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OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

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February 25, 2005

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Mr. John Buckley  
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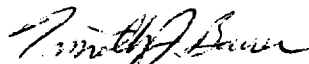
**SUBJECT: FINAL—CONFIRMATORY SURVEY RESULTS FOR SURFACE SOIL SURVEY  
UNITS 9 AND 10, MAINE YANKEE ATOMIC POWER COMPANY, WISCASSET,  
MAINE [DOCKET NO. 50-0309; RFTA NOS. 04-003 AND 05-006]**

Dear Mr. Buckley:

The Environmental and Survey Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) performed confirmatory surveys of survey units 9 and 10 of the Maine Yankee Atomic Power Company's (MYAPC) final status survey package FR 0111 during the periods of November 15 and 16, 2004, and December 7 and 8, 2004. Enclosed are the subject final confirmatory survey results with your comments incorporated. These results will be incorporated into the final confirmatory survey report with the results of the planned March 2005 MYAPC soil areas survey outlined in RFTA No. 05-006.

Please direct any questions you may have to me at (865) 576-3356 or Timothy J. Vitkus at (865) 576-5073.

Sincerely,

  
Timothy J. Bauer  
Health Physicist  
Environmental Survey and  
Site Assessment Program

TJB:ar

Enclosure

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**CONFIRMATORY SURVEY RESULTS  
FOR SOIL SURVEY UNITS 9 AND 10  
MAINE YANKEE ATOMIC POWER COMPANY  
WISCASSET, MAINE**

**INTRODUCTION**

The U.S. Nuclear Regulatory Commission's (NRC) Headquarters and Region I Offices requested that the Oak Ridge Institute for Science and Education's (ORISE) Environmental and Survey Site Assessment Program (ESSAP) perform confirmatory surveys of excavated soil survey units (SU) 9 and 10 at the Maine Yankee Atomic Power Company (MYAPC) in Wiscasset, Maine. SU 9 of final status survey (FSS) package FR 0111 is centered along the west boundary of the Restricted Area. The area of SU 9 is 1,622 m<sup>2</sup>, extending from the north end of FR 0111 SU 6 up to the south end of FR 0111 SU 8, and located between outfall six and the Restricted Area roadway. The confirmatory survey of SU 9 was performed on November 15 and 16, 2004. The area of SU 10 from FSS package FR 0111 is 1,332 m<sup>2</sup>, extending from the north end of FR 0100 SU 1 up to the south end of FR 0111 SU 11, and bounded on the east side by FR 0111 SU 9 and by FR 0111 SU 13 on the west side. The confirmatory survey of SU 10 was performed on December 7 and 8, 2004.

**PROCEDURES**

The confirmatory surveys were performed in accordance with the site-specific survey plans, submitted to and approved by the NRC (ORISE 2004a and b), and the ORISE/ESSAP Survey Procedures and Quality Assurance Manuals (ORISE 2004c and d). Gamma surface scans were performed over 100 percent of accessible portions of the survey units using NaI scintillation detectors coupled to ratemeters with audible indicators—some areas were inaccessible due to standing water or restricted access due to safety concerns. Seven soil samples (0-15 cm) were collected from excavated areas of SU 9 (Figure 1) and six soil samples were collected from excavated areas of SU 10 (Figure 2).

**SAMPLE ANALYSIS AND DATA INTERPRETATION**

Samples and data were returned to ESSAP's laboratory in Oak Ridge, TN for analysis and interpretation. Soil samples were analyzed by gamma spectroscopy for the primary gamma emitting radionuclide of concern Cs-137—the data were also reviewed for other fission and activation products, e.g. Co-60. Sample analyses were performed in accordance with the ESSAP Laboratory Procedures Manual (ORISE 2004e). Radionuclide concentrations were reported in picocuries per gram (pCi/g). The analytical results were compared to MYAPC's site-specific derived concentration guideline level (DCGL<sub>w</sub>) for Cs-137 of 2.39 pCi/g (MYAPC 2002).

**FINDINGS AND RESULTS**

Gamma surface scans identified several locations of elevated direct gamma radiation in SU 9, but determined the elevated readings were due to natural radioactive material in granite formations. No elevated areas were identified during gamma surface scans of SU 10. Concentrations of radionuclides in soil samples collected from SU 9 and 10 are provided in

Table 1. Concentrations of Cs-137 in SU 9 ranged from -0.03 to 0.56 pCi/g. Concentrations of Cs-137 in SU 10 ranged from 0.00 to 0.06 pCi/g. A review of other gamma-emitting radionuclide concentrations did not note any significant findings.

#### **COMPARISON OF RESULTS WITH GUIDELINES**

A comparison of Cs-137 radionuclide concentrations to the site-specific DCGL<sub>w</sub> showed that the concentrations are below the guideline. Based on these results, it is ESSAP's opinion that SU 9 and 10 satisfy the site-specific DCGL<sub>w</sub> of 2.39 pCi/g.

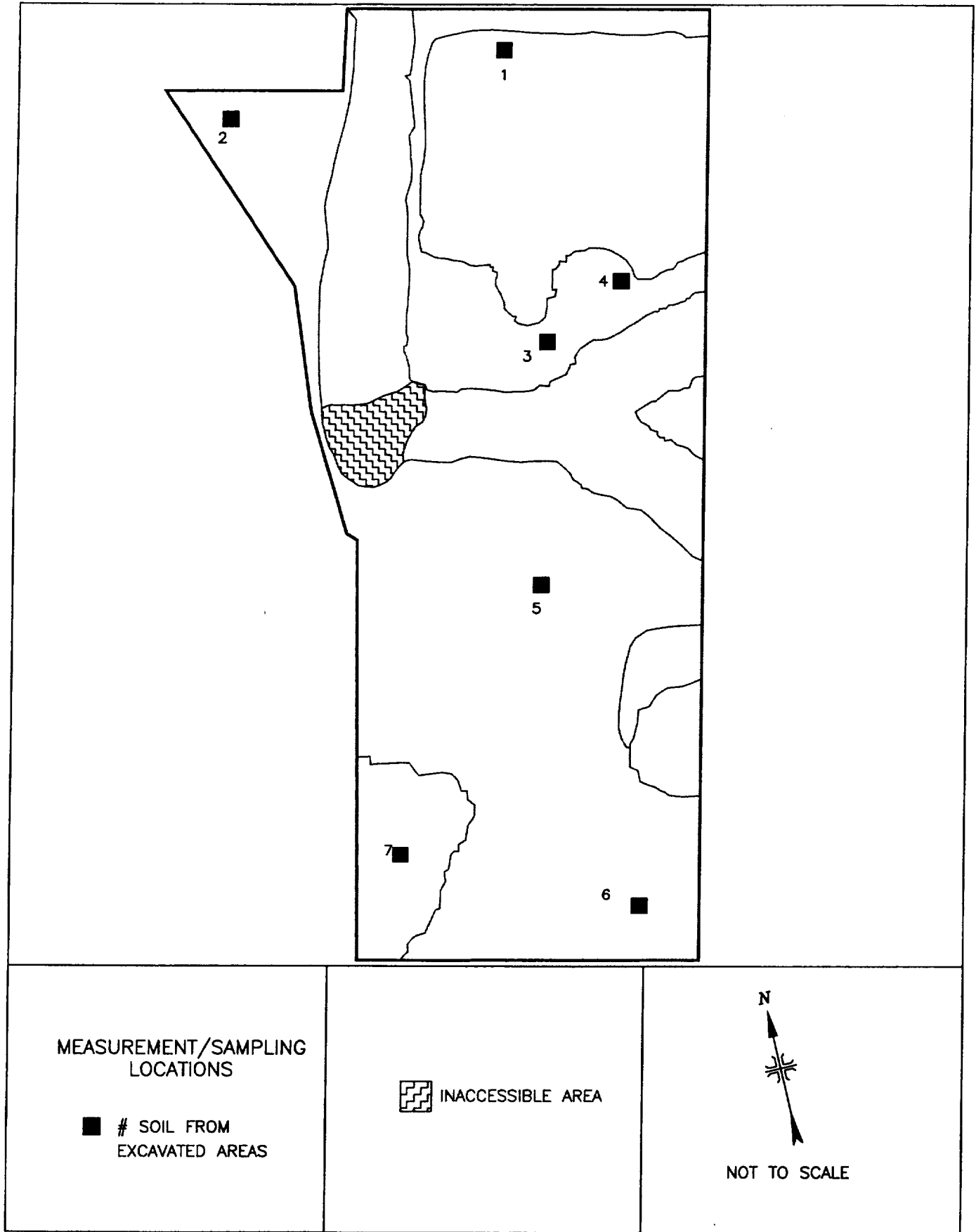


FIGURE 1: Survey Unit 9 – Measurement and Sampling Locations

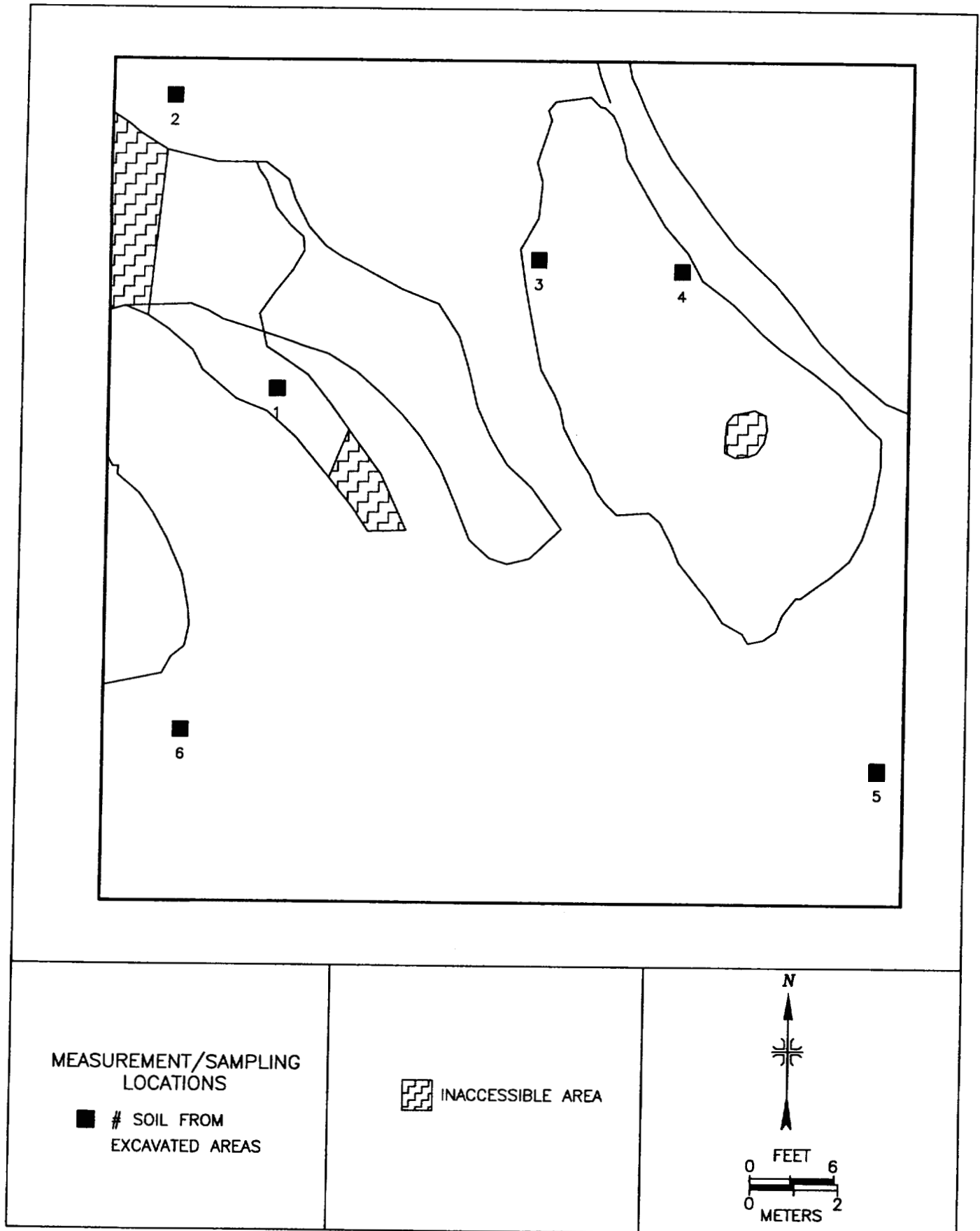


FIGURE 2: Survey Unit 10 – Measurement and Sampling Locations

TABLE 1

**CS-137 CONCENTRATIONS IN SOIL  
DETERMINED BY GAMMA SPECTROSCOPY  
SU 9 AND 10  
MAINE YANKEE ATOMIC POWER COMPANY  
WISCASSET, MAINE**

| Sample <sup>a</sup>   | Cs-137 Radionuclide Concentration (pCi/g) | Fraction of DCGL <sub>w</sub> <sup>b</sup> |
|-----------------------|---|--|
| <b>Survey Unit 9</b>  |   |  |
| 1637S0001             | -0.03 ± 0.03 <sup>c</sup>                 | -- <sup>d</sup>                            |
| 1637S0002             | 0.56 ± 0.05                               | 0.23                                       |
| 1637S0003             | 0.02 ± 0.03                               | 0.01                                       |
| 1637S0004             | 0.05 ± 0.02                               | 0.02                                       |
| 1637S0005             | 0.02 ± 0.02                               | 0.01                                       |
| 1637S0006             | 0.04 ± 0.02                               | 0.02                                       |
| 1637S0007             | 0.04 ± 0.03                               | 0.02                                       |
| <b>Survey Unit 10</b> |   |  |
| 1643S0001             | 0.06 ± 0.03                               | 0.03                                       |
| 1643S0002             | 0.00 <sup>e</sup> ± 0.01                  | 0.00                                       |
| 1643S0003             | 0.02 ± 0.02                               | 0.01                                       |
| 1643S0004             | 0.02 ± 0.02                               | 0.01                                       |
| 1643S0005             | 0.00 ± 0.02                               | 0.00                                       |
| 1643S0006             | 0.01 ± 0.02                               | 0.00                                       |

<sup>a</sup>Refer to Figures 1 and 2.

<sup>b</sup>Calculated by dividing the Cs-137 concentration by the DCGL<sub>w</sub> of 2.39 pCi/g.

<sup>c</sup>Uncertainties represent the 95% confidence level based on total propagated uncertainties.

<sup>d</sup>Not applicable.

<sup>e</sup>Zero values due to rounding.

## REFERENCES

Maine Yankee Atomic Power Company (MYAPC). Maine Yankee License Termination Plan, Revision 3. Wiscasset, Maine. October 2002.

Oak Ridge Institute for Science and Education (ORISE). Final Confirmatory Survey Plan for Surface Soil Survey Unit 9, Maine Yankee Atomic Power Company, Wiscasset, Maine [Docket No. 50-0309; RFTA No. 04-003]. Oak Ridge, TN; November 11, 2004a.

Oak Ridge Institute for Science and Education. Final Confirmatory Survey Plan for Surface Soil Survey Unit 10, Maine Yankee Atomic Power Company, Wiscasset, Maine [Docket No. 50-0309; RFTA No. 05-006]. Oak Ridge, TN; December 3, 2004b.

Oak Ridge Institute for Science and Education. Survey Procedures Manual for the Environmental Survey and Site Assessment Program. Oak Ridge, TN; September 2, 2004c.

Oak Ridge Institute for Science and Education. Quality Assurance Manual for the Environmental Survey and Site Assessment Program. Oak Ridge, TN; August 31, 2004d.

Oak Ridge Institute for Science and Education. Laboratory Procedures Manual for the Environmental Survey and Site Assessment Program. Oak Ridge, TN; August 31, 2004e.