

September 26, 2011

Ms. Laurie Kauffman
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Division of Nuclear Materials Safety
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**SUBJECT: PROJECT-SPECIFIC PLAN FOR INDEPENDENT CONFIRMATORY
SURVEY ACTIVITIES ASSOCIATED WITH THE STRUCTURAL
SURFACES AND SOIL EXCAVATIONS AT THE UNC NAVAL
PRODUCTS FACILITY, NEW HAVEN, CONNECTICUT
(DOCKET NO. 070-371; RFTA NO. 11-009) DCN 2040-PL-01-0**

Dear Ms. Kauffman:

The Oak Ridge Institute for Science and Education (ORISE) is pleased to provide the enclosed survey plan for conducting confirmatory surveys of the final status survey activities associated with remediation activities at the UNC Naval Products facility in New Haven, Connecticut. Comments on the draft survey plan submitted to the U.S. Nuclear Regulatory Commission on September 22, 2011 have been incorporated into this final plan.

My contact information is listed below or you may contact Tim Vitkus at 865.576.5073 or Erika Bailey at 865.576.6659 should you have any questions or require additional information.

Sincerely,



Wade C. Adams
Project Manager/Health Physicist
Independent Environmental
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Enclosure

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PROJECT-SPECIFIC PLAN FOR INDEPENDENT CONFIRMATORY SURVEY ACTIVITIES ASSOCIATED WITH THE STRUCTURAL SURFACES AND SOIL EXCAVATIONS AT THE UNC NAVAL PRODUCTS FACILITY NEW HAVEN, CONNECTICUT

INTRODUCTION

United Nuclear Corporation (UNC) Naval Products fabricated fuel elements for the Naval Reactors Program at the New Haven, Connecticut, H-Tract facility under U.S. Nuclear Regulatory Commission (NRC) Docket No. 70-371, License No. SNM-368. The Atomic Energy Commission (AEC) issued special nuclear material (SNM) license to Olin Mathieson Corporation in 1959, which was later transferred to UNC in 1961. This license authorized possession and use of enriched uranium (EU) and later source material, including natural uranium (NU), depleted uranium (DU) and thorium for research and nuclear fuel fabrication. UNC operated the facility from June 8, 1961 to April 22, 1976 (NRC 1996).

Manufacturing activities at the H-Tract facility involved the fabrication of fuel elements which were then shipped to another site for upgrading into naval reactor components. The radioactive material used in these operations was primarily EU and NU. The H-Tract production facility received EU and combined it with zirconium to form fuel elements suitable for upgrading into fuel assemblies. In 1974, UNC announced the closing of the H-Tract facility and transferred their inventory of radioactive materials from the New Haven location to the Montville, Connecticut location.

Final surveys of the New Haven facility were completed in February 1976 and the NRC performed confirmatory surveys in March 1976; NRC subsequently released the site for unrestricted use in accordance with the existing release criteria (UNC 1976). The SNM-368 license was amended in April 1976 to remove the New Haven facility from the license and the license was terminated on June 8, 1994, following decommissioning at the Montville facility. The NRC's guidance and criteria for release for unrestricted use, at that time, was Regulatory Guide 1.86, dated June 1974, and *Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material*, dated May 3, 1973 (NRC 2011).

Around 1994, the NRC had initiated a program to ensure that licenses for facilities, where activities authorized by the AEC and/or NRC were conducted, had been terminated in accordance with the NRC's current release criteria for unrestricted use. As part of this program, the NRC's contractor,

Oak Ridge National Laboratory (ORNL), identified License No. SNM-368 as a site that required additional review since final radiological survey records were either incomplete or inadequate. NRC Region I staff reviewed the ORNL findings and site files and determined that further information on this site was necessary to determine the radiological status of the site in comparison with the then-current NRC release criteria in 1994 (NRC 1981 and 1991).

The NRC contracted with the Oak Ridge Institute for Science and Education (ORISE) to conduct a radiological scoping survey of the subsurface soils in September 1996 using the release criteria in the 1981 Branch Technical Position (BTP) *Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations*, published in the Federal Register on October 23, 1981 (NRC 1981). The ORISE results indicated that residual EU, in certain subsurface/subfloor soil areas inside the building and inside a connected inactive sewer system, had exceeded the release criteria of 30 picocuries per gram (pCi/g) in soil. These contaminated areas were documented in an NRC Inspection Report and in the ORISE report entitled *Radiological Scoping Survey of Buildings 3H and 6H at the Former UNC H-Tract Facility, New Haven, Connecticut* (NRC 1996 and ORISE 1997).

In a letter from UNC General Electric (UNC/GE)—General Electric Corporation is the current site owner—to the NRC, dated June 8, 1998, UNC/GE agreed to proceed with site characterization and to remediate the facility, in accordance with the soil cleanup criteria in Option 1 delineated in the NRC 1981 BTP. Structural surface release criteria were not considered at that time. UNC/GE also informed the NRC that the U.S. Department of Energy (DOE) had accepted financial responsibility for the site cleanup. In August 1998, UNC/GE submitted a Characterization Plan which NRC approved on April 6, 1999 (UNC/GE 1998). UNC/GE began sampling activities in 2003 and from 2005 to 2008 issued supplemental documents, e.g., the Radiological Characterization Report (and its associated appendix) and the Final Status Survey Plan (FSSP) (UNC/GE 2005 and 2006).

Due to inactivity by UNC/GE with the project since 2008, the NRC contacted UNC/GE personnel in early 2009 to determine the project status. UNC/GE informed the NRC that they were in the process of securing the services of a new remediation contractor and expected to complete decommissioning of the site by the summer of 2009. However, UNC/GE has contracted with a new remediation contractor, Cabrera Services, Inc. (CSI), and did not obtain access agreements with

the adjacent private property owner and with Olin Mathieson Chemical Corporation (OMCC), the current owner of the adjacent, defunct Argyle Street property, until May 2011 (NRC 2011). Currently, CSI has mobilized to the site and has begun final remediation activities.

SITE DESCRIPTION

The UNC H-Tract facility is located at 71 Shelton Avenue in the west section of Science Park industrial park in northwest New Haven, Connecticut (Figure 1). The former H-Tract area is generally bounded by Division Street on the north, Shelton Avenue on the west, and the Winchester Gun Company on the east. The former 3H and 6H contiguous building is adjacent to Argyle Street to the south. The associated storm/sanitary sewer system included in this survey runs along the center line of Argyle Street and is adjacent to the private property line (Figure 2). The building was divided into two separate areas: the component assembly area (located in 3H), containing an x-ray reading room, a decontamination pit (decon pit), and the chemistry laboratories (located in 6H) containing a utility trench that is located on the south side of the building (Figure 3).

A chain link fence completely surrounds the site. The property to the south side of the building, which borders Argyle Street, is currently owned by OMCC. A second chain link fence surrounds the adjacent private property and separates the adjacent private property and Argyle Street. The inactive sewer line under Argyle Street traverses under the property line (and chain link fence) of the adjacent private property residence and ends under Shelton Avenue (NRC 2011) (Figure 4).

PLANNED REMEDIATION ACTIVITIES

UNC/GE's FSSP details the survey and sampling efforts to be performed at the site, with the goal of releasing the property and surrounding area for unrestricted use. The FSSP was prepared in accordance with the procedures and methods established in NUREG-1575, *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM), Revision 1 and UNC/GE's Decommissioning Plan (DP) (NRC 2000 and UNC/GE 2005).

The areas of the site subject to remediation due to remaining subsurface soil contamination are: subfloor soils in the Decon Pit, the X-Ray Reading Room, and the Chemistry Laboratories South Trench (located in 6H); subsurface soils outside the building that are subject to remediation are located within and near the inactive sewer system. As defined in the FSSP, the impacted soil will be

excavated and packaged for disposal. The soil will be shipped to EnergySolutions Low Level Waste (LLW) disposal facility in Clive, Utah (NRC 2011). Structural surface alpha contamination may also be present within the South Trench tunnel; this area will be encapsulated after asbestos abatement. However, prior to the encapsulation, CSI will perform alpha surface scans and direct measurements for surface activity.

Radiological data from the 1997 ORISE report and the UNC/GE Characterization Report indicated that EU soil contamination ranged from 30 to 700 pCi/g, which exceeds the 1981 BTP release criteria of 30 pCi/g of total uranium in soil. Specifically, radionuclide concentrations of the total uranium in each area were as follows: less than 6 pCi/g in the Decon Pit; a range of values from 3 to 720 pCi/g in the soil under the floor of the X-ray room; values from 37 to 57 pCi/g in the South Trench; and a range from 3 to 217 pCi/g in the sewer system.

The UNC/GE remediation survey activities will include the performance of gamma scans, subfloor soil sampling, and sediment sampling from the associated Argyle Street sewer system. Surface scans for gamma radiation will be performed over accessible floor space in each of the areas of concern. Alpha surface scans will be performed at the openings of accessible floor drains that remain within the specified H-Tract Building SUs and along structural surfaces within the South Trench Tunnel. Due to the existence of a water line and a high pressure line adjacent to the Argyle Street sewer system excavation, the sewer system will be excavated in sections and those sections backfilled immediately after FSS soil samples are collected. This action will be performed at risk by the UNC/GE and may require a repeat excavation based on FSS soil sample results.

OBJECTIVES

The objectives of the confirmatory activities are to provide independent contractor field data reviews and to generate independent radiological data for use by the NRC in evaluating the adequacy and accuracy of the decommissioning contractor's procedures and final status survey (FSS) results.

RESPONSIBILITY

Work described in this survey plan will be performed under the direction of Tim Vitkus, Survey Operations Director, and Wade Adams, Project Manager, of the Oak Ridge Institute for Science and Education (ORISE). The cognizant ORISE site supervisor has the authority to make appropriate

changes to the survey procedures as deemed necessary, and after consultation with NRC personnel. Changes to the scope of this survey plan or procedures will be documented in the site logbook.

DOCUMENT REVIEW

ORISE has reviewed the UNC/GEs DP, FSSP and the applicable soil derived concentration guideline levels (DCGL_w), which were developed based on an NRC-approved radiation dose assessment (UNC/GE 2005, 2006, and 2008). The DP was specifically reviewed for historical information, to identify the radionuclides of concern (ROCs) and the dose assessment was reviewed for the applicable dose-based DCGL_w, which indicate that the BTP soil release guideline criteria being used is much more conservative than the dose-based DCGL_w. The purpose of this review was to ensure that the regulatory requirements are being met by the UNC/GE and to develop the confirmatory plan. ORISE will ensure the current FSS activities within the excavation areas are adequate and appropriate, taking into account any supporting documentation and MARSSIM guidance (NRC 2000).

PROJECT HEALTH AND SAFETY

ORISE will adhere to all applicable regulatory requirements and participate in any required site-specific training. ORISE will perform confirmatory activities in accordance with requirements of the site's overall health and safety plan (HASP), as well as the Radiation Safety Program as described in the DP during site activities (UNC/GE 2006). Personnel working on the project will be informed of known and potential hazards to effectively apply required safety precautions. A walk-down of the project area prior to the survey will assist ORISE in evaluating any additional potential health and safety issues that are not currently addressed in the ORISE Survey Procedures Manual job hazard analyses (JHAs) (ORISE 2008). Should ORISE identify a hazard not covered in the ORISE Survey Procedures Manual or the site HASP, work will not be initiated or continued until it is addressed by an appropriate JHA. Survey activities may be conducted in areas that require radiation work permits but no special dosimetry requirements are expected. Due to the nature of the asbestos-containing material (ACM) removal in the South Trench tunnel, which requires encapsulation of all surfaces after the ACM abatement, ORISE would be required to enter in Level C personal protective equipment (PPE) and powered air purifying respirators (PAPRs).

PROCEDURES

The ORISE survey team will conduct field activities to evaluate soil areas within each of the UNC excavations by performing visual inspections, measurements, and soil sampling activities.

Specifically, ORISE is tasked with performing confirmatory survey activities within the excavations for the Decon Pit, the X-Ray Reading Room, the Chemistry Laboratories South Trench (located in 6H), and the inactive Argyle Street sewer system (including backfill soil, if available). Survey activities performed by the ORISE team will be conducted in accordance with the ORISE Survey Procedures and the Oak Ridge Associated Universities (ORAU) Quality Program Manuals (ORISE 2008; ORAU 2011).

Classification of Survey Units

The operation history for various areas of the site resulted in different levels of potential exposure to residual radiological contamination. Therefore, different areas will require different levels of survey coverage to determine if remaining residual activity levels meet the NRC release criteria. ORISE will perform confirmatory surveys of the former UNC Naval Products facility in accordance with Cabrera Services' three category classifications - based on contamination potential, as either Class 1, 2, or 3. A description of each is as follows:

- Class 1: Buildings or land areas that have a significant potential for radioactive contamination (based on site operating history) or known contamination (based on previous radiological surveys) that exceeds the expected release criteria.
- Class 2: Areas that have, or had prior to remediation, a potential for radioactive contamination or known contamination, but are not expected to exceed the release criteria.
- Class 3: Any impacted areas that are not expected to contain residual contamination, or are expected to contain levels of residual contamination at a small fraction of the release criteria.

Survey units (SUs) are generally formed by grouping contiguous site areas with a similar use history and the same classification of contamination potential. SUs are established to facilitate the survey process and the statistical analysis of survey data. UNC/GE has determined SU classification for the

following areas:

Table 1. Classification of Survey Units for the Former UNC Naval Products Facility New Haven, Connecticut^a		
Survey Unit	Classification	Description
Decon Pit	1	Subsurface Soil and Applicable Drains
X-Ray Reading Room	1	Subsurface Soil and Applicable Drains
South Trench and Tunnel	1	Subsurface Soil and Structural Surfaces
Argyle Street Sewer System	1	Subsurface Soil and Sediment
Soil Outside Sewer	2	Subsurface Soil
Overburden Soil for Backfill	3	Soil

^aSurvey unit classification taken from Table 1 of FSSP (UNC/GE 2006).

Reference System

ORISE will reference survey results using the reference system established by the UNC/GE's contractor and/or global positioning system (GPS) coordinates and prominent site features. Measurement and sampling locations will be documented on detailed survey maps.

Surface Scans

Surface scans for gamma radiation will be performed within each excavation and as requested by the NRC. Scans will be performed using NaI scintillation detectors coupled to ratemeter-scalers with audible indicators. For soil SUs, detectors will be coupled to GPS equipment to enable real-time gamma count rate and spatial data capture. High-density surface scans will be performed in Class 1 SUs; medium-density surface scans will be performed in Class 2 SUs; and, low-density surface scans will be performed in Class 3 SUs. Surface scans for alpha radiation will be performed on available surfaces (such as sewer piping, floor drains, and available floor and walls within the South Trench tunnel), as deemed appropriate during survey activities. Alpha and/or beta scans will be performed using hand-held alpha and/or beta scintillation detectors coupled to ratemeter-scalers with audible output. Within the tunnel, they will also be coupled with hand-held data loggers to collect the scanning count rate at one-second intervals. Locations of elevated direct gamma, alpha and/or beta radiation will be marked for further investigation.

Surface Activity Measurements

Initially, construction-material-specific backgrounds, specifically for beta activity, may be determined in areas without a history of radioactive material use but of similar material and construction. If a similarly constructed non-impacted area cannot be identified, then ORISE may select an area for background measurements within the survey areas. Selection of such an area will be based on program personnel experience and professional judgment as to the suitability of the area selected.

Surface activity measurements will be performed at a minimum of ten locations within each available SU within the South Trench tunnel, if applicable, and at judgmental locations exhibiting elevated radiation levels identified by surface scans within the tunnel and within other SUs. If portions of the South Trench tunnels have been encapsulated after the asbestos abatement, those areas will not receive confirmatory survey activities. Smears for removable activity will be performed at selected surface activity locations where direct alpha and/or beta activity measurements could exceed removable activity criteria.

Soil Sampling

Background soil sample concentrations, may be collected at six locations on the site. In the event that ORISE is not able to collect background soil samples, ORISE will use the background soil data used by CSI to determine the total uranium concentrations above background levels in soil samples.

Soil, sediment, and/or miscellaneous material samples will be collected from judgmental locations where elevated direct gamma radiation could exceed the DCGLs. The number of samples will be based upon the findings as the surveys progress. As time and site conditions permit, ORISE may also collect a minimum of six randomly-selected soil samples from each excavation. Additionally, up to five samples of the backfill material (if available) will be collected from either random or judgmental locations and up to five of the decommissioning contractor's FSS soil samples may be requested for confirmatory comparison analysis. Due to the project requirement to quickly backfill the Argyle Street sewer system excavations, ORISE may not be present during FSS activities for some sections of the sewer system excavations and backfilling. Therefore, CSI personnel may collect split soil samples and submit those to the ORISE laboratory for radiological analyses.

GUIDELINES

The primary ROCs for the UNC facility are enriched uranium (and associated isotopes) and their respective decay radionuclides. For surface activity, the UNC/GE has elected to use the NRC guidance document *Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material* which indicates that the release limit for the alpha (α) component of **total natural uranium** is as follows (NRC 1991):

Natural Uranium

5,000 α dpm/100 cm², averaged over a 1 m² area
 15,000 α dpm/100 cm², total, maximum in a 100 cm² area
 1,000 α dpm/100 cm², removable in a 100 cm² area

The complete surface contamination limits guidance table, taken from the above NRC reference is provided (NRC 1991).

Table 2. Acceptable Surface Contamination Limits			
Radionuclide of Concern ^a	Surface Contamination Release Criteria (dpm/100 cm ²)		
	Average ^{b,c}	Maximum ^{b,d}	Removable ^{b,e}
<i>U-nat, U-235, U-238 and associated decay products</i>	<i>5,000 α</i>	<i>15,000 α</i>	<i>1,000 α</i>
Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100	300	20
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000	3,000	200
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted.	5,000 β - γ	15,000 β - γ	1,000 β - γ

^aWhere surface contamination by both alpha and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma emitting nuclides should apply independently.

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

^cMeasurements of average contaminant should not be averaged over more than 1 square meter (m²). For objects of less surface area, the average should be derived for each object.

^dThe maximum contamination level applies to an area of not more than 100 square centimeters (cm²).

^eThe amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper (swipe), applying moderate pressure, and assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionately and the entire surface should be swiped.

The site-specific contamination guidelines for processed EU in soil as presented in the FSSP and as established in the NRC BTP *Disposal or Onsite Storage of Thorium and Uranium Wastes from Past*

Operations is less than 30 pCi/g above background averaged over an area of 100 m² (NRC 1981). This criterion may be modified for “hot spots” or areas that exhibit localized concentrations of uranium over an area smaller than 100 m². The criteria would be limited by the using the elevated measurement comparison (EMC) which is calculated as follows:

$$EMC = 30 \text{ pCi/g} * (100/A)^{1/2}$$

Where, A is the area of the location with the impacted soil, measured in square meters (m²). No single value greater than 90 pCi/g will be permitted for unrestricted release.

SAMPLE ANALYSIS AND DATA INTERPRETATION

All data collected onsite will be brought back to the ORISE facility for interpretation. Samples collected for radiological analysis will be delivered to the ORISE radiochemistry laboratory in Oak Ridge, Tennessee, for analysis. Sample analyses will be performed in accordance with the ORISE Laboratory Procedures Manual (ORISE 2011). Smear samples collected for the quantification of gross alpha/beta activity will be analyzed using a low-background proportional counter. Smear sample and direct measurement results will be reported in units of dpm/100 cm². Soil/sediment samples will be analyzed by gamma spectroscopy for the gamma-emitting radioisotopes of uranium—the spectra will also be reviewed for other identifiable photopeaks. The U-235 quantified concentration and enrichment percentage may then be used to estimate the U-234 concentration for determining total uranium activity levels. Alpha spectroscopy may also be performed as necessary, based on the gamma spectroscopy results, to verify the U-234 concentrations. Soil sample results will be reported in units of pCi/g. The data generated will be compared with the approved criteria. If possible, all soil samples will be returned to UNC/GE for disposal. Results will be presented in a draft report to the NRC for review and comment.

TENTATIVE SCHEDULE

- ORISE personnel plan to conduct measurements and sampling activities during several time periods, which are provided below. These scheduled site visits are tentative based on weather conditions and status of FSS activities. These dates are not all-inclusive and may be only for portions of these weeks and/or at the discretion of the NRC site representative.
 - October 3 through 7, 2011
 - October 17 through 21, 2011
 - Other dates to be determined
- Interim letter reports documenting the survey results will be submitted within 15 days of receipt of all sample analysis data. Any sample results that exceed the cleanup criteria and would impact project completion will be reported immediately to NRC.
- A draft report documenting the confirmatory survey results will be submitted to the NRC within 15 days of receipt of all sample analysis data for the last site confirmatory survey activities. Any sample results that exceed the cleanup criteria and would impact project completion will be reported immediately to NRC.
- A final report will be submitted within 10 days of the receipt of comments from the NRC.



REFERENCES

- Oak Ridge Associated Universities (ORAU). *Quality Program Manual for the Independent Environmental Assessment and Verification Program*. Oak Ridge, Tennessee; August 31, 2011.
- Oak Ridge Institute for Science and Education (ORISE). *Radiological Scoping Survey of Buildings 3H and 6H at the Former UNC H-Tract Facility, New Haven, Connecticut [Docket 70-371]*. Oak Ridge, Tennessee; January 1997.
- Oak Ridge Institute for Science and Education. *Survey Procedures Manual for the Independent Environmental Assessment and Verification Program*. Oak Ridge, Tennessee; May 1, 2008.
- Oak Ridge Institute for Science and Education. *Laboratory Procedures Manual for the Independent Environmental Assessment and Verification Program*. Oak Ridge, Tennessee; August 31, 2011.
- United Nuclear Corporation (UNC). *Final Survey Report after Decontamination. United Nuclear Corporation Naval Products Division H-Tract Facility*. New Haven, Connecticut; February 1976.
- UNC Naval Products/General Electric (UNC/GE). *Characterization Plan for Previously Licensed Facility in New Haven, Connecticut*. Old Saybrook, Connecticut; August 14, 1998.
- UNC Naval Products/General Electric. *Decommissioning Plan: UNC Naval Products Previously Licensed Facility in New Haven, Connecticut*. Revision 1. Old Saybrook, Connecticut; June 7, 2005.
- UNC Naval Products/General Electric. *Final Status Survey Plan for the Former UNC Manufacturing Facility, New Haven, Connecticut*. Old Saybrook, Connecticut; October 4, 2006.
- UNC Naval Products/General Electric. *Derived Concentration Guideline Levels for Decommissioning the former UNC Manufacturing Facility*. Old Saybrook, Connecticut; June 23, 2008.
- U.S. Nuclear Regulatory Commission (NRC). *Disposal or Onsite Storage of Thorium and Uranium Wastes from Past Operations*. Branch Technical Position. 46 CFR 52061, Washington, DC; October 23, 1981.
- U.S. Nuclear Regulatory Commission. *Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproducts, Source, or Special Nuclear Material*. Washington, DC; August 1991.
- U.S. Nuclear Regulatory Commission. *Inspection No. 070-00371/96-01*. Washington, DC; July 26, 1996.
- U.S. Nuclear Regulatory Commission. *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), NUREG-1575; Revision 1*. Washington, DC; August, 2000.
- U.S. Nuclear Regulatory Commission. *Site Visit Report*. Site Visit Report No. 07000371/2011001. Region I, King of Prussia, Pennsylvania; May 13, 2011.

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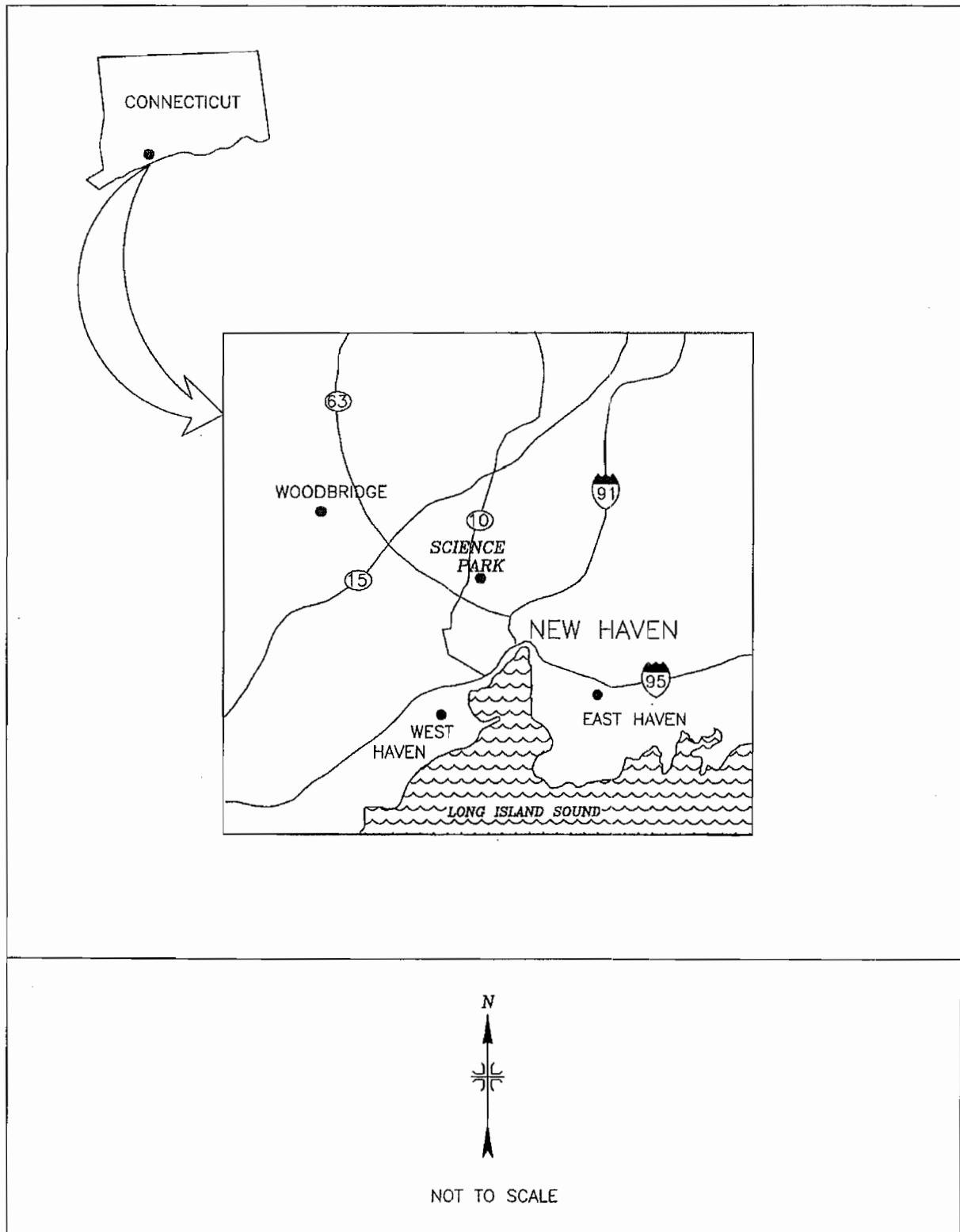
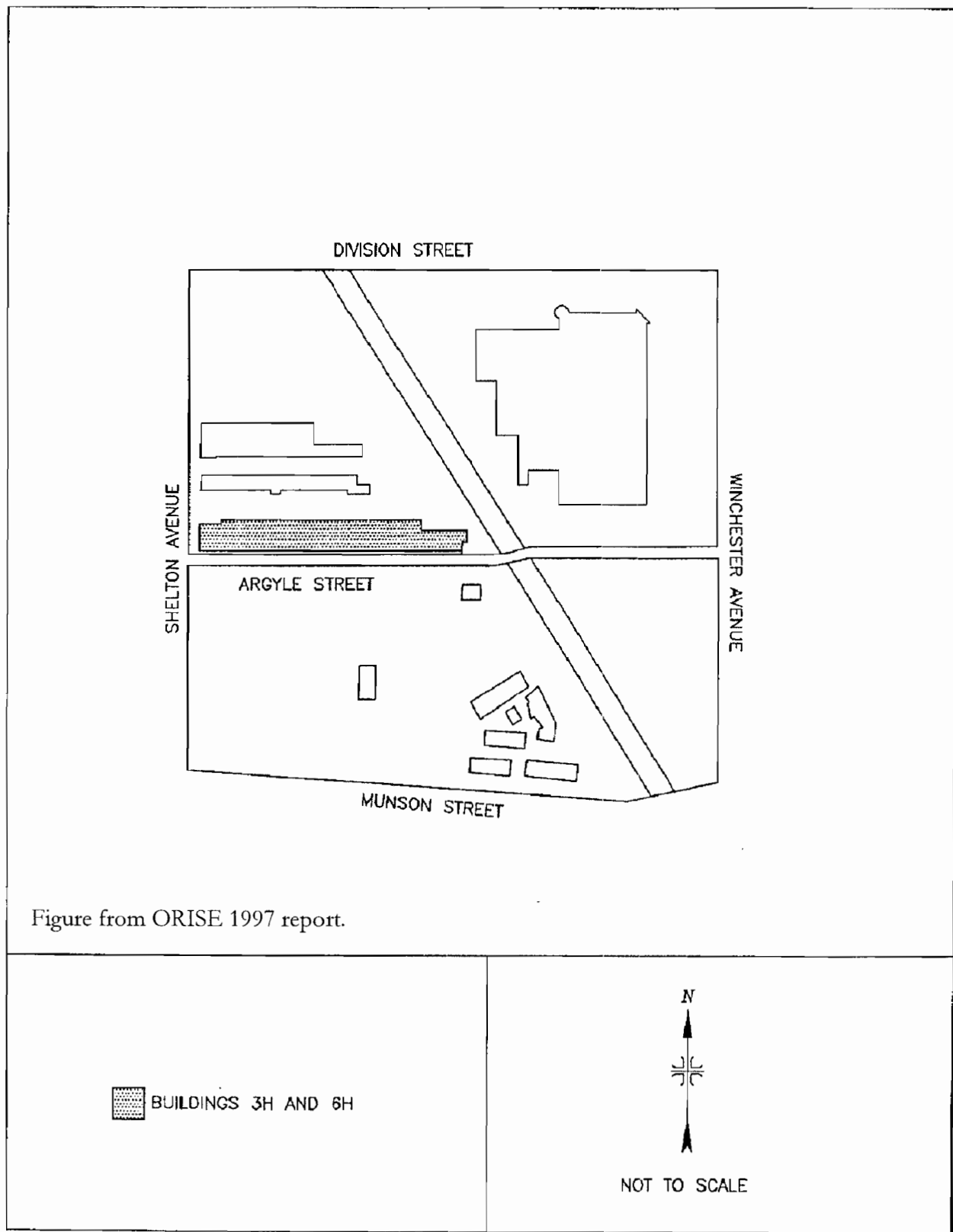


Figure 1. New Haven, Connecticut – Location of Science Park



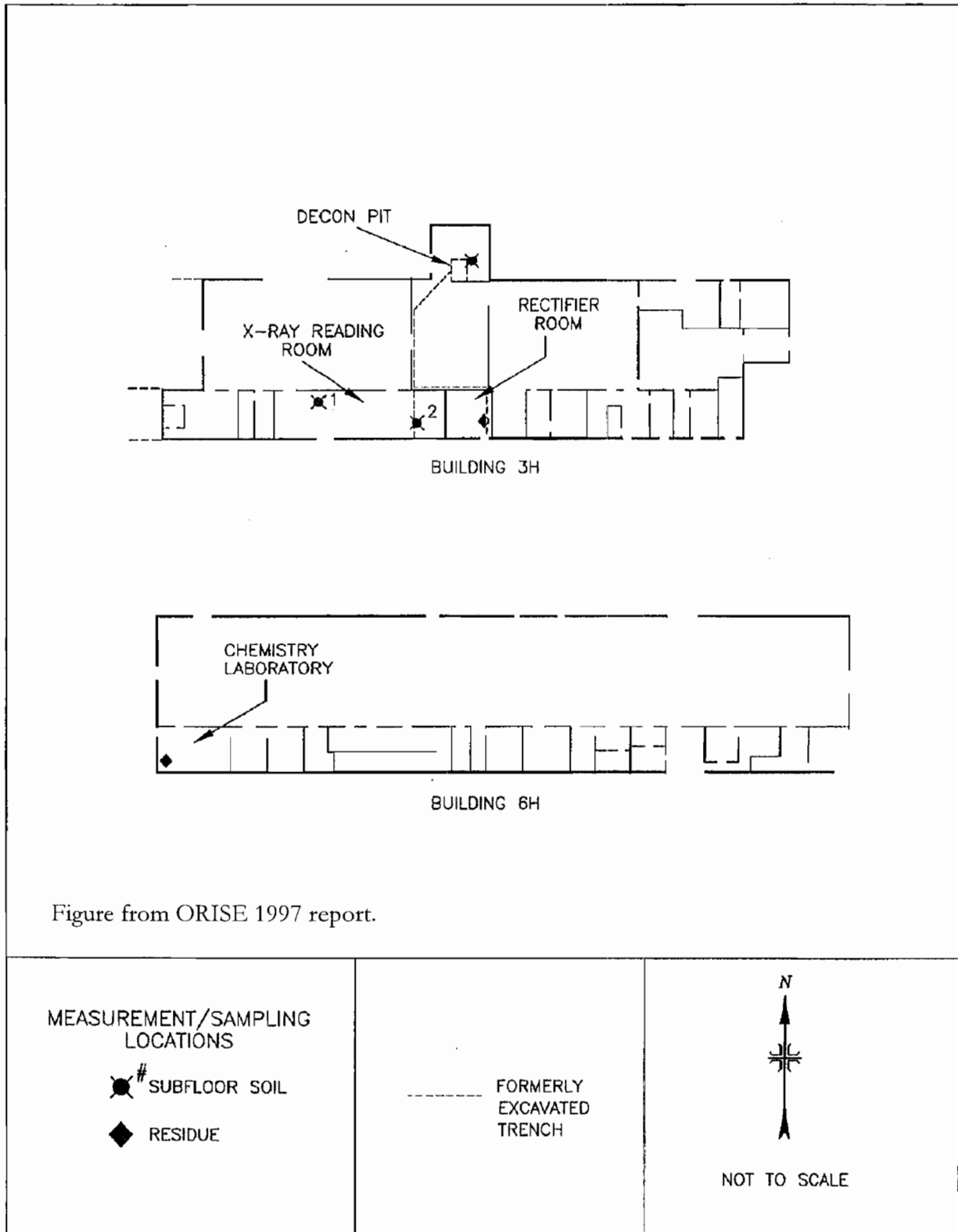


Figure from ORISE 1997 report.

Figure 3. Floor Plan of Buildings 3H and 6H Indicating Previous ORISE Sampling Locations

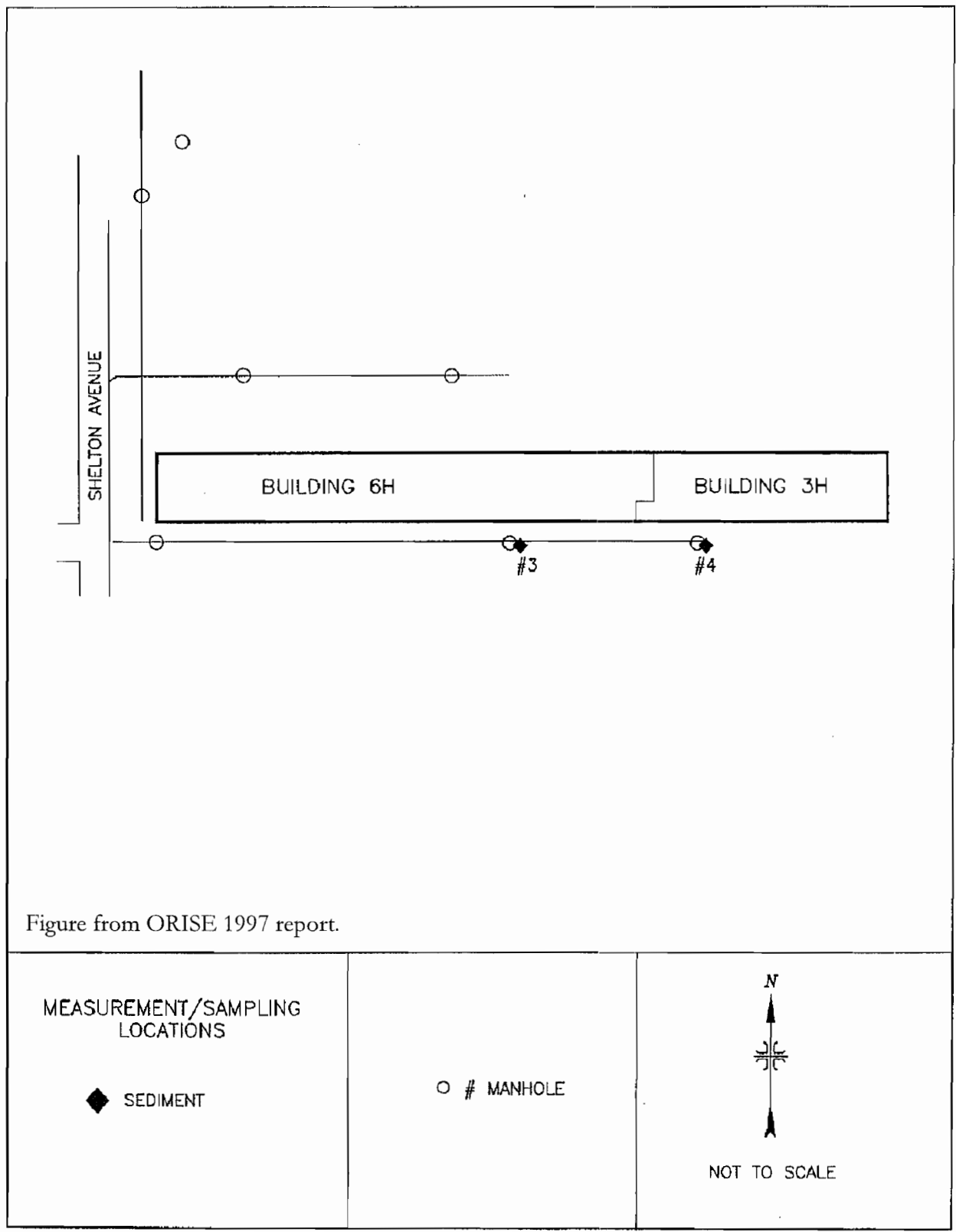


Figure 4. Plot Plan of Sewer System Indicating Previous ORISE Sampling Locations