CBS

CBS CORPORATION
11 STANWIX STREET
PITTSBURGH, PENNSYLVANIA 15222-1384

February 10, 2000

Mr. Mark Roberts
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

RE: SURVEY PLAN
FORMER WESTINGHOUSE LAMP MANUFACTURING PLANT
BLOOMFIELD, NEW JERSEY
LICENSE NO. SMB-1527

Dear Mr. Roberts:

As we discussed during your site visit on January 18, 2000, Earth Sciences Consultants, on behalf of CBS Corporation, has prepared a survey plan. The document describes the survey program being implemented during the removal of the impacted storm sewer pipe and Building 7 basement soils. Enclosed is one copy of the plan.

CBS appreciates your continuing efforts to assist us in resolving the remaining issues at the facility. Please call me if you have questions on any aspect of the remediation or survey plan.

Sincerely,

Kenneth J. Bird
Project Engineer/Consultant

pc: Marcy Gallick - Cummings/Riter Consultants, Inc. (w/o enclosures)

L10/rad/blf/bird

Survey Plan

Former Bloomfield Lamp Manufacturing Plant
Bloomfield, New Jersey

CBS Corporation
Pittsburgh, Pennsylvania

Project No. 5275
January 2000

Earth Sciences Consultants, Inc.
Providing Environmental Consulting Services Since 1979

Survey Plan

Former Bloomfield Lamp Manufacturing Plant
Bloomfield, New Jersey

CBS Corporation
Pittsburgh, Pennsylvania

Project No. 5275
January 2000

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Branch Offices
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Table of Contents

Survey Plan
Former Bloomfield Lamp Manufacturing Plant
Bloomfield, New Jersey

1.0 Background

The Bloomfield Lamp Manufacturing Plant in Bloomfield, New Jersey was involved in various activities beginning in the early 1900s involving both thorium and uranium. These resulted in residual radioactive contamination in various portions of the site. Operations ceased in 1986. Since 1989, Westinghouse has been conducting a comprehensive radiological decontamination and decommissioning effort at the site.

After various decontamination and survey activities, Westinghouse determined in December of 1995 that all but three areas of the site met free release criteria. In these three areas, residual radioactivity is present in underground piping and in subsurface soils and bedrock. Remediation is required in these areas. In July 1999, CBS Corporation decided to remediate these areas.

Support surveys will be performed to guide remediation activities. Subsequent to completion of remediation, a final status survey will be performed to demonstrate that radiological conditions in these areas satisfy Nuclear Regulatory Commission (NRC) guidelines and that the area can, therefore, be released for future use without radiological controls. This demonstration will be carried out in accordance with the methodology prescribed in the Manual for Conducting Radiological Surveys in Support of License Termination, NUREG/CR-5849.

2.0 Status Survey Overview

2.1 Survey Objectives

The specific objectives of the survey are to show that:

A. Activity of Soil

1. Average radionuclide concentrations are at or below guideline values (Table 1). Averaging is based on a 100-square-meter (m^2) grid area.

2. Reasonable efforts have been made to identify and remove hot spots that may exceed the average guideline by greater than a factor of $(100/A)^{1/2}$, where A is the area (in m^2) of the hot spot. The residual activity level of any location may not exceed three times the guideline value.

3. After the trench has been filled, exposure rates do not exceed 10 μR/h above background at 1 meter above the surface. Exposure rates are to be averaged over 100-m^2grid areas. Maximum exposure rates over any discrete area of less than 100 m^2 may not exceed 20 μR/h above background.

The above conditions will be demonstrated at a 95 percent confidence level for each survey unit as a whole.

B. Surface Activity of "Clean" Pipe:

1. Average removable surface contamination levels are at or below guideline values.

2. Surface scan of the interior pipe surface (fixed surface contamination) is below the most restrictive (thorium) guideline value or below the sample-specific guideline value calculated from the spectral analysis of a representative sample and the guideline values as follows:

$$GLV_s = 1 / [(A_{Th} / 1000) + (A_U / 5000)]$$

where:

GLV_s = Guideline Value of sample s,
A_{Th} = Activity fraction of thorium (determined from the spectral results of sample s), and
A_U = Activity fraction of uranium (determined from the spectral results of sample s)

C. Surface Activity of Building Structures:

1. Average removable surface contamination levels are at or below guideline values.

2. Surface scan of the building structure surface (fixed surface contamination) is below the most restrictive (thorium) guideline value or below the sample-specific guideline value calculated from the spectral analysis of a representative sample and the guideline values as follows:

$$GLV_s = 1 / [(A_{Th} / 1000) + (A_U / 5000)]$$

where:

GLV_s = Guideline Value of sample s,
A_{Th} = Activity fraction of thorium (determined from the spectral results of sample s), and
A_U = Activity fraction of uranium (determined from the spectral results of sample s)

Small areas of elevated residual activity less than three times the guideline value when averaged over 100 cm^2, are acceptable, if the average level within 1 m^2 is within the guideline value.

3. Exposure rates do not exceed 10 μR/h above background at 1 meter above the surface. Exposure rates are to be averaged over 10-m^2 grid areas. Maximum exposure rates over any discrete area of less than 10 m^2 may not exceed 20 μR/h above background.

2.2 Release Criteria

Radionuclides detected at the Bloomfield site during previous decontamination and decommissioning activities are isotopes of uranium and thorium. NRC-approved criteria for free release for unrestricted use for this site are consistent with values published in the Federal Register Vol. 46, No. 205, "Disposal or Onsite Storage of Thorium or Uranium in Waste from Past Operations," October 23, 1981 and NRC Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," June 1974. The soil activity concentrations for release are 35 pCi/g due to any combination of uranium isotopes and 10 pCi/g of thorium isotopes above background. Soils will be decontaminated or disposed such that the residual level of activity above background is no greater than the given value for uranium and for thorium.

Exposure rates will be reduced to an average of 10 μR/h above background at 1 m above the ground surface in 100 m^2 grid areas. Maximum exposure rates within a grid may not exceed 20 μR/h over any discrete area. For building structure surfaces, discrete areas are limited to 10 m^2.

Table 1: Guideline Values

Guideline	Uranium	Thorium
Average Surface Contamination	5000 dpm α / 100 cm^2	1000 dpm / 100 cm^2
Max Surface Contamination	15000 dpm α / 100 cm^2	3000 dpm / 100 cm^2
Removable Contamination	1000 dpm α / 100 cm^2	200 dpm / 100 cm^2
Soil Activity Concentration	35 pCi/g	10 pCi/g

2.3 Status Survey Design

The status survey design includes the following:

- Group/Separate Areas into Survey Units
- Establish Background
- Establish Reference Grid System
- Select Instrumentation
- Integrated Survey Plan
- Specific Survey Plan

These elements are discussed below.

2.3.1 Survey Units

The site will be subdivided into seven survey units of specified size and shape for which a separate decision will be made as to whether or not that area exceeds the release criteria. The seven survey units have a common history and are naturally distinguishable from other portions of the site. The total number of data points and the spacing of measurement/sampling will be sufficient to result in a statistically sound conclusion regarding that unit. The seven units are as follows. Refer to Drawing Nos. 2 and 6.

- A. Alignment 1 (0.00-550' by 5-10' deep)
- B. Alignment 1 (550'-810' by 3-10' deep) + Alignment 3, (33' by 7' deep)
- C. Alignment 4 (810'-170' by 3-9' deep) + Alignment 7 (24' by 5' deep)
- D. Alignment 6 (15' by 5' deep)
- E. Alignment 2 (110' by 10' deep)

- F. Alignment 5 (55' by 8' deep)
- G. Building 7 Basement Trenches (approx. 384 m^2)

2.3.2 Establish Background

During a preliminary sampling event a composite background sample was taken, surveyed, and analyzed as follows: contact readings for gross γ, γ exposure rate, α count rate, β count rate, uranium and thorium activity concentration by α spectroscopy and by γ spectroscopy. The sample showed uranium and thorium background levels of approximately 20 percent of the guideline values. Based on the preliminary sample results, a set of six background samples will be taken and analyzed by α or γ spectroscopy to establish background values for the purpose of background subtraction from final survey sample results, in accordance with NUREG/CR-5849.

In addition, background α and β count rates will be established for the survey instruments to be used in the final survey of the interior pipe surfaces. A survey of an accessible segment of clean terra-cotta storm drain pipe will be performed for the purpose of establishing a background α count rate due to naturally occurring activity in the terra-cotta pipe. The background rate established will be subtracted from all α surveys of pipe surfaces. The β background count rate will likely be a function of the location of the survey and the time of the survey. Therefore, β background measurements will always be performed immediately prior to performing a β survey of pipe.

2.3.3 Reference Grid Systems

Grids will be established for the purpose of referencing locations of samples and measurements relative to building and other site features so that the same survey point can be relocated. Grids facilitate systematic selection of measuring/sampling locations and provide a convenient means for determining average activity levels. Affected outside areas will be gridded at a maximum of 100 m^2 intervals.

2.3.4 Instrumentation

A list of the instruments to be used for survey activities is provided in Table 2. Use of these field instruments, or acceptable equivalents, and laboratory instrumentation will satisfy the goal of achieving minimum detectable concentrations of less than 25 percent of the release criteria for direct measurements and allowable release criteria for scanning measurements. Minimum detectable activity (MDA) was calculated for direct measurement instruments using the formula from NUREG/CR-5849 for calculating MDA that controls for both Type I and Type II errors (i.e., elimination of false negatives and false positives to the 95 percent confidence level):

$$MDA = [2.71 + 4.65 (B * t)^{1/2}] / (t * E * A/100)$$

where:

B is the background rate in counts per minute (cpm),
t is the counting time in minutes,
E is the detector efficiency in counts per disintegration (cpd), and
A is the active probe area in cm^2.

For scanning instruments, the MDA was also calculated using a formula from NUREG/CR-5849:

$$MDA = (3B)/(E* A/100)$$

where:

B is the background count rate in cpm,
E is the efficiency in cpd, and
A is the active probe area of the detector in cm^2.

In the scanning mode, the audio response must be used to prevent lack of detection of an elevated area due to meter response (analog needle) lag time.

Finally MDA was calculated for ratemeter instruments using a formula from NUREG/CR-5849:

$$MDA = [4.65 (B/(2 * t_c))^{1/2}] / (E * A/100)$$

where

B is the background count rate in cpm,
t_c is the meter time constant in minutes,
E is the detector efficiency in cpd, and
A is the active probe area in cm^2.

Table 2: Instrumentation

Type of Measurement	Instrumentation		Nominal Background	Percent Efficiency	Detection Sensitivity
	Detector	Meter			
γ exposure rate	1" x 1" NaI scintillator, connected	Ludlum Model 19 μR	7 μR	2	2 μR/hr
β/γ surface activity (frisking)	GM Tube, Ludlum Model 44-9, A = 12 cm^2	Ludlum Model 3	40 cpm	10.9	2430 β dpm/100 cm^2 *
γ surface scanning	2" x 2" NaI scintillator, Ludlum Model 44-10	Ludlum Model 2221 Scaler	1500 cpm	7	1.5 μR/hr
α, β removable activity on smears	ZnS(Ag) scintillator, Ludlum Model 43-10-1, A = 20.3 cm^2	Ludlum Model 2929 Alpha Beta Scaler	3 cpm (α) 100 cpm (β)	23.4 20.8	40 dpm/100 cm^2 250 dpm/100 cm^2
α surface activity (frisking and contact readings)	ZnS(Ag) scintillator, Ludlum Model 43-5, A = 50 cm^2	Ludlum Model 2221 Scaler	3 cpm	8.7	200 dpm/100 cm^2
α, β surface activity scan	Gas proportional, Ludlum Model 43-68, A = 100 cm^2	Ludlum Model 2224 Scaler/Ratemeter	3 cpm (α) 90 cpm (β)	12.2 (α) 21 (β)	90 (α), 1300 (β)** dpm/100 cm^2
β/γ, and β contact readings	GM Tube, Ludlum Model 44-38	Eberline Model E-520			***

*Since thorium has a release limit of 1000 dpm/100 cm^2, the 44-9 probe will not be used for free releasing equipment affected by thorium. Instead the 43-68 will be used in the scaler mode after checking for elevated readings in the scanning mode.

**To meet the release criteria for thorium, all areas will be scanned first for α, then scaled on the β channel in elevated areas.

*** The Eberline E-520 survey meter will not be used for finalization readings, which would require much lower measurements. It will be utilized for transportation and disposal surveys.

2.3.5 Integrated Survey Design

The integrated survey will combine scanning with soil sampling by α or γ spectroscopy. Scanning will be used to guide removal operations. Soil sampling will occur when remediation is believed to be complete. Fifteen preliminary samples were taken on site for the purpose of establishing the relationship between survey instrumentation readings (used to guide remediation and determine the point of final survey) and analytical results (used to determine if acceptance criteria has been met). Each sample point had contact readings for gross γ, γ exposure rate, α count rate and β count rate. Each sample was then analyzed for uranium and thorium by α spectroscopy and γ spectroscopy. A composite background sample was also surveyed and analyzed. Survey instrumentation threshold values were determined for clean soil (< threshold values) and for contaminated soil (> threshold values). These values will be used to guide remediation and to bias samples taken for final survey analysis. The results of the analytical analyses also establish the validity of using γ spectroscopy. results for final acceptance, in lieu of α spectroscopy.

2.3.5.1 Surface Scans

One hundred percent of the affected area soil surfaces will be scanned for γ radiation to identify locations of elevated residual surface and near-surface activity. Scanning speed will be no greater than 0.5 meter per second. Any areas of elevated activity detected will be removed and disposed with other contaminated materials until the area meets the requirements when scanned.

Soil removed during excavation for installation of new pipe and overburden of old pipe will be scanned. Equipment used will be scanned before release.

2.3.5.2 Surface Activity Measurements

2.3.5.2.1 Direct Measurements

Direct measurements of α, β, and/or β/γ surface activity will be performed at the boundaries where pipe removal is complete using instrumentation listed in Table 2. Direct surface activity measurements will provide confirmation that all contaminated pipe has been removed.

2.3.5.2.2 Removable Contamination Measurements

Smears for removable contamination will be performed at each direct measurement location, both inside and outside uncontaminated pipes.

2.3.5.3 Exposure Rate Measurements

γ exposure rate measurements will be taken at 1 meter above the soil surfaces. At least four measurements per 100-m^2 grid block soil and per 10-m^2 grid block structure surface will be uniformly spaced across the affected area.

2.3.5.4 Soil Sampling

Soil samples will be collected and transported to an off-site commercial laboratory, e.g., Paragon Analytics, for isotopic analysis for total uranium (U-234, U-235, and U-238) and for total thorium (Th-228, Th-230 and Th-232). Department of Energy-approved analytical methods LANLER290 and LANLER200 will be used for isotopic analysis of uranium and thorium, respectively. Turnaround time for analytical results will be 3 or 7 days depending on the time constraints of the remediation contractor.

2.3.5.4.1 Pipe Survey Units

Soil samples will be taken every 5 meters, below the pipe, biased toward joints or areas of obvious leakage. It is currently planned to analyze 20 percent of samples by α spectroscopy and 80 percent by γ spectroscopy. After the results of the initial samples are available (Section 2.3.5), the subsequent sampling frequency may be modified.

2.3.5.4.2 Building 7 Basement Trenches Survey Unit

Soil samples will be taken from the base and the walls of the trenches. At least 30 data locations will be sampled from the affected area. Sampling locations will be distributed evenly throughout the trench area, biased toward areas where hot spots may have been removed.

2.3.5.5 Special Sampling

Samples of the pipe interior will be obtained by scraping the inside of pipe and collecting the filings. The samples will be sent out for α spectroscopy or γ spectroscopy analysis to determine the relative activities of the uranium and thorium isotopes.

2.3.6 Specific Survey Plan

2.3.6.1 Survey Unit G, Building 7 Basement Trenches

A 10-meter-by-10-meter grid, including trench walls, will be established with at least 4 sampling points per grid (at least 30 sampling points total). Perform the following:

- γ scan 100 percent of the surface of the trenches including the walls.
- Exposure rate measurement at 1 meter above each sample point, before and after backfill.
- α/β contact reading at each sample point, conditions permitting (optional).
- Surface soil sample at each sample point, 6 inches deep. Ten percent of the samples will be sent out for α spectroscopy and 90 percent for γ spectroscopy.

2.3.6.2 Survey Units A - F, Trenches with Pipe

Sample points at areas that indicate leakage and at least every 5 meters of pipe length. Perform the following:

- γ scan the length of the pipe trench at the soil surface.
- Exposure rate measurement at 1 meter above each sample point, before and after backfill.
- α/β contact reading at each sample point, conditions permitting (optional).
- Surface soil sample at each sample point, directly below pipe at pipe centerline, 6 inches deep. For each sample point indicated by leakage, analyze by α spectroscopy or γ spectroscopy for uranium and thorium and take additional samples for chemical analysis. Otherwise, analyze soil samples by α or γ spectroscopy.
- γ scan "clean" soil excavated from above pipes.

2.3.6.3 Survey "Clean" Pipe Ends

Direct measurements of α, β, and/or β/γ surface activity will be performed at the boundaries where pipe removal is completed. Direct surface activity measurements will provide confirmation that all contaminated pipe has been removed. Smears for removable contamination will be performed at each direct measurement location, both inside and outside uncontaminated pipes. Perform the following:

- α scan the "clean" pipe end.
- α fixed duration contact reading at the "clean" pipe end.
- β scan the "clean" pipe end.
- β fixed duration reading at "clean" pipe end.
- Removable contamination smear at the "clean" pipe end, analyze smear for gross α/β.

- Surface soil sample at the "clean" pipe end below centerline of pipe, 6 inches deep. α or γ spectroscopy for uranium and thorium.

- Scrape interior of "clean" pipe (sediment or scale) when required to calculate sample specific guideline value. Analyze by α or γ spectroscopy.

2.3.6.4 Transportation Survey

Perform the following:

- γ contact reading and at 1-meter reading of each package to be transported off site.

- Removable contamination smear of each package, analyzed for gross α/β.

- γ exposure rate readings on vehicle surface, 2 meters from vehicle surface and all normally occupied spaces in vehicle.

- Prepare manifest including physical description, volume, radionuclides, calculation of curie content, and principle chemical form of each shipment.

- Prepare notice of shipment 5 days prior to shipment.

2.3.6.5 Final Scan

- γ scan 100 percent of each affected survey unit, A through G, at soil surface after backfilling and compaction.

- γ exposure rate reading at 1 meter above soil surface.

2.4 Quality Assurance/Quality Control

A qualified laboratory, e.g., Paragon Analytics, will be utilized for quality assurance (QA) of all swipes and for analysis of all soil samples. Laboratory procedures and instrumentation will be subject to QA/quality control (QC) procedures for the laboratory. Standard sources of appropriate energies will be used in instrument checks.

An approved health physics services organization will calibrate all portable instruments using appropriate NIST traceable sources based upon the radiation range of the nuclides of concern. Before being used in the field, the instruments will be checked against standard sources as an operational check. Field instruments will be calibrated semiannually and following maintenance which could affect calibration. Ten percent of all samples analyzed will be duplicates or blanks, with twice as many duplicates as blanks. Blanks will be evaluated against background results and duplicates will be compared to each other.

The survey data will be verified to assure that the measurements were performed in accordance with the criteria specified. The data will be validated to ensure that the results support the objectives of the survey or permit a determination that these objectives should be modified. Among the items for review are:

- use of calibrated instrumentation;
- instrument performance documentation;
- performance of required scanning density;
- survey documentation completeness;
- number and location of survey measurements;
- performance by trained personnel; and
- number and distribution of QC measurements.

Data obtained from the survey will be accepted or rejected based on the data verification and validation review. Data validation and verification will be documented and included in the final status survey report.

2.5 Training of Survey Staff

Survey staff will be trained on equipment, special techniques, and practices relative to the survey activities. All members of the final status survey team will attend an in-house training session prior to commencement of work on the survey. All survey procedures and QA/QC requirements will be reviewed during this session. Documentation of training participation and qualification test results will be maintained.

2.6 Laboratory Services

Samples of soil and other special samples requiring isotopic analyses and/or γ spectroscopy will be sent to the contract laboratory under strict chain of custody procedures.

2.7 Survey Documentation

Each survey unit will be uniquely identified and will be shown on maps or drawings. Survey activities will be documented by survey unit. Survey records will include the following information, at a minimum:

- Date and time of measurements
- Instrumentation utilized by manufacturer, model, and serial number
- Confirmation of current calibration
- Operational status
- Name(s) of surveyors

- Actual survey data
- Location of measurements
- QA/QC measurements
- Date, time, and initials of technical QA/QC review

Survey records also will indicate any anomalous findings or unusual observations. Follow-up or corrective action will be as established in the Standard Operating Procedure. All final status survey documentation will be filed and organized by survey unit designation.

3.0 Data Interpretation

Measurement data will be converted to units of dpm/100 cm^2 (surface activity), μR/h (exposure rates), and pCi/g (soil concentrations) for comparison with guidelines. Values will be adjusted for contributions from natural background. Individual measurements and soil levels will be compared with "hot-spot" criteria. Average values for survey units will be determined and compared with guideline levels. Data for each survey unit will be tested against the confidence level objective using guidance and procedures described in NUREG/CR-5849.

Additional remediation and/or further sampling and measurements will be performed where guidelines are not met or cannot be demonstrated to the specified level of confidence. Computations and comparisons will be repeated, as necessary. The average levels will be used to estimate the total residual inventory of uranium and thorium at the site.

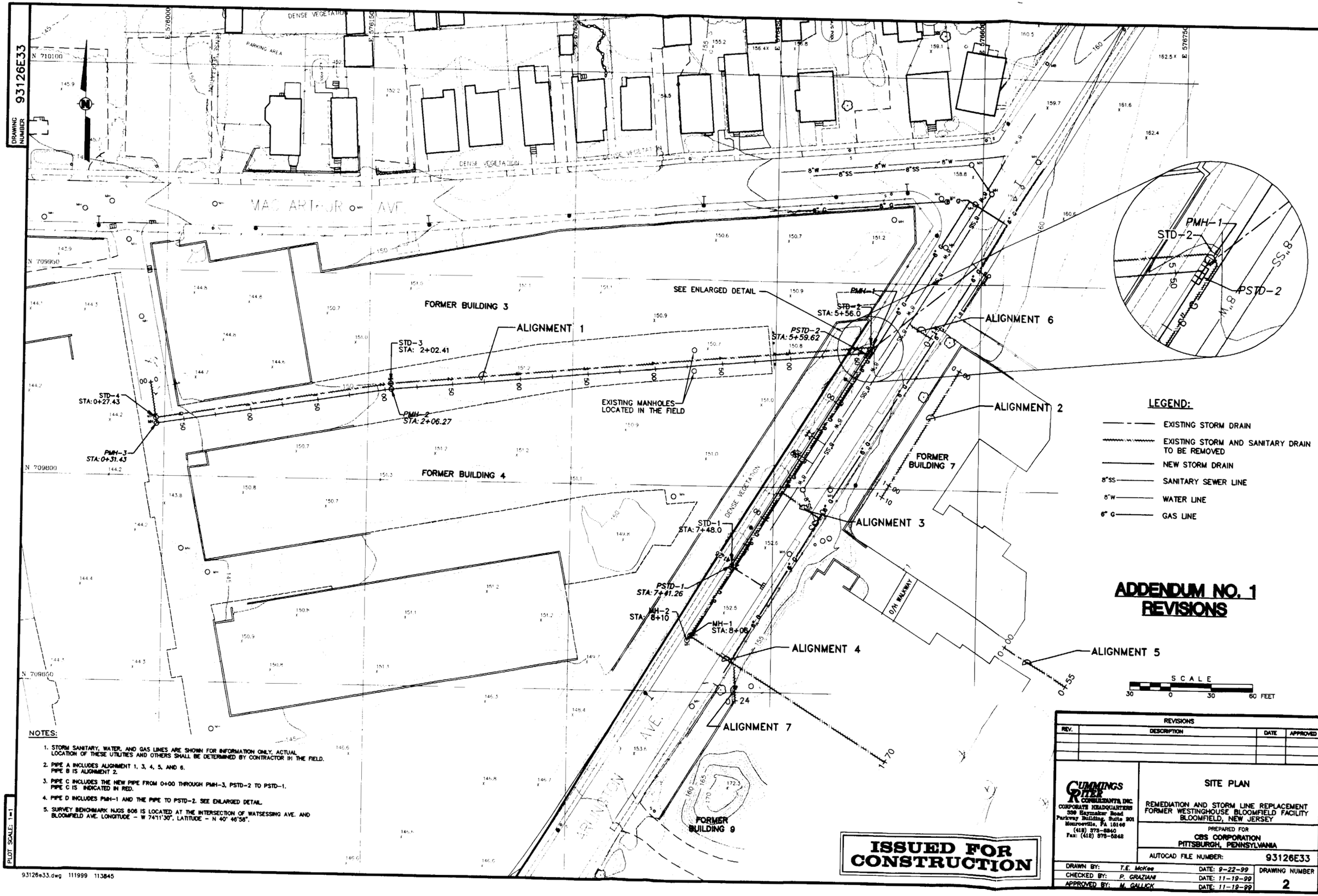
4.0 Transportation and Disposal

Packaging and transportation of radiological waste materials will be in accordance with applicable regulations (i.e., 10 Code of Federal Regulations [CFR] 91.5, Department of Transportation regulations in 49 CFR 170-189, and New Jersey regulations in Title 16, Chapter 49). Disposal of all radiological waste material will be at an approved and licensed low-level radioactive waste disposal facility.

w:\5275\rpt\survey.doc

Drawings

DRAWING NUMBER 93126E33



LEGEND:

- EXISTING STORM DRAIN
- EXISTING STORM AND SANITARY DRAIN TO BE REMOVED
- NEW STORM DRAIN
- 8"SS — SANITARY SEWER LINE
- 8"W — WATER LINE
- 6" G — GAS LINE

ADDENDUM NO. 1
REVISIONS

NOTES:

1. STORM SANITARY, WATER, AND GAS LINES ARE SHOWN FOR INFORMATION ONLY. ACTUAL LOCATION OF THESE UTILITIES AND OTHERS SHALL BE DETERMINED BY CONTRACTOR IN THE FIELD.
2. PIPE A INCLUDES ALIGNMENT 1, 3, 4, 5, AND 6. PIPE B IS ALIGNMENT 2.
3. PIPE C INCLUDES THE NEW PIPE FROM 0+00 THROUGH PMH-3, PSTD-2 TO PSTD-1. PIPE C IS INDICATED IN RED.
4. PIPE D INCLUDES PMH-1 AND THE PIPE TO PSTD-2. SEE ENLARGED DETAIL.
5. SURVEY BENCHMARK NJGS 606 IS LOCATED AT THE INTERSECTION OF WATSESSING AVE. AND BLOOMFIELD AVE. LONGITUDE = W 74°11'30", LATITUDE = N 40° 46'58".

ISSUED FOR CONSTRUCTION

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
CORPORATE HEADQUARTERS
350 Haymaker Road
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Monroeville, PA 15146
(412) 373-6840
Fax: (412) 373-5848

SITE PLAN

REMEDIATION AND STORM LINE REPLACEMENT
FORMER WESTINGHOUSE BLOOMFIELD FACILITY
BLOOMFIELD, NEW JERSEY

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

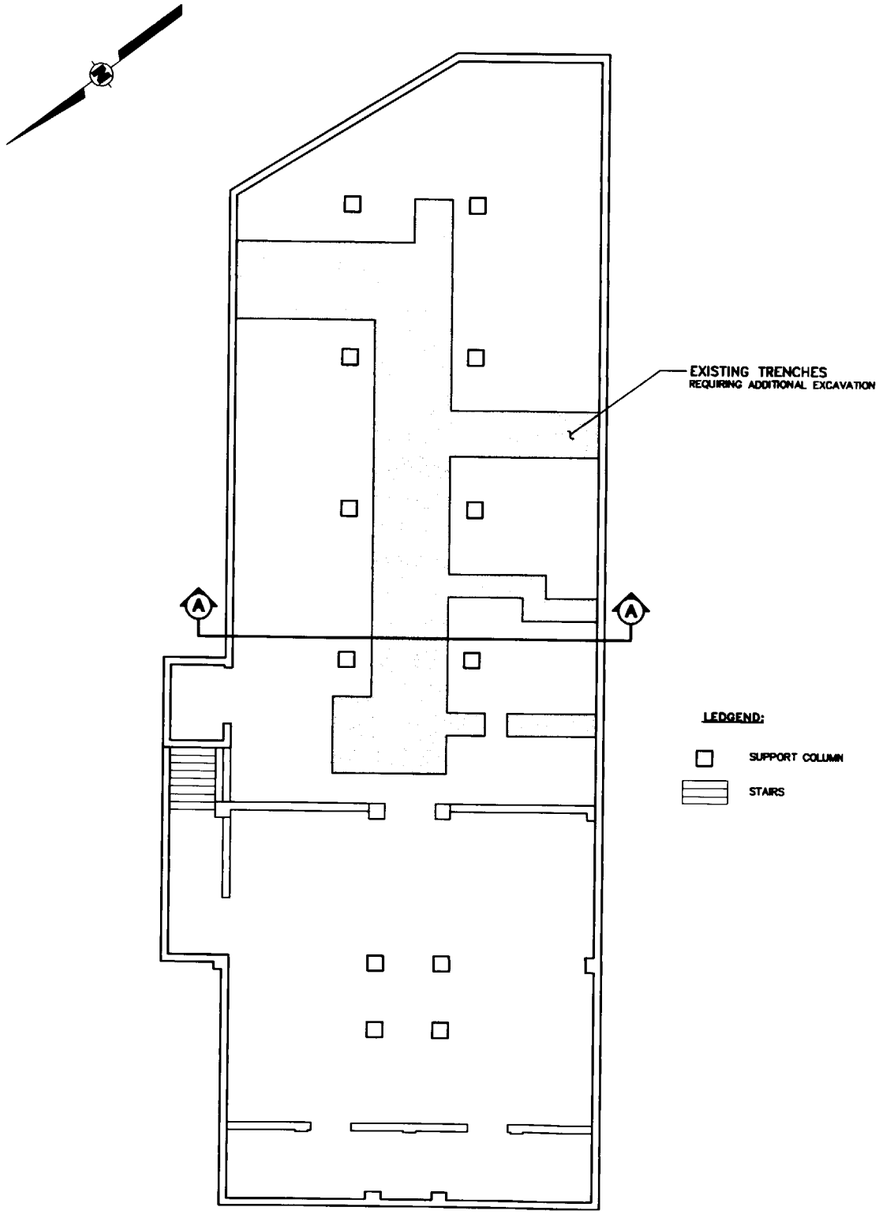
AUTOCAD FILE NUMBER: 93126E33

DRAWN BY:	T.E. McKee	DATE: 9-22-99	DRAWING NUMBER
CHECKED BY:	P. GRAZIANI	DATE: 11-19-99	2
APPROVED BY:	M. GALLICK	DATE: 11-19-99	

PLOT SCALE: 1=1

93126e33.dwg 111999 113845

AUTOCAD FILE NUMBER 93126E37

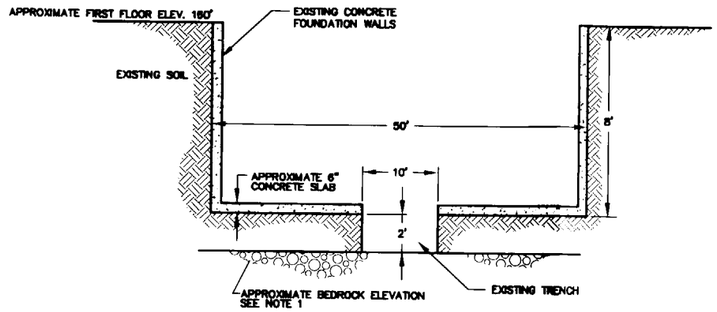


LEGEND:

- SUPPORT COLUMN
- STAIRS

FORMER BUILDING 7

SCALE
0 10 20 FEET



CROSS SECTION A–A

HORIZONTAL SCALE
0 40 80 FEET
VERTICAL SCALE
0 10 20 FEET

FORMER BUILDING 7 BASEMENT EXCAVATION ESTIMATED ELEVATION VIEW

NOTES:

1. BEDROCK FROM APPROXIMATE ELEVATION 150 ft. DOWN TO 140 ft. IS SOFT, RED–BROWN TO GRAY, SANDY SHALE. BEDROCK IS WEATHERED FROM APPROXIMATE ELEVATION 150 ft. DOWN TO 147 ft.

ADDENDUM NO. 1 REVISIONS

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
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FORMER BUILDING 7 BASEMENT EXCAVATION PLAN

REMEDIATION AND STORM LINE REPLACEMENT
FORMER WESTINGHOUSE BLOOMFIELD FACILITY
BLOOMFIELD, NEW JERSEY

PREPARED FOR
CBS CORPORATION
PITTSBURGH, PENNSYLVANIA

AUTOCAD FILE NUMBER: 93126E37

DRAWN BY:	T. FITZROY	DATE: 10-1-99	DRAWING NUMBER
CHECKED BY:	P. GRAZIANI	DATE: 11-19-99	6
APPROVED BY:	M. GALLICK	DATE: 11-19-99	

ISSUED FOR CONSTRUCTION

PLOT SCALE: 1=1