

July 28, 2006

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

SUBJECT: ANALYTICAL RESULTS FOR FOURTEEN WATER SAMPLES, BATCH EIGHT, FROM THE VICINITY OF THE BRAIDWOOD NUCLEAR GENERATING STATION, BRAIDWOOD, ILLINOIS [INSPECTION REPORT NO. 050-00456/2006-004] (RFTA NO. 06-001)

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received Batch Eight, consisting of 14 water samples on July 17, 2006. These samples were collected in the vicinity of the Braidwood Nuclear Generating Station in Braidwood, Illinois. The 14 water samples were analyzed for tritium to a minimum detectable concentration of 190 pCi/L using a liquid scintillation analyzer. The chain-of-custody identified two water samples to be analyzed by gamma spectroscopy (GS). The sample identifications and collection data are presented in Table 1. The GS data are presented in Table 2. The tritium data are presented in Table 3.

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

Dale Condra, Manager
Laboratory

RDC:WPI:ar

Enclosures

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TABLE 1

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

ORISE Sample ID	NRC Region III Sample ID	Collection Date	Collection Time
1691W0163	BD-06-8-01	07/13/06	1623
1691W0164	BD-06-8-02	07/13/06	1630
1691W0165	BD-06-8-03	07/13/06	1640
1691W0166	BD-06-8-04	07/13/06	1700
1691W0167	BD-06-8-05	07/13/06	1725
1691W0168	BD-06-8-06	07/13/06	1750
1691W0169	BD-06-8-07	07/13/06	1800
1691W0170	BD-06-8-08	07/13/06	1805
1691W0171	BD-06-8-09	07/13/06	1810
1691W0172	BD-06-8-10	07/13/06	1815
1691W0173	BD-06-8-11	07/13/06	1830
1691W0174	BD-06-8-12	07/13/06	1900
1691W0175	BD-06-8-13	07/13/06	1930
1691W0176	BD-06-8-14	07/14/06	1630

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 ^a (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1691W0167	BD-06-8-05	-1.6 ± 4.9 ^b	1.1 ± 5.1	2.1 ± 5.3	3.3 ± 4.8
1691W0172	BD-06-8-10	-2.4 ± 6.2	-3.1 ± 5.8	-1.0 ± 6.9	-5.9 ± 7.2

^aThe range of MDCs for the selected radionuclides is 8.2 pCi/L to 9.8 pCi/L.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

TABLE 3

**CONCENTRATIONS OF TRITIUM
IN WATER SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP2, REVISION 15; CP4, REVISION 3
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs ^a (pCi/L)			
1691W0163	BD-06-8-01	-10	±	110 ^b	(190)
1691W0164	BD-06-8-02	-70	±	110	(190)
1691W0165	BD-06-8-03	-20	±	110	(190)
1691W0166	BD-06-8-04	-110	±	110	(190)
1691W0167	BD-06-8-05	10	±	110	(190)
1691W0168	BD-06-8-06	-50	±	110	(190)
1691W0169	BD-06-8-07	270	±	120	(190)
1691W0170	BD-06-8-08	-60	±	110	(190)
1691W0171	BD-06-8-09	-30	±	110	(190)
1691W0172	BD-06-8-10	60	±	110	(190)
1691W0173	BD-06-8-11	-60	±	110	(190)
1691W0174	BD-06-8-12	0 ^c	±	110	(190)
1691W0175	BD-06-8-13	170	±	110	(190)
1691W0176	BD-06-8-14	-60	±	110	(190)

^aMDCs are in parentheses.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

^cZero values are due to rounding.