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Subject: Analytical Results of Sediments Collected From Selected Water Bodies Near the WIPP by NMED/DOE OB/WOS, 2012

The New Mexico Environment Department (NMED) DOE Oversight Bureau (DOE OB) has compiled and assessed laboratory data for sediment collected from selected water bodies near the Waste Isolation Pilot Plant (WIPP), New Mexico, during 2012.

The accompanying data report includes results for sediment collected from six surface water bodies near the WIPP. These include Hill Tank, Indian Tank, Lost Tank, Noya Tank, Poker Tank, and Tut Tank, with a field duplicate collected at Poker Tank. Samples were shipped to the contract lab, and analyzed for americium-241 (Am-241), cesium-137 (Cs-137), plutonium-238 (Pu-238), plutonium-239/240 (Pu-239/240), strontium-90 (Sr-90), uranium-234 (U-234), uranium-235 (U-235), and uranium-238 (U-238).

This year, there were no detections above the sample Minimum Detectable Concentrations (MDC) for Am-241, Pu-239, Pu-239/240, or U-235 at any of the surface water bodies from which sediment was collected.

Cs-137 was detected in activities exceeding the sample MDC in all sediment samples collected this year, including the field duplicate collected from Poker Tank. Cs-137 detections ranged from a minimum of $1.16\text{E-}3 \pm 9.99\text{E-}4$ Bq/g at Tut Tank, to a maximum of $1.41\text{E-}2 \pm 2.33\text{E-}3$ at Poker Tank. The Q/A duplicate, also from Poker Tank showed activities of $1.43\text{E-}2 \pm 2.78\text{E-}3$ Bq/g. This analyte was detected at each of these sites during previous DOE OB sampling projects, with the exception of Tut Tank, as this was the first year sediment was collected from this tank.

Sr-90 was detected in activities exceeding the sample MDC in the sediment collected from Lost Tank, with no such detections from other sampled tanks. While this analyte was detected in sediments collected from other tanks in previous years, this was the first time it was detected at Lost Tank.

U-234 was detected in activities exceeding the sample MDC in sediment samples collected from Hill Tank, Indian Tank, Lost Tank, Poker Tank, and Tut Tank, as well as the field duplicate collected from Poker Tank. Detections of U-234 ranged from a minimum of $3.74\text{E-}3 \pm 2.89\text{E-}3$ Bq/g at Indian Tank to a maximum of $6.44\text{E-}3 \pm 3.52\text{E-}3$ Bq/g at Tut Tank.

U-238 was detected in activities exceeding the sample MDC in sediment samples collected from Hill Tank, Poker Tank, Tut Tank and the field duplicate collected from Poker Tank. Detections of U-238 ranged from a minimum of $2.65\text{E-}3 \pm 2.33\text{E-}3$ Bq/g to a maximum of $6.88\text{E-}3 \pm 3.66\text{E-}3$ Bq/g at Tut Tank.

U-234 and U-238 were found in each of these tanks during previous sampling projects, with sediment collected from Tut Tank the first time during this year. This year's results showed less activity than that reported in the Permittee's Annual Site Environmental Reports for 1998 and 1999, and all uranium activities were within the average range of uranium found naturally in soils worldwide.

Both Cs-137 and Sr-90 are present in surface soils as a result from past atmospheric nuclear weapons tests. The concentration of Cs-137 in surface soil from fallout ranges from about 0.1 to 1 picocurie per gram (pCi/g). The Cs-137 detections obtained this year fall within this range. Currently, Sr-90 levels in surface soils range from 0.01 to 1 picocurie per gram (pCi/g). The Sr-90 detection at Lost Tank falls within this range.

Response

Questions and or comments may be addressed to Thomas Kesterson by phone at (575)-885-9023, by e-mail at thomasl.kesteron@state.nm.us, or to the address in the above letterhead.

Enclosures: 1. Table 1 – Analytical Laboratory Results For Sediment Collected From Selected Water Bodies Near the WIPP by NMED/DOE OB/WOS, 2012

Cc: George Basabilvazo, DOE, CBFO
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Table 1 – Analytical Laboratory Results For Sediment Collected From Selected Water Bodies Near the WIPP by NMED/DOE OB/WOS, 2012

<i>Hill Tank</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	8.25E-02	7.60E-02	1.50E-01	U	3.05E-03	2.81E-03	5.55E-03
Pu-239/240	-2.72E-03	5.50E-02	1.14E-01	U	-1.01E-04	2.04E-03	4.22E-03
Pu-238	0.00E+00	5.50E-02	1.14E-01	U	0.00E+00	2.04E-03	4.22E-03
Am 241	0.00E+00	1.80E-02	3.70E-02	U	0.00E+00	6.66E-04	1.37E-03
Cs 137	7.63E-02	3.10E-02	2.65E-02		2.82E-03	1.15E-03	9.81E-04
U-234	1.38E-01	8.70E-02	5.26E-02		5.11E-03	3.22E-03	1.95E-03
U-235	-1.26E-03	2.50E-02	5.26E-02	U	-4.66E-05	9.25E-04	1.95E-03
U-238	7.17E-02	6.30E-02	6.62E-02		2.65E-03	2.33E-03	2.45E-03

<i>Indian Tank</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	9.30E-02	8.10E-02	1.57E-01	U	3.44E-03	3.00E-03	5.81E-03
Pu-239/240	2.71E-02	5.60E-02	1.22E-01	U	1.00E-03	2.07E-03	4.51E-03
Pu-238	0.00E+00	3.90E-02	8.11E-02	U	0.00E+00	1.44E-03	3.00E-03
Am 241	1.61E-02	2.30E-02	3.36E-02	U	5.96E-04	8.51E-04	1.24E-03
Cs 137	8.48E-02	2.40E-02	2.41E-02		3.14E-03	8.88E-04	8.92E-04
U-234	1.01E-01	7.80E-02	7.54E-02		3.74E-03	2.89E-03	2.79E-03
U-235	2.40E-02	3.80E-02	6.39E-02	U	8.88E-04	1.41E-03	2.36E-03
U-238	7.21E-02	6.70E-02	8.42E-02	U	2.67E-03	2.48E-03	3.12E-03

<i>Lost Tank</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	1.81E-01	9.30E-02	1.44E-01		6.70E-03	3.44E-03	5.33E-03
Pu-239/240	0.00E+00	3.60E-02	7.53E-02	U	0.00E+00	1.33E-03	2.79E-03
Pu-238	-1.80E-03	3.60E-02	7.53E-02	U	-6.66E-05	1.33E-03	2.79E-03
Am 241	7.61E-03	1.70E-02	3.54E-02	U	2.82E-04	6.29E-04	1.31E-03
Cs 137	1.33E-01	3.60E-02	3.02E-02		4.92E-03	1.33E-03	1.12E-03
U-234	1.18E-01	8.20E-02	7.92E-02		4.37E-03	3.03E-03	2.93E-03
U-235	2.01E-02	3.60E-02	7.09E-02	U	7.44E-04	1.33E-03	2.62E-03
U-238	7.03E-02	6.30E-02	7.09E-02	U	2.60E-03	2.33E-03	2.62E-03

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<i>Noya Tank</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	5.82E-02	6.90E-02	1.42E-01	U	2.15E-03	2.55E-03	5.25E-03
Pu-239/240	-1.15E-03	2.30E-02	4.81E-02	U	-4.26E-05	8.51E-04	1.78E-03
Pu-238	1.15E-02	2.30E-02	4.82E-02	U	4.26E-04	8.51E-04	1.78E-03
Am 241	0.00E+00	1.40E-02	2.96E-02	U	0.00E+00	5.18E-04	1.10E-03
Cs 137	7.89E-02	2.60E-02	2.52E-02		2.92E-03	9.62E-04	9.32E-04
U-234	5.21E-02	5.60E-02	6.57E-02	U	1.93E-03	2.07E-03	2.43E-03
U-235	0.00E+00	2.80E-02	5.73E-02	U	0.00E+00	1.04E-03	2.12E-03
U-238	1.37E-02	2.80E-02	5.73E-02	U	5.07E-04	1.04E-03	2.12E-03

<i>Poker Tank</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	1.16E-01	7.90E-02	1.42E-01	U	4.29E-03	2.92E-03	5.25E-03
Pu-239/240	-1.10E-03	2.20E-02	4.58E-02	U	-4.07E-05	8.14E-04	1.69E-03
Pu-238	-1.10E-03	2.20E-02	4.59E-02	U	-4.07E-05	8.14E-04	1.70E-03
Am 241	-7.94E-04	1.60E-02	3.32E-02	U	-2.94E-05	5.92E-04	1.23E-03
Cs 137	3.81E-01	6.30E-02	3.51E-02		1.41E-02	2.33E-03	1.30E-03
U-234	1.36E-01	8.20E-02	4.77E-02		5.03E-03	3.03E-03	1.76E-03
U-235	0.00E+00	2.30E-02	4.44E-02	U	0.00E+00	8.51E-04	1.64E-03
U-238	1.00E-01	7.10E-02	5.47E-02		3.70E-03	2.63E-03	2.02E-03

<i>Poker Tank, Dup</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	1.66E-01	9.40E-02	1.52E-01		6.14E-03	3.48E-03	5.62E-03
Pu-239/240	0.00E+00	3.80E-02	7.91E-02	U	0.00E+00	1.41E-03	2.93E-03
Pu-238	1.89E-02	3.80E-02	7.92E-02	U	6.99E-04	1.41E-03	2.93E-03
Am 241	8.13E-03	1.60E-02	3.40E-02	U	3.01E-04	5.92E-04	1.26E-03
Cs 137	3.86E-01	7.50E-02	3.91E-02		1.43E-02	2.78E-03	1.45E-03
U-234	1.31E-01	8.30E-02	5.03E-02		4.85E-03	3.07E-03	1.86E-03
U-235	2.59E-02	3.90E-02	6.57E-02	U	9.58E-04	1.44E-03	2.43E-03
U-238	1.46E-01	8.90E-02	6.57E-02		5.40E-03	3.29E-03	2.43E-03

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<i>Tut Tank</i> 2012					<i>Data Summaries</i>		
	Result	2s TPU	MDC	Lab	Result	2s TPU	MDC
Analyte	pCi/g			Flag	Bq/g		
Sr 90	8.93E-02	8.80E-02	1.75E-01	U	3.30E-03	3.26E-03	6.48E-03
Pu-239/240	-1.51E-03	3.00E-02	6.31E-02	U	-5.59E-05	1.11E-03	2.33E-03
Pu-238	1.51E-02	3.10E-02	6.32E-02	U	5.59E-04	1.15E-03	2.34E-03
Am 241	9.50E-03	1.90E-02	3.97E-02	U	3.52E-04	7.03E-04	1.47E-03
Cs 137	3.14E-02	2.70E-02	3.70E-02		1.16E-03	9.99E-04	1.37E-03
U-234	1.74E-01	9.50E-02	4.87E-02		6.44E-03	3.52E-03	1.80E-03
U-235	3.50E-02	4.10E-02	4.87E-02	U	1.30E-03	1.52E-03	1.80E-03
U-238	1.86E-01	9.90E-02	4.87E-02		6.88E-03	3.66E-03	1.80E-03