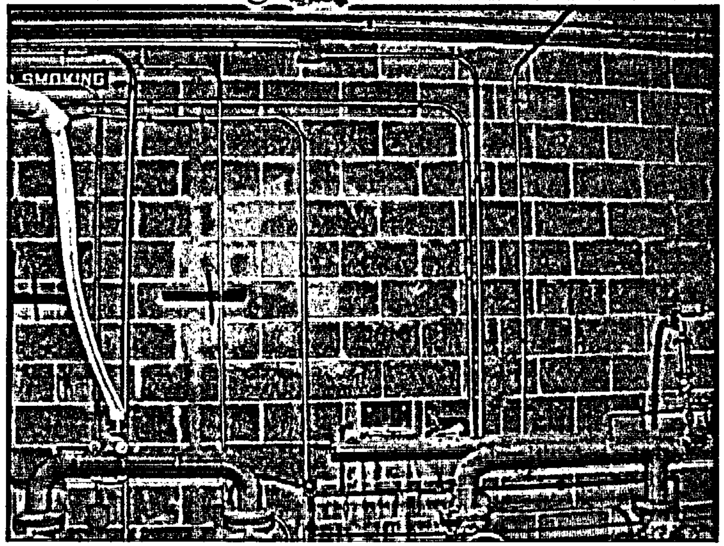


Photo 128: North wall of Pump room, facing north.

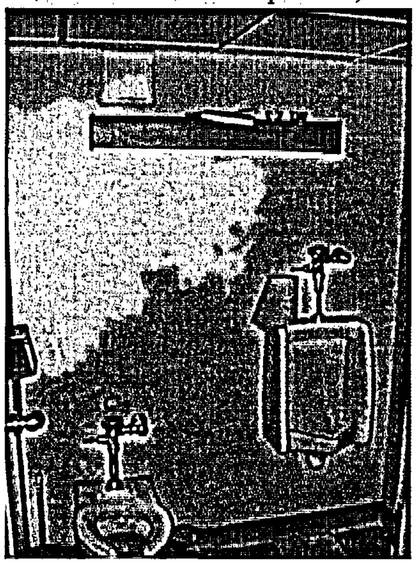


Photo 129: North wall of restroom, facing north.

Photo 130: North wall of locker room, facing north.

Westinghouse Facility Interior Building [redacted] continued

Photo 131: Trash Pile in center of [redacted]

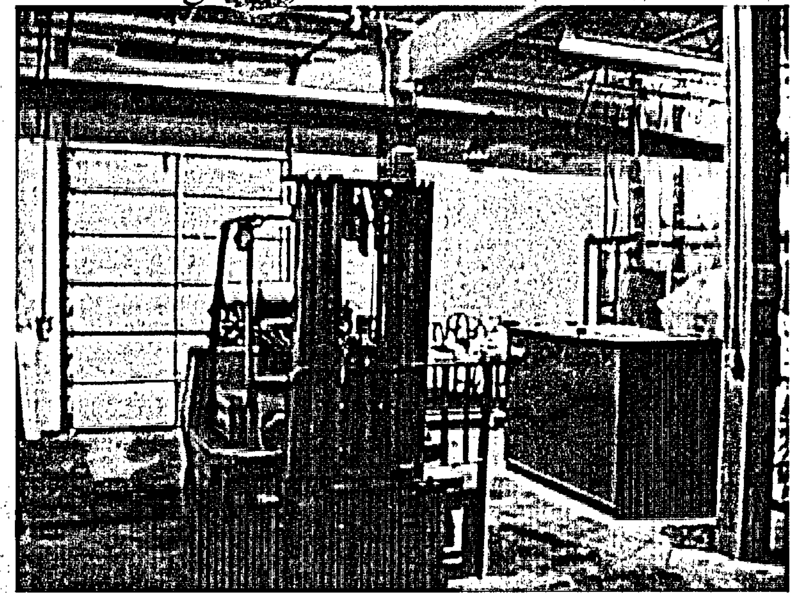


Photo 132: South wall, facing south.

Westinghouse Facility Interior Building [redacted]

Photo 133: Entire inner floor [redacted] facing northeast.

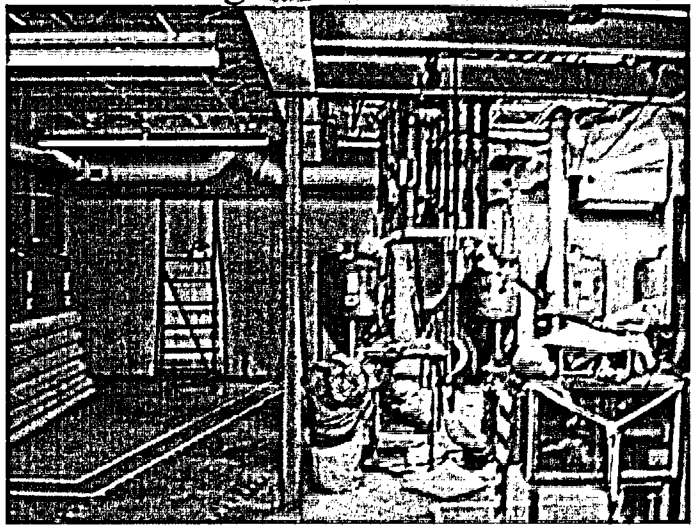


Photo 134: North interior wall, facing north.

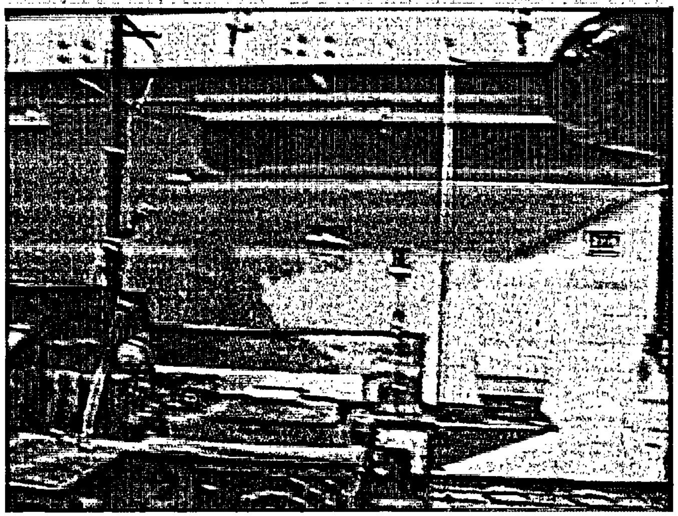


Photo. 135: West wall, facing west.

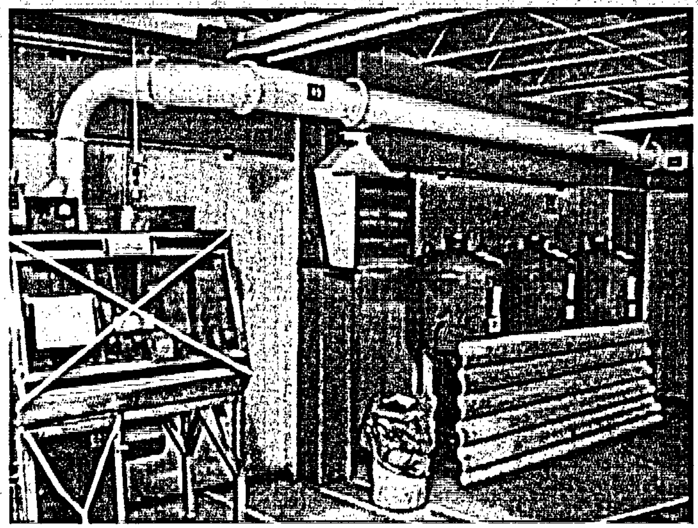


Photo 136: West wall, facing west.

Westinghouse Facility Interior Building [redacted] and [redacted]

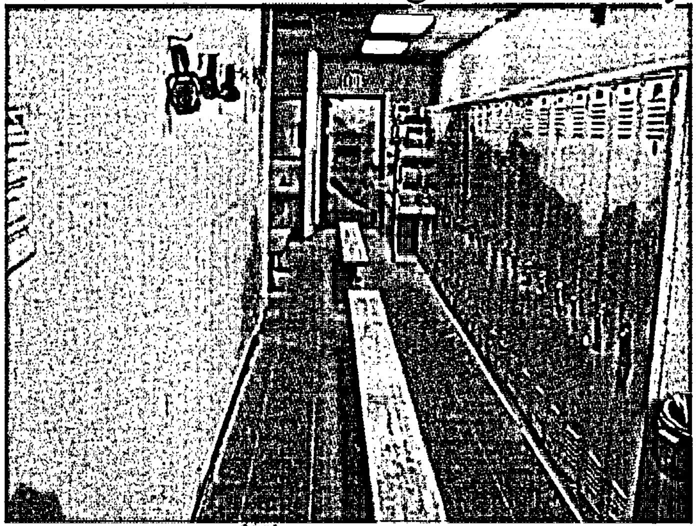


Photo 137: BLD [redacted] Men's locker room, facing west.


Photo 138: BLD [redacted] Men's locker room, facing east.


Photo. 139: BLD [redacted] Hopper storage area, facing west.

Westinghouse Facility Interior Building [redacted] (Offices)

Photo 140: West wall of entry room facing west.

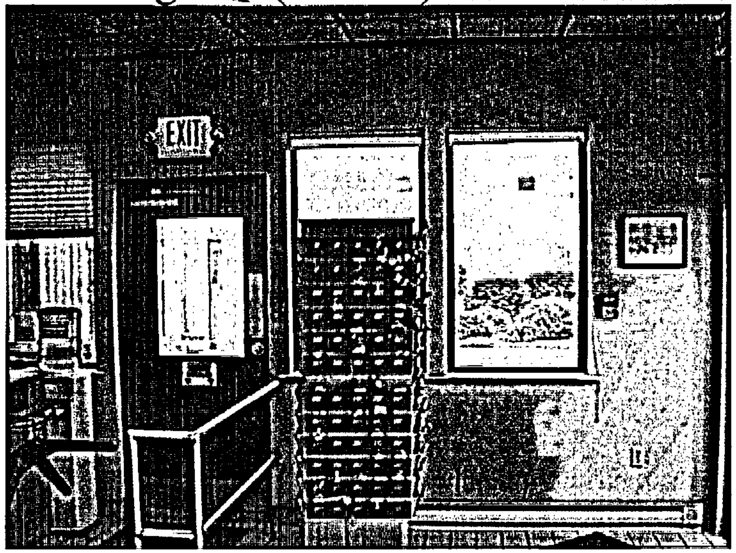


Photo 141: South wall of entry room, facing south.

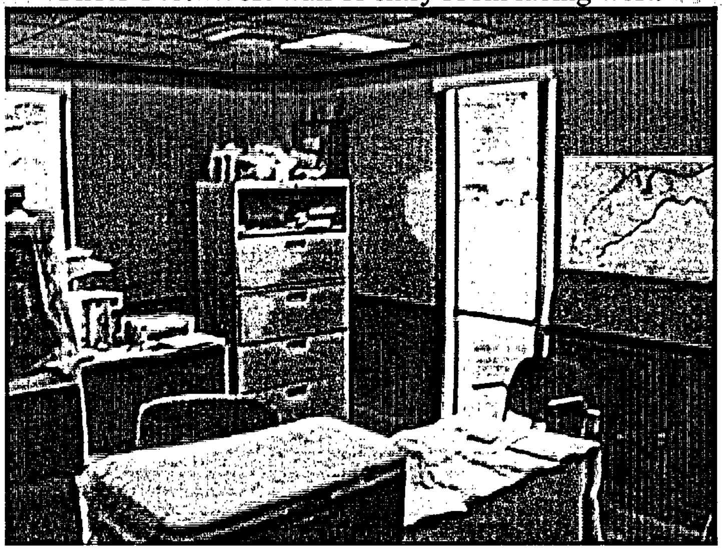


Photo 142: North wall of first office, facing north.

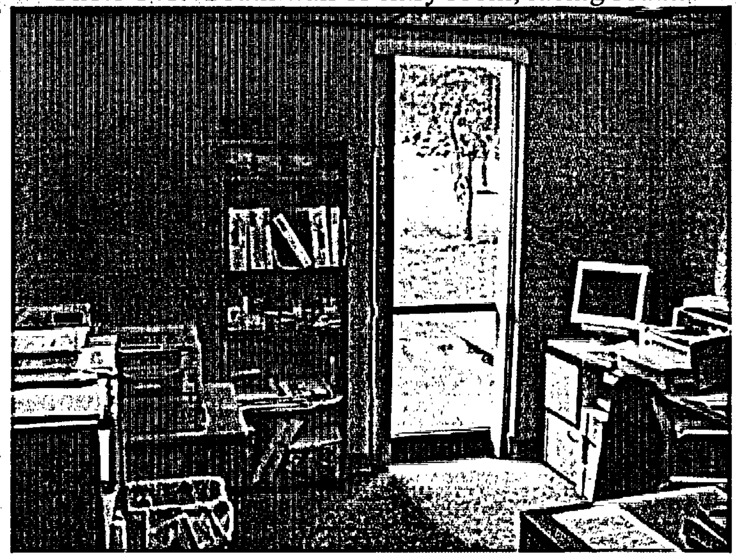


Photo 143: North wall of second office, facing north.

Westinghouse Facility Interior Building [redacted] (Offices), continued

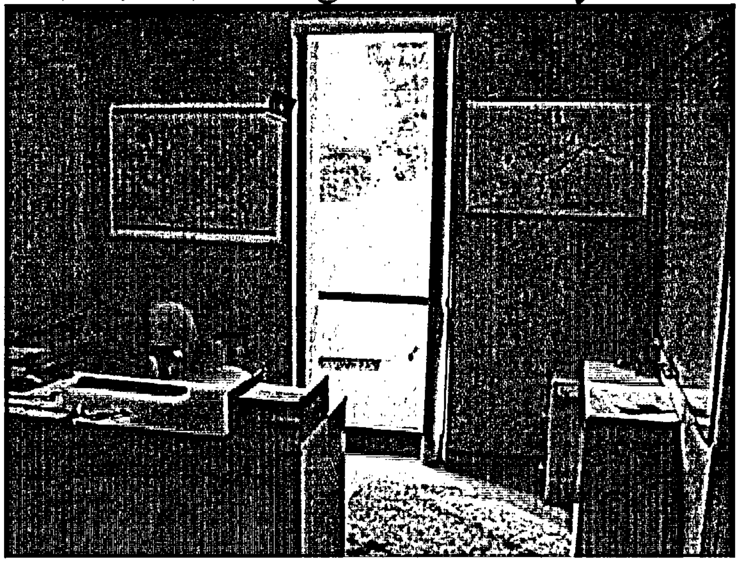


Photo 144: North wall of third office, facing north.

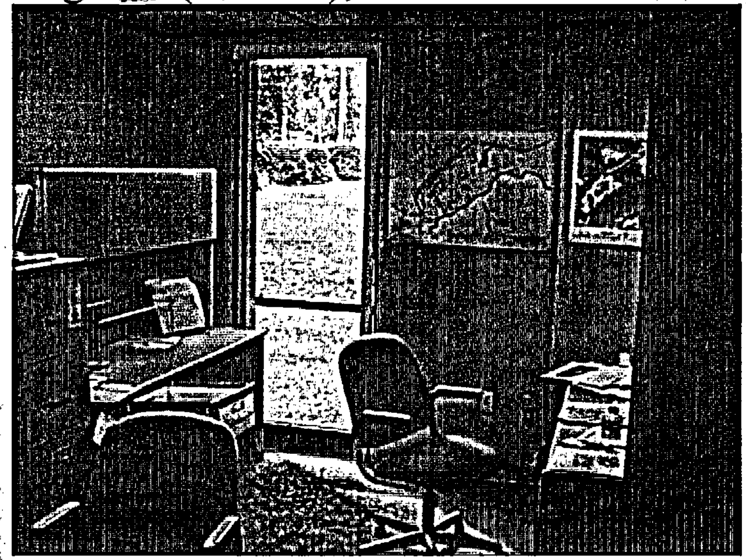


Photo 145: North wall of fifth office, facing north.

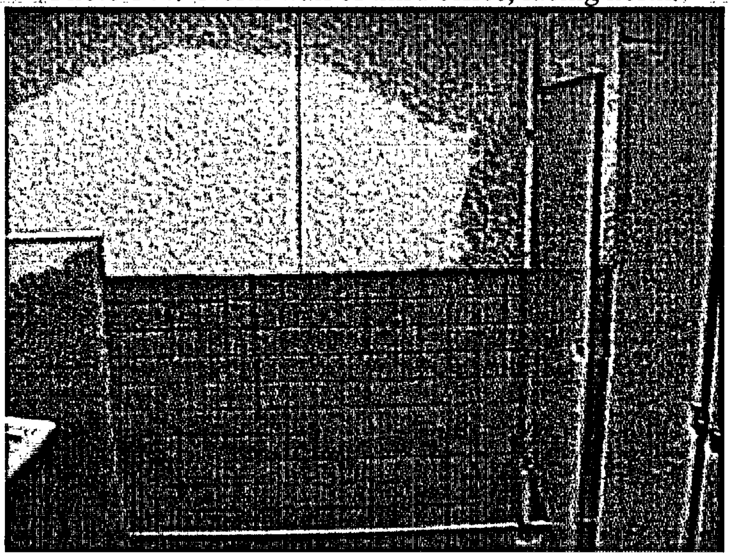


Photo 146: North wall of men's restroom, facing north.

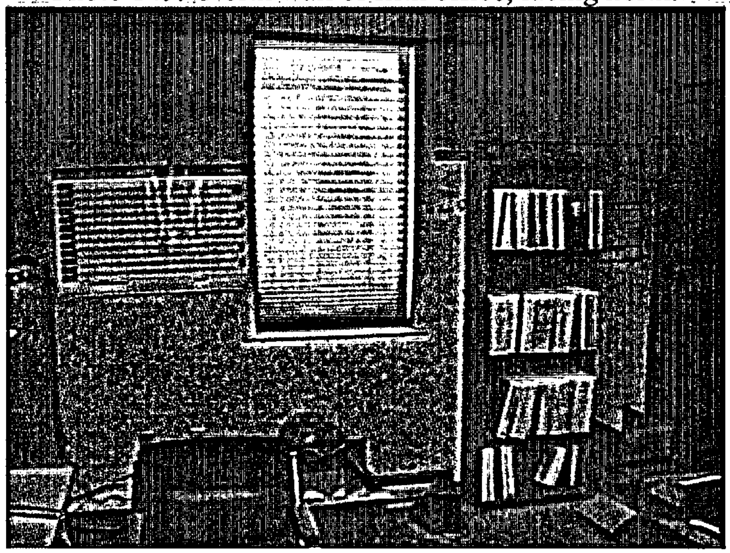


Photo 147: South wall of southwest office, facing south.

Westinghouse Facility Interior Building [redacted]

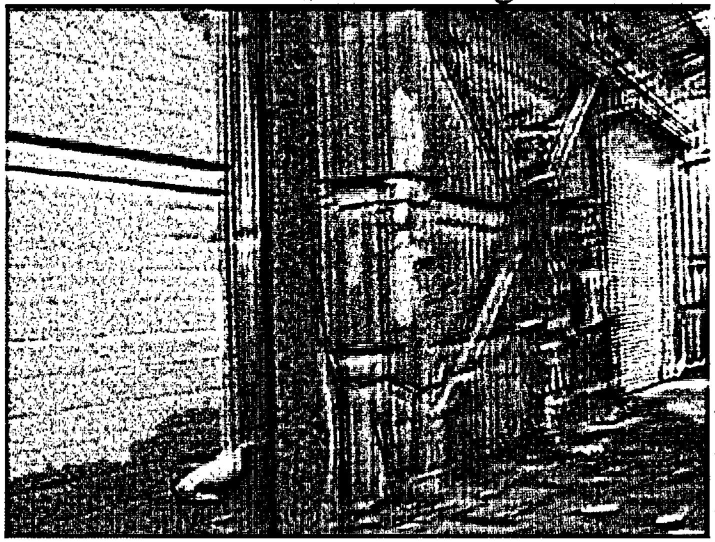


Photo 148: West wall, facing southwest.

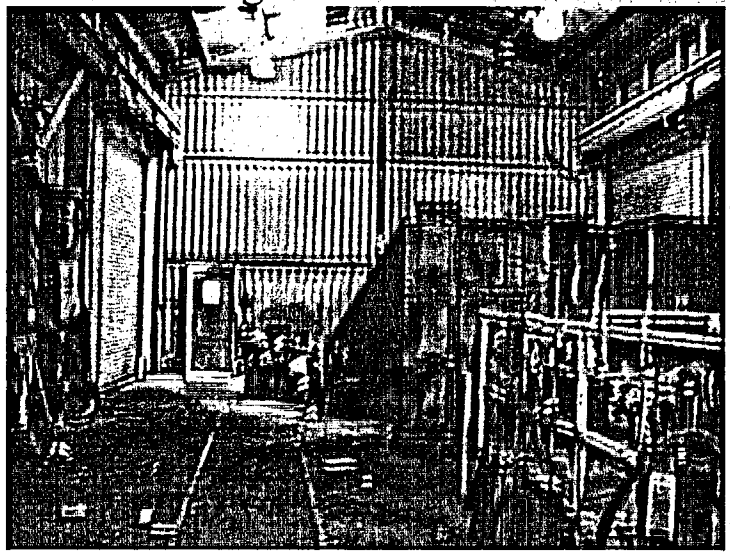


Photo 149: North wall, facing north.

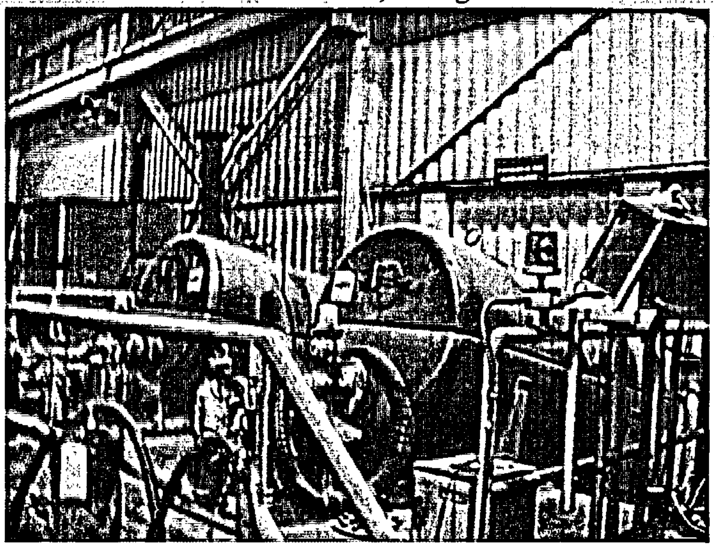


Photo 150: East wall, facing east.

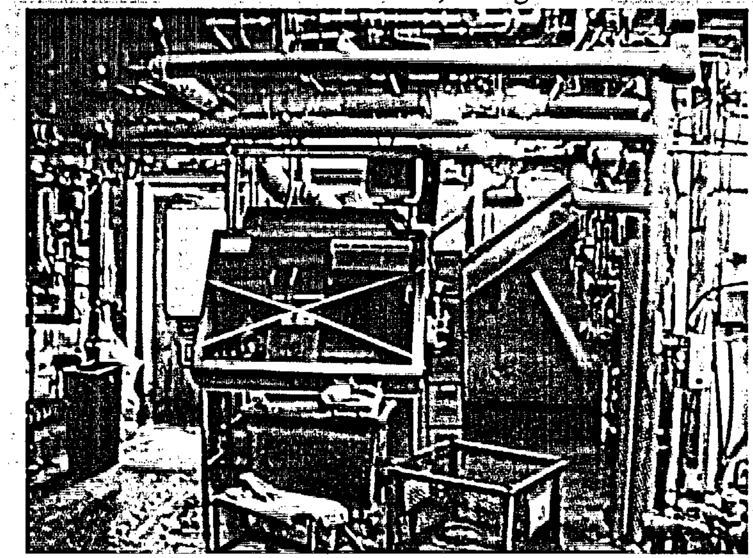


Photo 151: East outer wall, facing east.

Westinghouse Facility Interior Building [redacted], continued

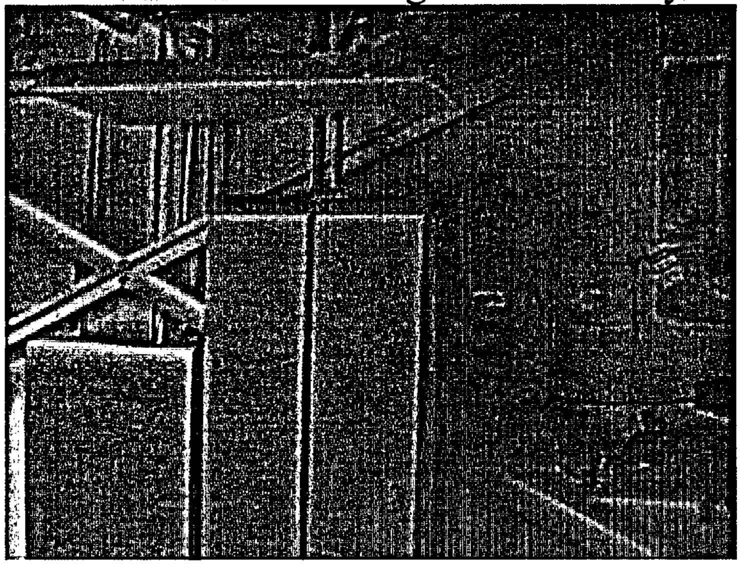


Photo 152: East outer wall, facing east.

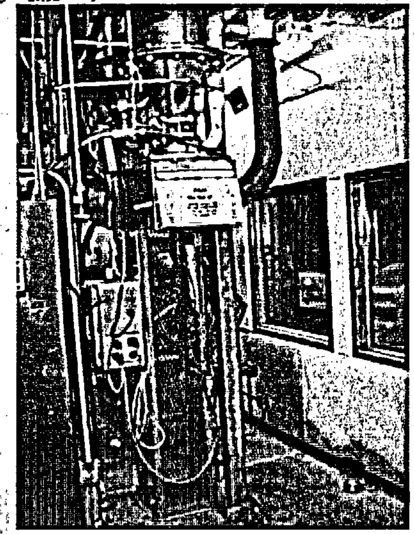


Photo 153: Fume Hood

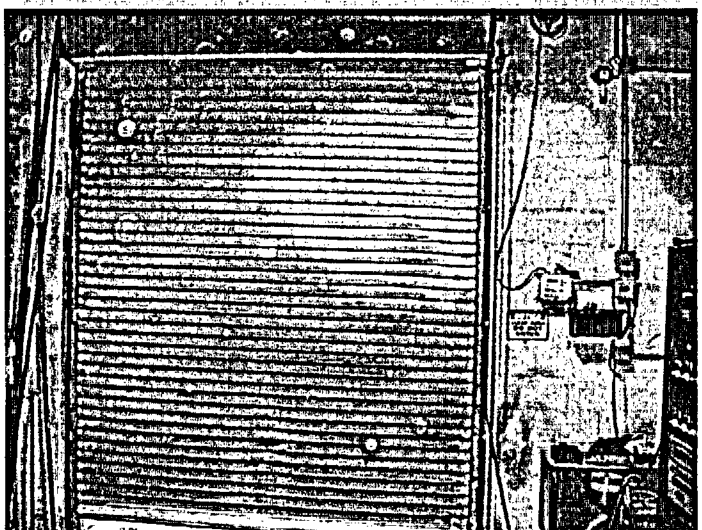


Photo 154: East wall of [redacted] near shredder, facing east.

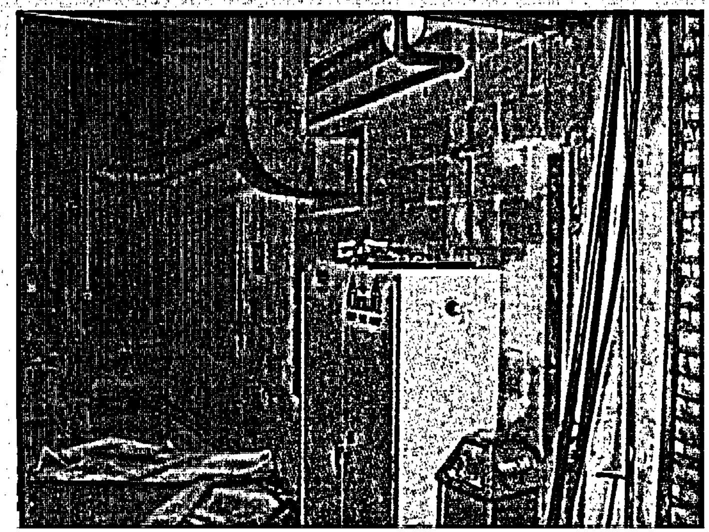


Photo 155: East wall of [redacted] near shredder, facing east.

Westinghouse Facility Interior Building [redacted], continued

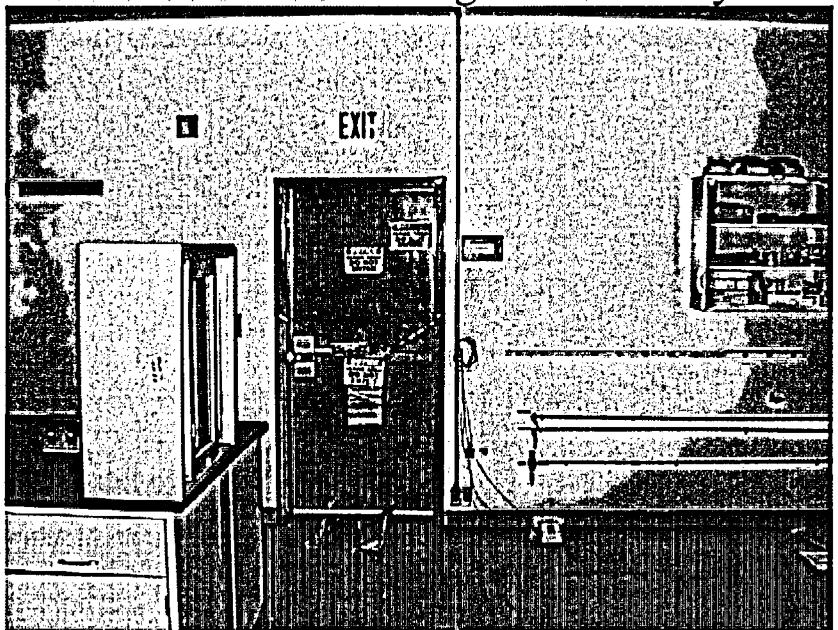


Photo 156: South wall in [redacted] QC lab, facing south.

Westinghouse Facility Interior Building [redacted] and [redacted]

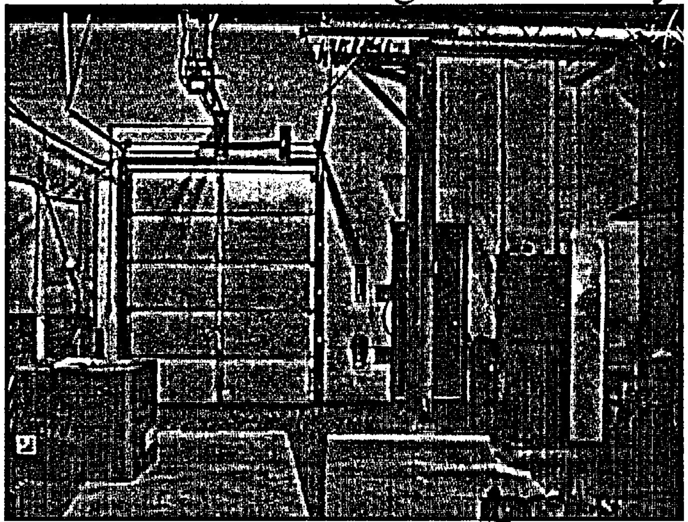


Photo 157: East half of south wall of [redacted] loading area, facing south.

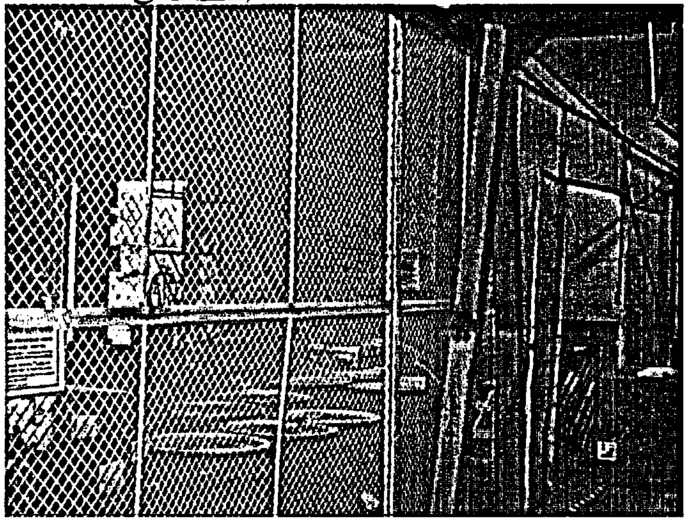


Photo 158: West half of south wall of [redacted] loading area, facing southeast.

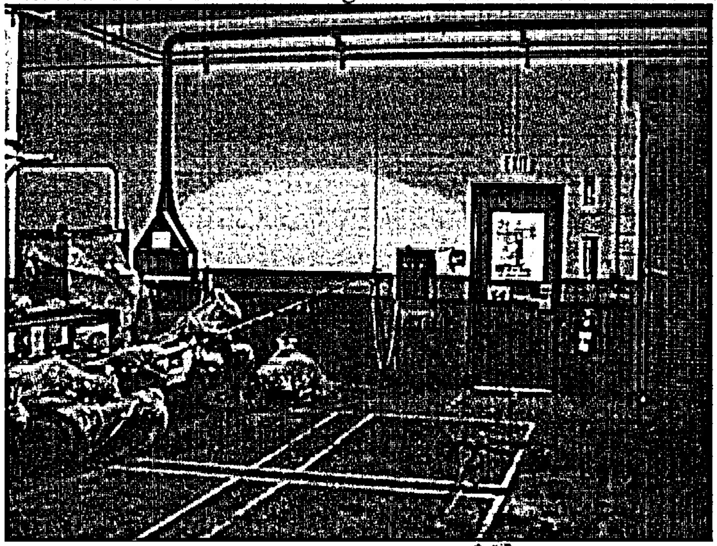


Photo 159: East half of south wall of [redacted] facing south.

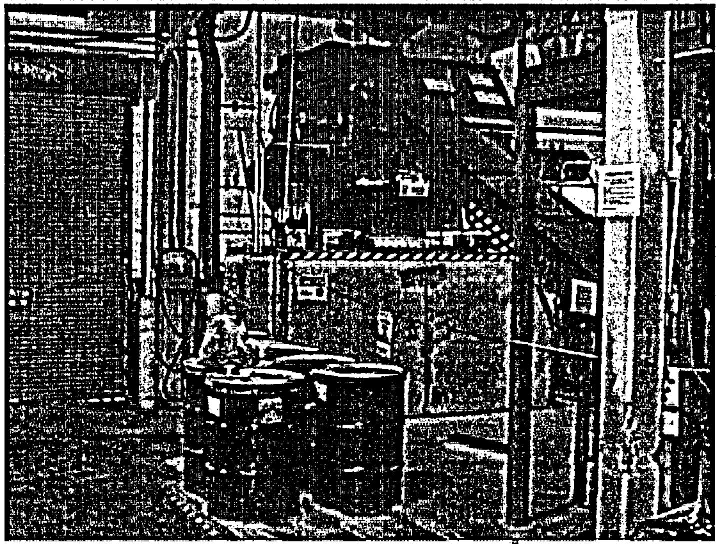


Photo 160: West half of south wall of [redacted], facing south.

Westinghouse Facility Interior HP room

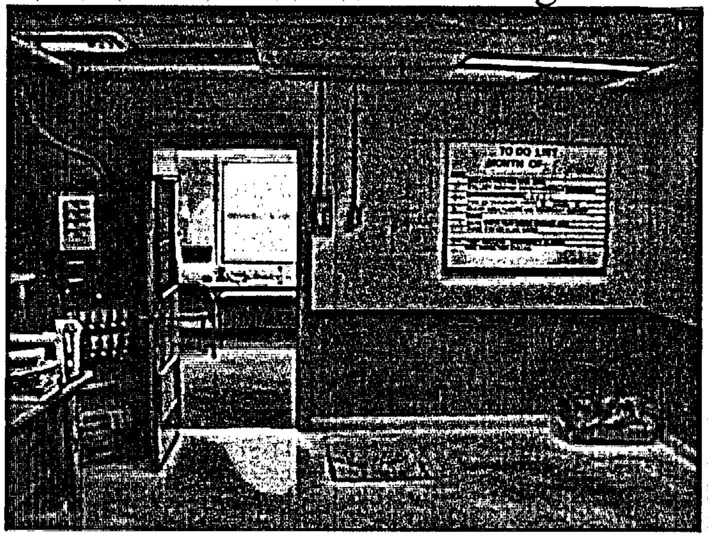


Photo 161: North wall, facing north.

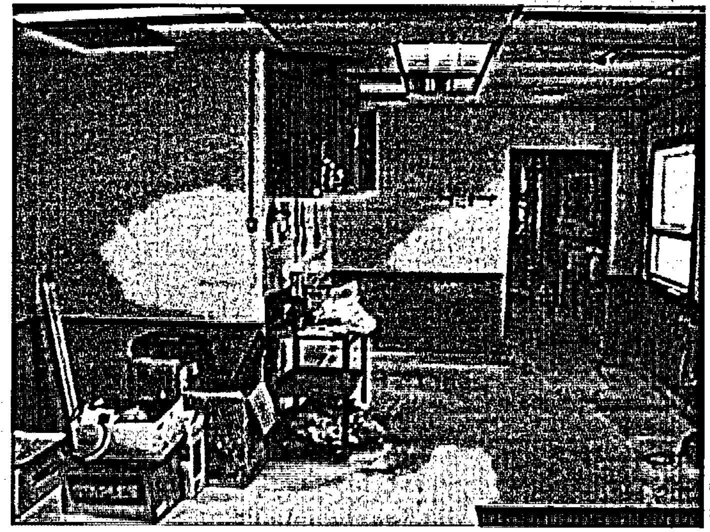


Photo 162: South wall, facing south.

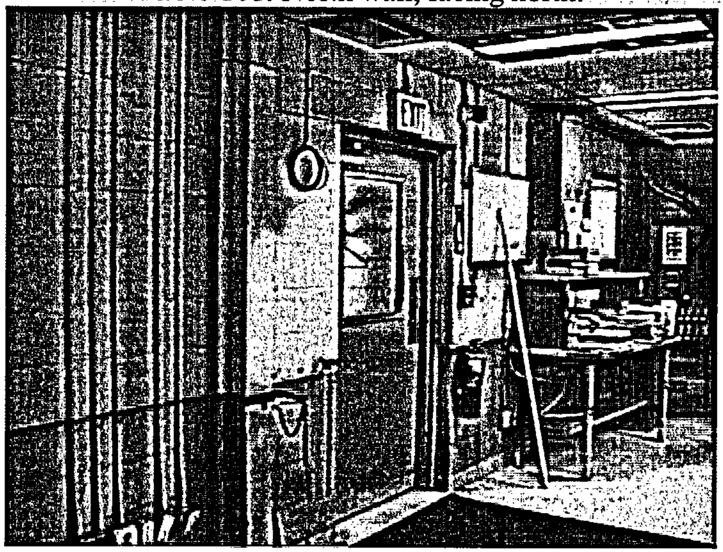


Photo 163: West wall, facing northwest.

164: South part of room, facing south.

Westinghouse Facility Interior Women's Locker Room Storage

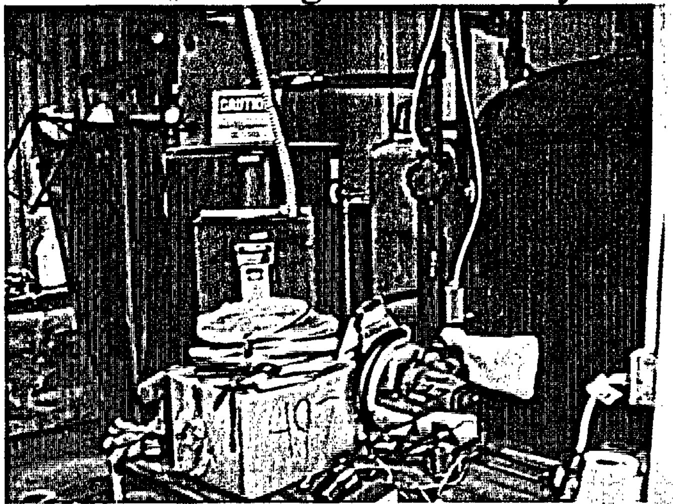


Photo 165: Southwest corner of equipment storage east of locker room, facing southwest.

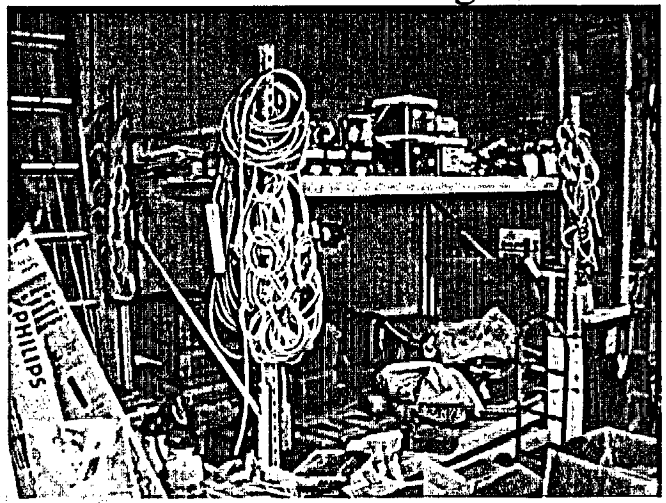


Photo 166: East wall of equipment storage, facing southeast.

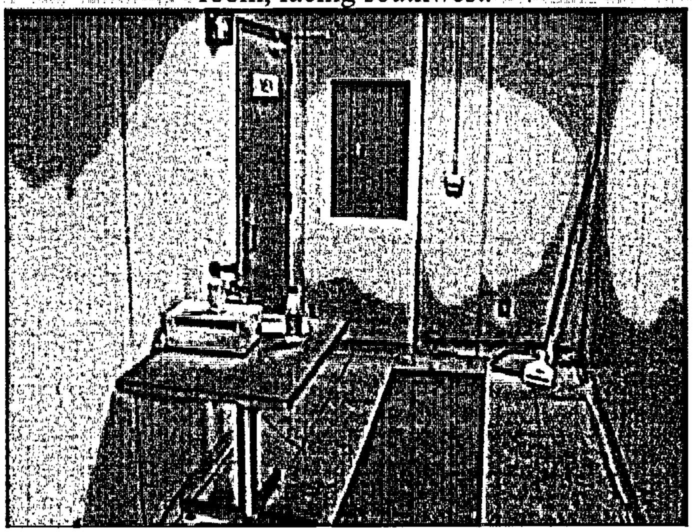


Photo 167: Locker room foyer and entrance to women's locker room, facing south.

Westinghouse Facility Interior Women's locker room

Photo 168: North exterior wall of locker room, facing north.

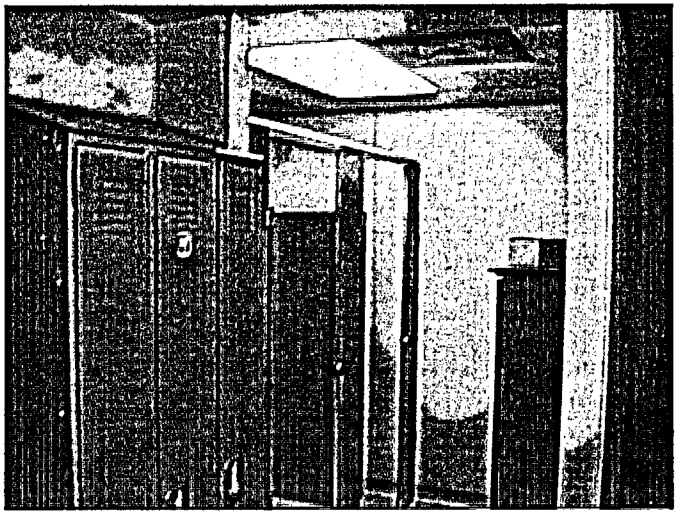
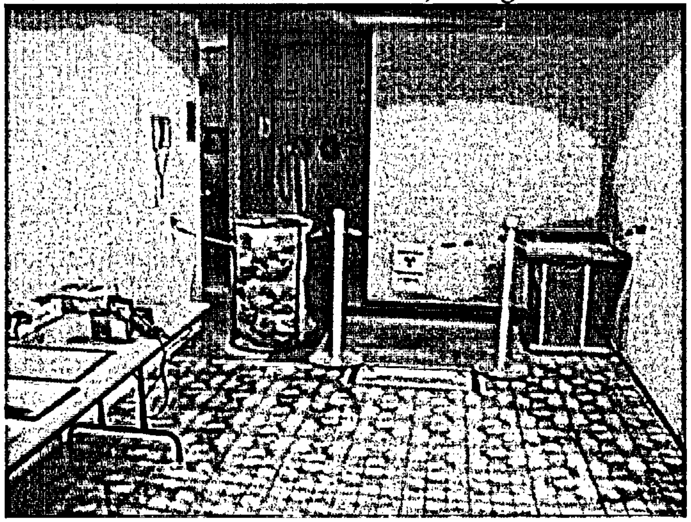


Photo 169: Locker room stalls, facing southeast.

170: Locker Room main area, facing east.



171: Locker Room with Contamination area entrance, facing east.

Westinghouse Facility Interior HVAC Room

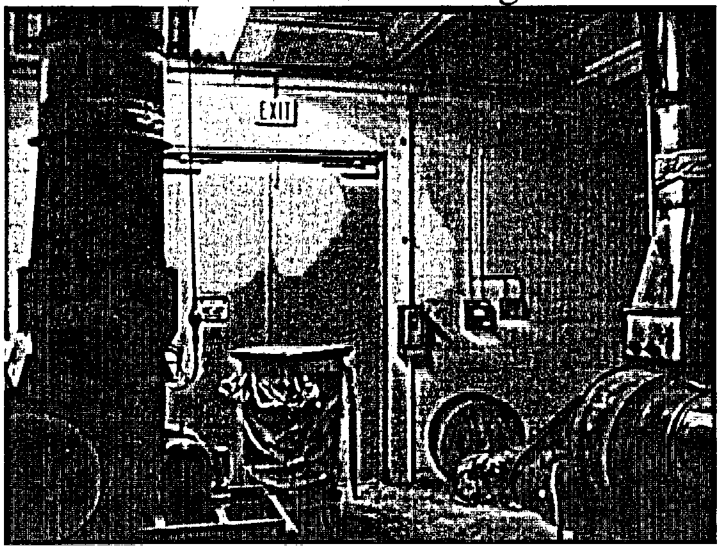


Photo 172: West wall of HVAC room, facing west.


Photo 173: West wall of HVAC room, facing west.

Westinghouse Facility Interior Building [redacted] (Tile Barn)

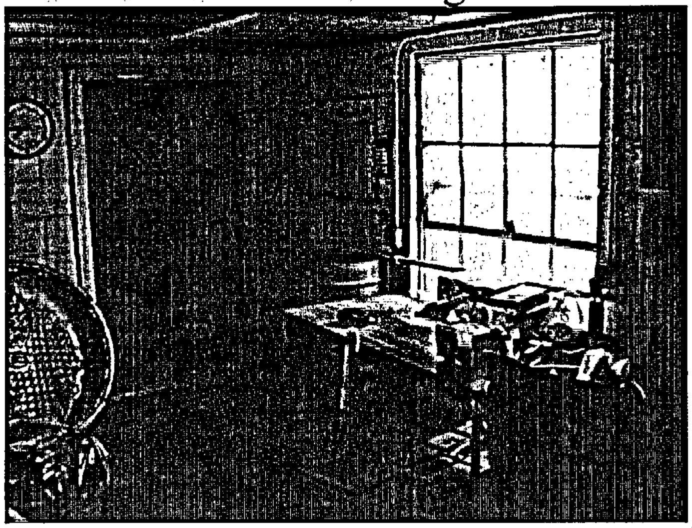


Photo 174: Southeast corner, facing southeast.

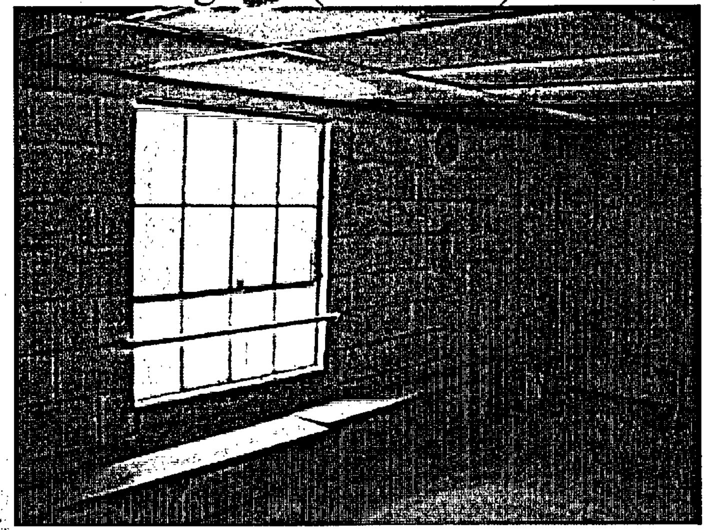


Photo 175: North wall, facing northwest.

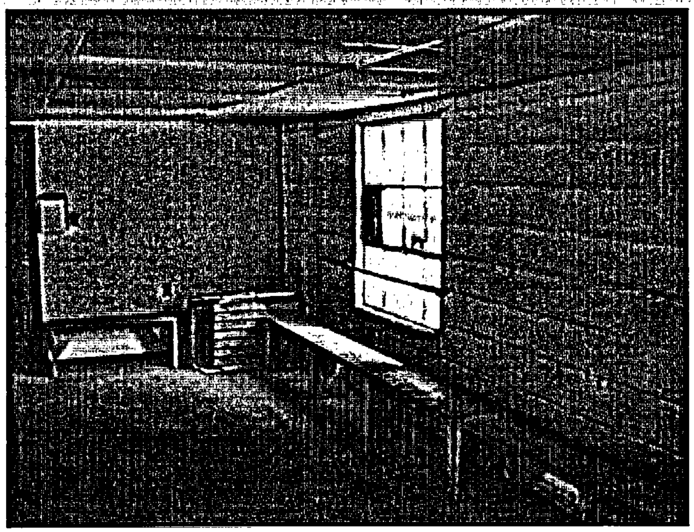
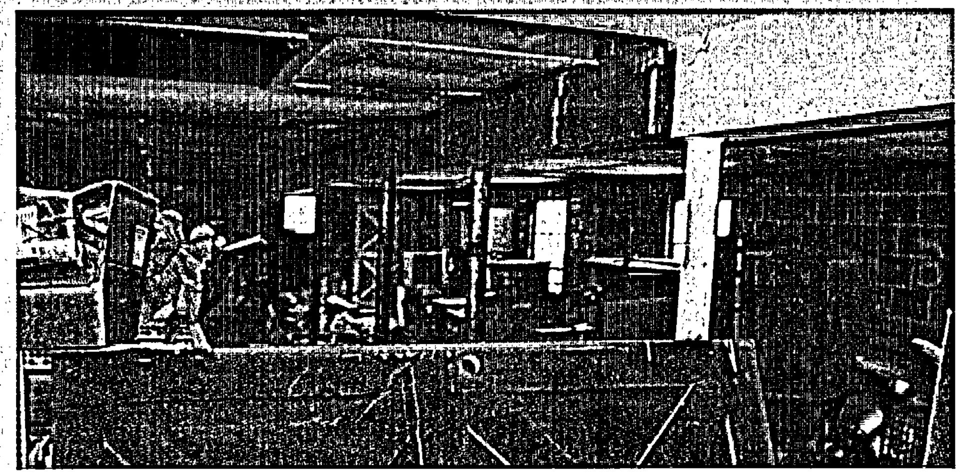


Photo 176: North wall, facing northwest.



178: North wall of storage room, facing west.

Westinghouse Facility Interior Building [redacted] (Tile Barn), continued

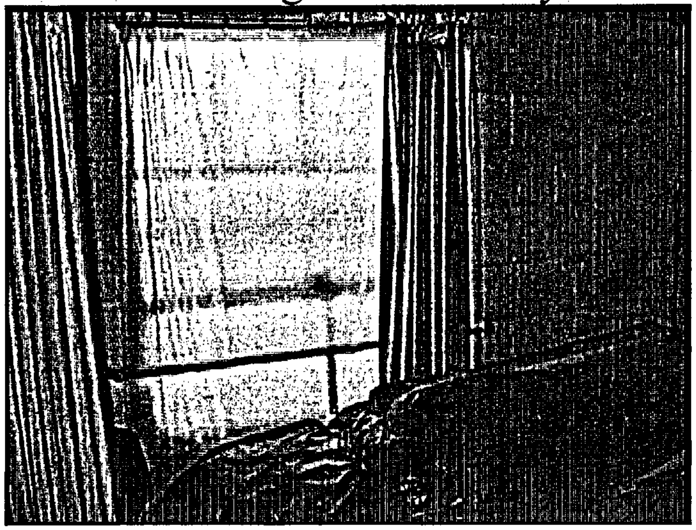


Photo 179: South wall of decon/first aid, facing southwest.

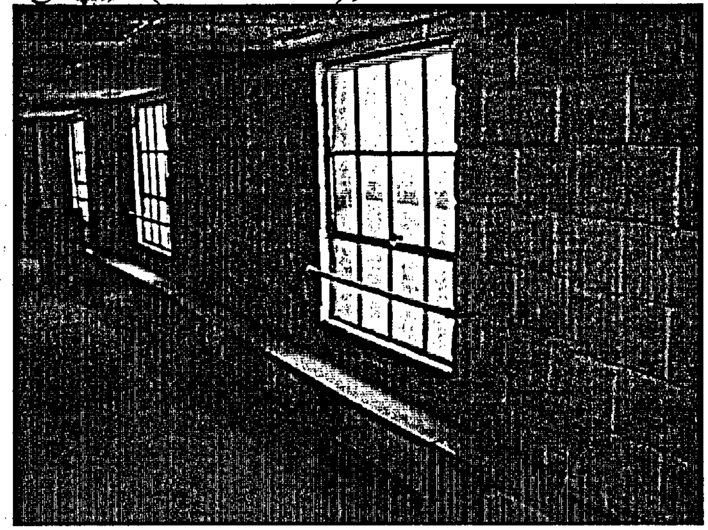


Photo 180: North wall of Clean Assembly Room, facing southwest.

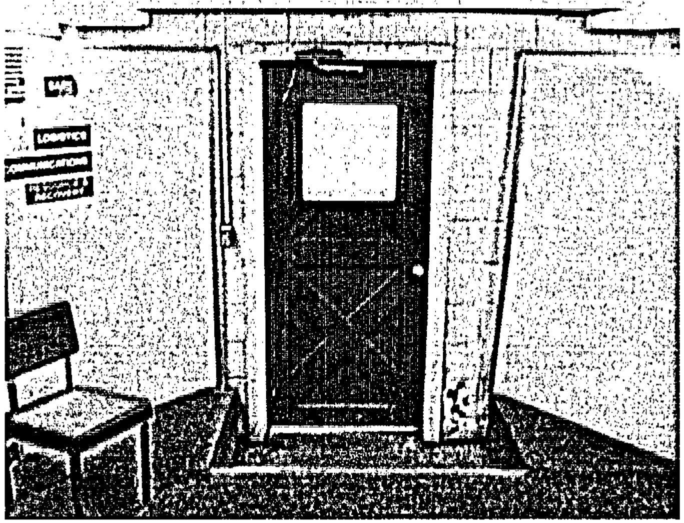


Photo 181: East wall of Emergency response room, facing east

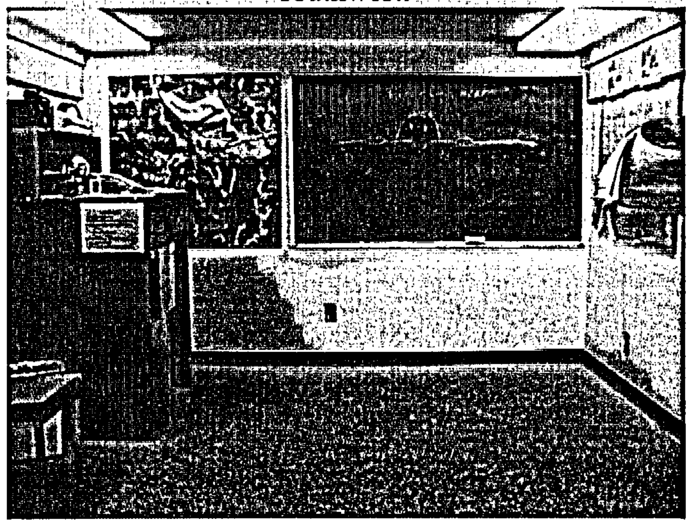


Photo 182: West wall of emergency response room, facing west.

Westinghouse Facility Interior [redacted] (Tile Barn), continued

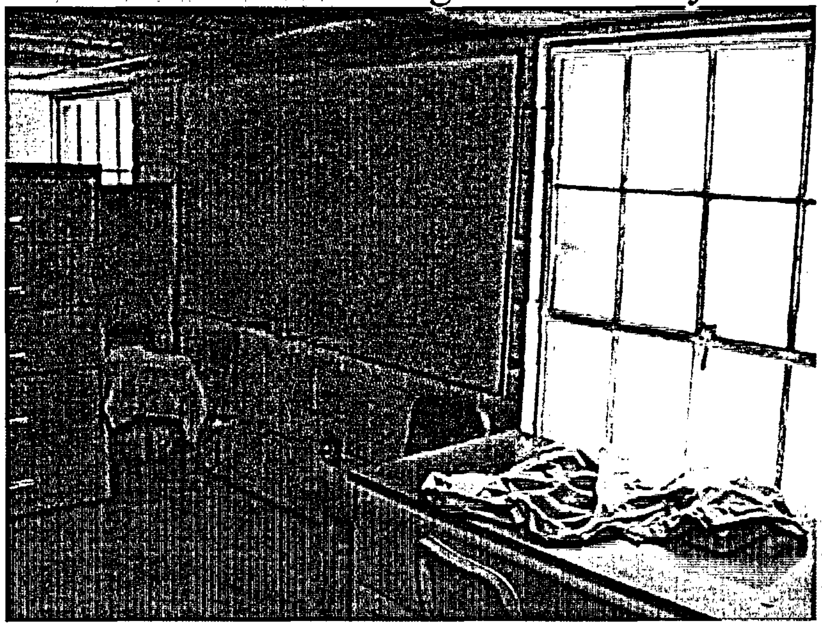


Photo 183: North wall of communications room, facing northeast.

Westinghouse Facility Interior Building [redacted] (Wood Barn)

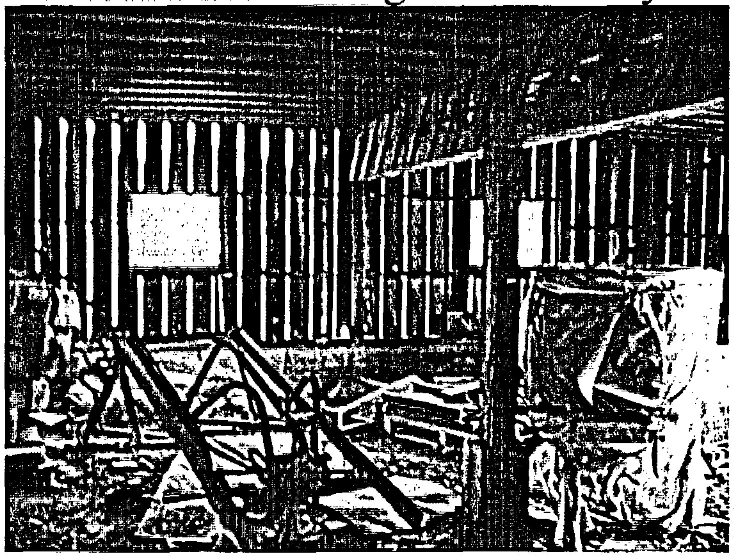


Photo 184: East wall, facing east.

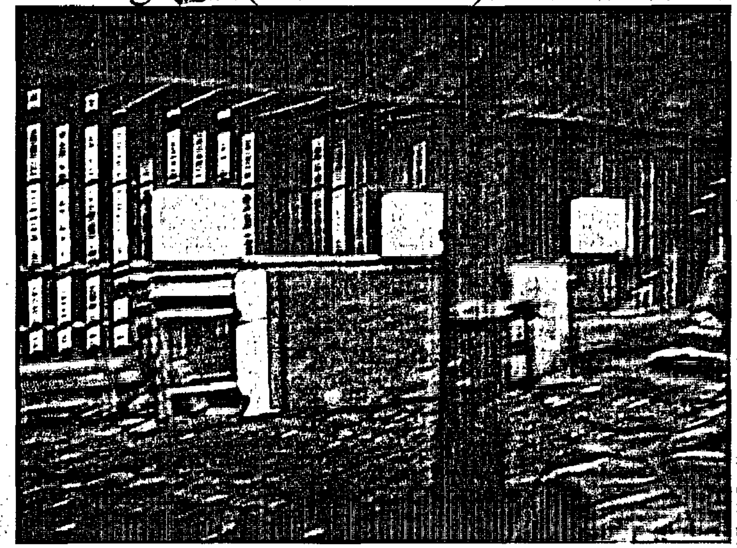


Photo 185: East half of north wall, facing north.

Photo 186: West half of north wall, facing north.

Photo 187: West wall, facing west.

Westinghouse Facility Interior Building [redacted] (Wood Barn), continued

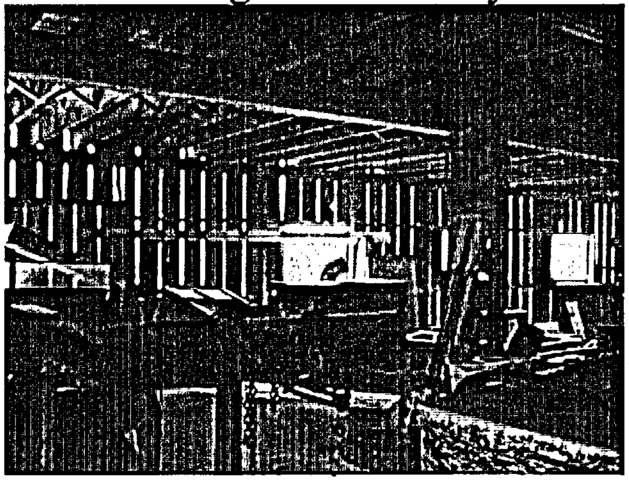


Photo 188: West half of south wall, facing south.

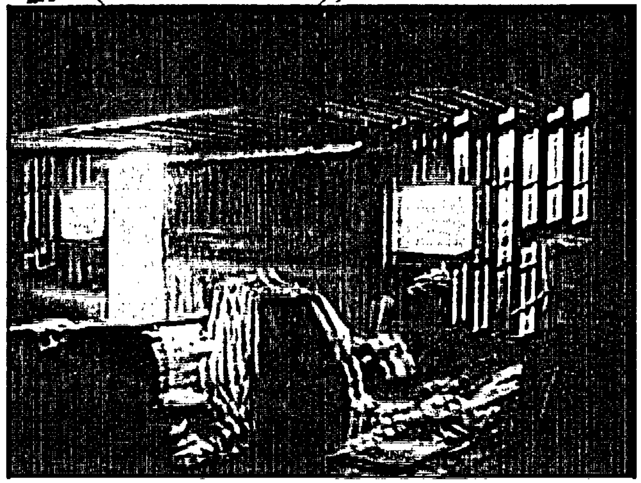


Photo 189: East half of south wall, facing south.

[redacted]