

April 20, 2007

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

**SUBJECT: LETTER REPORT FOR 34 WATER SAMPLES FROM THE VICINITY OF
THE BRAIDWOOD NUCLEAR GENERATING STATION,
BRAIDWOOD, ILLINOIS
[INSPECTION REPORT NO. 050-00456/2007-003] (RFTA NO. 06-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received 34 water samples associated with the Braidwood Nuclear Generating Station operations, on March 23, 2007. The samples were analyzed for tritium to an average minimum detectable concentration of 190 pCi/L using a liquid scintillation analyzer. The chain-of-custody also identified six water samples for analysis by gamma spectroscopy (GS). The sample identifications and collection data are presented in Table 1, the GS data are presented in Table 2, and the tritium data are presented in Table 3. Pertinent ORISE procedure references are provided in the specific results tables.

The ORISE's Quality Control (QC) requirements were met for these analyses. ORISE 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

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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
1739W0001	BD-07-2-01	2/15/07	NDP ^a
1739W0002	BD-07-2-02	2/15/07	NDP
1739W0003	BD-07-2-03	2/15/07	NDP
1739W0004	BD-07-2-04	2/15/07	NDP
1739W0005	BD-07-2-05	2/15/07	NDP
1739W0006	BD-07-2-06	2/15/07	NDP
1739W0007	BD-07-2-07	2/15/07	NDP
1739W0008	BD-07-2-08	2/15/07	NDP
1739W0009	BD-07-2-09	2/13/07	NDP
1739W0010	BD-07-2-10	2/13/07	NDP
1739W0011	BD-07-2-11	2/13/07	NDP
1739W0012	BD-07-2-12	2/15/07	NDP
1739W0013	BD-07-2-13	3/2/07	NDP
1739W0014	BD-07-2-14	3/12/07	NDP
1739W0015	BD-07-2-15	3/12/07	NDP
1739W0016	BD-07-2-16	3/12/07	NDP
1739W0017	BD-07-2-17	3/12/07	NDP
1739W0018	BD-07-2-18	3/12/07	NDP
1739W0019	BD-07-2-19	3/12/07	NDP
1739W0020	BD-07-2-20	3/12/07	NDP
1739W0021	BD-07-2-21	3/12/07	NDP
1739W0022	BD-07-2-22	3/12/07	NDP
1739W0023	BD-07-2-23	3/12/07	NDP
1739W0024	BD-07-2-24	3/13/07	NDP
1739W0025	BD-07-2-25	3/13/07	NDP
1739W0026	BD-07-2-26	3/13/07	NDP
1739W0027	BD-07-2-27	3/13/07	NDP
1739W0028	BD-07-2-28	3/14/07	NDP
1739W0029	BD-07-2-29	3/14/07	NDP
1739W0030	BD-07-2-30	3/14/07	NDP
1739W0031	BD-07-2-31	3/15/07	NDP
1739W0032	BD-07-2-32	3/15/07	NDP
1739W0033	BD-07-2-33	3/15/07	NDP
1739W0034	BD-07-2-34	3/15/07	NDP

^aNo data provided

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
1739W0005	BD-07-2-05	-3.2 ± 2.9 ^b , 4.6	0.4 ± 2.5, 3.9	-1.2 ± 2.3, 3.9	1.8 ± 2.1, 3.8
1739W0010	BD-07-2-10	-0.7 ± 4.5, 7.2	-0.8 ± 3.3, 5.6	2.7 ± 3.9, 5.8	1.5 ± 3.0, 5.2
1739W0015	BD-07-2-15	-1.1 ± 2.9, 4.7	3.9 ± 3.6, 5.6	-0.9 ± 3.1, 4.8	2.1 ± 5.9, 4.8
1739W0020	BD-07-2-20	0.2 ± 3.1, 5.2	0.1 ± 3.1, 5.4	-2.1 ± 3.1, 5.1	-0.8 ± 2.9, 4.8
1739W0025	BD-07-2-25	-2.4 ± 3.0, 4.9	-0.5 ± 3.0, 5.2	-3.5 ± 3.0, 4.8	-0.1 ± 2.8, 4.8
1739W0030	BD-07-2-30	-4.6 ± 4.6, 7.5	2.6 ± 4.9, 7.7	-0.3 ± 4.6, 7.8	-2.6 ± 5.7, 7.0

^aThe MDCs are after the comma.

^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)		
1739W0001	BD-07-2-01	110	± 120 ^b	, 190
1739W0002	BD-07-2-02	7,650	± 370	, 190
1739W0003	BD-07-2-03	-40	± 110	, 190
1739W0004	BD-07-2-04	100	± 120	, 190
1739W0005	BD-07-2-05	130	± 120	, 190
1739W0006	BD-07-2-06	40	± 110	, 190
1739W0007	BD-07-2-07	110	± 120	, 190
1739W0008	BD-07-2-08	190	± 120	, 190
1739W0009	BD-07-2-09	-150	± 110	, 190
1739W0010	BD-07-2-10	0 ^c	± 110	, 190
1739W0011	BD-07-2-11	-60	± 110	, 190
1739W0012	BD-07-2-12	40	± 110	, 190
1739W0013	BD-07-2-13	40	± 110	, 190
1739W0014	BD-07-2-14	0	± 110	, 190
1739W0015	BD-07-2-15	10	± 110	, 190
1739W0016	BD-07-2-16	470	± 130	, 190
1739W0017	BD-07-2-17	-10	± 110	, 190
1739W0018	BD-07-2-18	240	± 120	, 190
1739W0019	BD-07-2-19	120	± 120	, 190
1739W0020	BD-07-2-20	-90	± 110	, 190
1739W0021	BD-07-2-21	20	± 110	, 200
1739W0022	BD-07-2-22	3,650	± 230	, 200
1739W0023	BD-07-2-23	-60	± 110	, 200
1739W0024	BD-07-2-24	11,150	± 500	, 200
1739W0025	BD-07-2-25	60	± 120	, 200
1739W0026	BD-07-2-26	20	± 110	, 200
1739W0027	BD-07-2-27	30	± 110	, 200
1739W0028	BD-07-2-28	90	± 120	, 200
1739W0029	BD-07-2-29	620	± 130	, 200
1739W0030	BD-07-2-30	100	± 120	, 200
1739W0031	BD-07-2-31	30	± 110	, 200
1739W0032	BD-07-2-32	80	± 120	, 200
1739W0033	BD-07-2-33	12,450	± 540	, 200
1739W0034	BD-07-2-34	40	± 110	, 200

^aMDCs are after the comma.

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

^cZero values are due to rounding.