

June 27, 2007

Mr. William Snell  
U.S. Nuclear Regulatory Commission  
Region III  
2443 Warrenville Road  
Lisle, IL 60532-4351

**SUBJECT: LETTER REPORT FOR FOUR WATER SAMPLES FROM THE VICINITY OF THE BRAIDWOOD NUCLEAR GENERATING STATION, BRAIDWOOD, ILLINOIS [INSPECTION REPORT NO. 050-00456/2007-004] (RFTA NO. 07-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received four water samples associated with the Braidwood Generating Station on June 1, 2007. ORISE analyzed the samples, for tritium, to an average minimum detectable concentration of 190 pCi/L using a liquid scintillation analyzer with one exception. Sample BD-07-03-03 had a very short count time due to the concentration of tritium in the samples. The chain-of-custody also identified one water sample to be analyzed by gamma spectroscopy (GS). The sample identifications and collection data are presented in Table 1. GS data are presented in Table 2 and the tritium data are presented in Table 3.

Pertinent procedural references are provided in the specific tables. ORISE's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

My contact information is listed below. You may also contact Wade Ivey at 865.576.9184 with any questions or comments.



Sincerely,



Dale Condra, Manager  
Laboratory

RDC:WPI:km

c: T. Carter, NMSS/DWMEP 7J8  
E. Knox-Davin, NRC/NMSS/TWFN 8A23  
E. Abelquist, ORISE  
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File 1744

Distribution approval and concurrence :	Initials
Technical Management Team Member	
Quality Manager	

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**TABLE 1**

**SAMPLE IDENTIFICATIONS  
AND COLLECTION DATA  
BRAIDWOOD NUCLEAR GENERATING STATION  
BRAIDWOOD, ILLINOIS**

<b>ORISE Sample ID</b>	<b>NRC Region III Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
1744W0001	BD-07-03-01	05/31/07	0800
1744W0002	BD-07-03-02	05/31/07	0810
1744W0003	BD-07-03-03	05/31/07	0935
1744W0004	BD-07-03-04	05/31/07	0925

**TABLE 2**

**CONCENTRATIONS OF SELECTED  
GAMMA EMITTING RADIONUCLIDES  
IN SELECTED WATER SAMPLES  
BY GAMMA SPECTROSCOPY CP1, REVISION 15  
BRAIDWOOD NUCLEAR GENERATING STATION  
BRAIDWOOD, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations <sup>a</sup> (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1744W0004	BD-07-03-04	0.2 ± 2.4 <sup>b</sup> , 3.9	0.9 ± 3.0, 4.5	0.1 ± 2.8, 4.1	-1.1 ± 2.3, 3.9

<sup>a</sup>The MDCs are after the comma.

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

**TABLE 3**

**CONCENTRATIONS OF TRITIUM  
IN WATER SAMPLES  
BY LIQUID SCINTILLATION ANALYSIS  
AP2, REVISION 16 ; CP4, REVISION 3  
BRAIDWOOD NUCLEAR GENERATING STATION  
BRAIDWOOD, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs <sup>a</sup> (pCi/L)
1744W0001	BD-07-03-01	380 ± 120 <sup>b</sup> , 190
1744W0002	BD-07-03-02	440 ± 120 , 190
1744W0003	BD-07-03-03	1,523,000 ± 57,000 , 1,000
1744W0004	BD-07-03-04	59,100 ± 2,200 , 200

<sup>a</sup>MDCs are after the comma.

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