March 8, 2001

37-23341-01 030-20934

Ms. Elizabeth Ullrich U.S. Nuclear Regulatory Commission Region I 475 Allendale Road King of Prussia, PA 19406

REVISED REPORT FOR ANALYSIS OF REED BED SAMPLES COLLECTED, SUBJECT: AUGUST 12, 1999 THROUGH SEPTEMBER 2, 1999, FROM ROYERSFORD WASTEWATER TREATMENT FACILITY, ROYERSFORD, PENNSYLVANIA (DOCKET NO. 030-20934, RFTA NO. 99-017)

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

Dear Ms. Ullrich:

This letter is being revised to correct the units associated with the strontium-90 data in Table 1. The original units were presented in pCi/g wet. The units should have been presented as pCi/g dry. The correct units have been inserted into Table 1.

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) performed strontium-90, tritium, gamma spectroscopy, and percent moisture analyses on 6 sludge and 13 liquid samples from the Royersford Wastewater Treatment Facility, Royersford, Pennsylvania. The results are presented in Tables 1 through 7, respectively.

ESSAP's Quality Control (QC) procedures were followed for these analyses. Analytical and instrumentation QC for these analyses were within acceptable limits. The QC files are available for your review upon request.

We apologize for any inconvenience this reporting error may have caused. Please contact me at (865) 241-3242 or Wade Ivey at (865) 576-9184, with any questions or comments.

Sincerely,

Dale Contra-

Dale Condra Laboratory Manager Environmental Survey and Site Assessment Program

RDC:ar

Enclosure

R. Clement, NRC/NMSS/TWFN/7F27 cc: E. Knox-Davin, NRC/NMSS/TWFN/8A23 J. Kottan, NRC/Region I W. Beck, ORISE/ESSAP

E. Abelquist, ORISE/ESSAP T. Vitkus, ORISE/ESSAP W. Ivey, ORISE/ESSAP File/737 •

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STRONTIUM-90 CONCENTRATIONS IN SLUDGE SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	Sr-90 Concentration (pCi/g dry)	MDC (pCi/g dry)
0737M015	Sample #1 sludge dewatering filter cake	1.21 ± 0.27^{a}	0.34
0737M016	Sample #2 sludge filter pressed cake	1.42 ± 0.28	0.33
0737M017	Sample #3 sludge filter cake	2.29 ± 0.33	0.34
0737M018	Sample #4 sludge dewatering filter cake	1.48 ± 0.28	0.34
0737M019	Sample #5 pressed filter cake	1.80 ± 0.31^{a}	0.36
0737M020	Sample #5 sludge filter cake	0.86 ± 0.29	0.41

^a Uncertainties are total propagated uncertainties at the 95% confidence level.

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STRONTIUM-90 CONCENTRATIONS IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	Sr-90 Concentration (pCi/L)	MDC (pCi/L)
0737M021	Sample #1 sludge dewatering, polymer added	48 ± 17^{a}	25
0737M022	Sample #1 primary digestor sludge sample, polymer added	14.4 ± 6.7	10
0737M023	Sample #1 sludge dewatering, sludge sample only	33.4 ± 9.8	14
0737M024	Sample #2 dewatering sludge sample, polymer added	39 ± 14	21
0737M025	Sample #3 sludge sample, polymer added, cell A-B	65 ± 18	25
0737M026	Sample #5 sludge sample, polymer added	30.9 ± 9.4	13
0737M027	Sample #1 filtrate from sludge dewatering	-7.9 ± 8.5	16
0737M028	Sample #1 river sample effluent	-4.8 ± 9.3	17
0737M029	Sample #1 filtrate from primary digestor	-4.2 ± 8.8	16

TABLE 2 (continued)

STRONTIUM-90 CONCENTRATIONS IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	Sr-90 Concentration (pCi/L)	MDC (pCi/L)
0737M030	Sample #2 filtrate from sludge dewatering	-6.4 ± 8.4	16
0737M031	Sample #3 filtrate from sludge dewatering	0.6 ± 9.1	16
0737M032	Sample #4 filtrate	-1.5 ± 9.2	17
0737M033	Sample #5 filtrate	-3.1 ± 8.8	16

TRITIUM CONCENTRATIONS IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	H-3 Concentration (pCi/L)	MDC (pCi/L)
0737M021	Sample #1 sludge dewatering, polymer added	536 ± 461^{a}	760
0737M022	Sample #1 primary digestor sludge sample, polymer added	546 ± 459	757
0737M023	Sample #1 sludge dewatering, sludge sample only	332 ± 455	764
0737M024	Sample #2 dewatering sludge sample, polymer added	312 ± 463	779
0737M025	Sample #3 sludge sample, polymer added, cell A-B	639 ± 473	774
0737M026	Sample #5 sludge sample, polymer added	296 ± 458	772
0737M027	Sample #1 filtrate from sludge dewatering	889 ± 478	765
0737M028	Sample #1 river sample effluent	223 ± 460	780

TABLE 3 (continued)

TRITIUM CONCENTRATIONS IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	H-3 Concentration (pCi/L)	MDC (pCi/L)
0737M029	Sample #1 filtrate from primary digestor	407 ± 468	781
0737M030	Sample #2 filtrate from sludge dewatering	561 ± 471	777
0737M031	Sample #3 filtrate from sludge dewatering	346 ± 462	776
0737M032	Sample #4 filtrate	486 ± 465	771
0737M033	Sample #5 filtrate	462 ± 454	753

CONCENTRATION OF SELECTED GAMMA EMITTING ISOTOPES IN SLUDGE SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC REGION I SAMPLE ID	I-125	Cr-51	Sb-125	Ag-110M	Cs-137
0737M015	Sample #1 sludge dewatering filter cake	4.2 ± 2.8^{a}	8.2 ± 7.0	2.86 ± 0.73	1.35 ± 0.32	13.69 ± 0.79
0737M016	Sample #2 sludge filter pressed cake	12.7 ± 4.7	1.7 ± 9.1	2.86 ± 0.52	0.98 ± 0.24	13.74 ± 0.72
0737M17	Sample #3 sludge filter cake	-6.5 ± 8.5	17.4 ± 4.8	2.69 ± 0.59	1.98 ± 0.39	13.66 ± 0.77
0737M018	Sample #4 sludge dewatering filter cake	4.4 ± 2.3	12.7 ± 5.7	2.75 ± 0.65	2.26 ± 0.41	12.65 ± 0.74
0737M019	Sample #5 pressed filter cake	10.5 ± 4.3	9.9 ± 3.3	2.18 ± 0.49	1.81 ± 0.29	13.13 ± 0.69
0737M020	Sample #5 sludge filter cake	7.7 ± 2.7	18.1 ± 2.9	1.54 ± 0.40	1.49 ± 0.26	10.40 ± 0.56

TABLE 4 (continued)

CONCENTRATION OF SELECTED GAMMA EMITTING ISOTOPES IN SLUDGE SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

	NRC REGION 1	Radionuclide Concentration (pCi/g wet)				
ESSAP SAMPLE ID	SAMPLE ID	Cs-134	Co-58	Mn-54	Zn-65	Co-60
0737M015	Sample #1 sludge dewatering filter cake	1.18 ± 0.44^{a}	34.1 ± 2.2	1677 ± 10	71.6 ± 2.8	304.4 ± 4.2
0737M016	Sample #2 sludge filter pressed cake	0.88 ± 0.33	32.2 ± 1.8	1757 ± 10	71.7 ± 2.4	301.8 ± 4.2
0737M017	Sample #3 sludge filter cake	1.07 ± .48	46.1 ± 2.7	156.5 ± 8.7	85.4 ± 2.9	302.0 ± 4.5
0737M018	Sample #4 sludge dewatering filter cake	0.88 ± 0.49	44.7 ± 2.7	141.5 ± 8.1	70.4 ± 2.6	271.7 ±3.8
0737M019	Sample #5 pressed filter cake	0.90 ± 0.32	38.9 ± 2.2	138.4 ± 7.60	60.0 ± 2.0	288.4 ± 4.1
0737M020	Sample #5 sludge filter cake	0.61 ± 0.26	17.0 ± 1.0	173.0 ± 9.5	26.9 ± 1.3	182.2 ± 2.6

^a Uncertainties are total propagated uncertainties at the 95% confidence level.

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CONCENTRATION OF SELECTED GAMMA EMITTING ISOTOPES IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP	NRC REGION I Radionuclide Concentration (pCi/L)					
SAMPLE ID	SAMPLE ID	I-125	Cr-51	Sb-125	Ag-110M	Cs-137
0737M021	Sample #1 sludge dewatering polymer added	409 ± 210^{a}	1140 ± 580	231 ± 58	83 ± 17	1270 ± 70
0737M022	Sample #1 primary digestor sludge sample, polymer added	177 ± 247	1810 ± 270	207 ± 52	139 ± 23	950 ± 50
0737M023	Sample #1 sludge dewatering, sludge sample only	605 ± 451	2410 ± 870	461 ± 149	313 ± 65	1820 ± 110
0737M024	Sample #2 sludge dewatering sludge sample, polymer added	121 ± 555	833 ± 501	170 ± 68	86 ± 34	1120 ± 80
0737M025	Sample #3 sludge sample, polymer added, cell A-B	746 ± 451	1790 ± 860	395 ± 96	237 ± 46	1650 ± 100
0737M026	Sample #5 sludge sample, polymer added	369 ± 544	24 ± 107	267 ± 80	145 ± 36	94.15
0737M027	Sample #1 filtrate from sludge dewatering	-60 ± 139	-20 ± 138	21 ± 17	1.7 ± 7.1	94 ± 15

TABLE 5 (continued)

CONCENTRATION OF SELECTED GAMMA EMITTING ISOTOPES IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP	SSAP NRC REGION I Radionuclide Concentration (pCi/L)					
SAMPLE ID	SAMPLE ID	I-125	Cr-51	Sb-125	Ag-110M	Cs-137
0737M028	Sample #1 river sample effluent	18 ± 84	37 ± 71	-3.0 ± 9.1	-1.4 ± 3.6	24.5 ± 8.2
0737M029	Sample #1 filtrate from primary digestor	-16 ± 92	75 ± 67	-1.5 ± 12.1	-6.1 ± 4.6	44.5 ± 7.7
0737M030	Sample #2 filtrate from sludge dewatering	20 ± 78	27 ± 72	8.9 ± 9.8	-13.2 ± 4.6	112.5 ± 8.9
0737M031	Sample #3 filtrate from sludge dewatering	-188 ± 215	98 ± 168	11 ± 23	-9.8 ± 9.9	93 ± 19
0737M032	Sample #4 filtrate	-81 ± 227	42 ± 173	18 ± 27	3 ± 12	135 ± 23
0737M033	Sample #5 filtrate	-145 ± 150	89 ± 126	12 ± 21	0.2 ± 9.4	84 ± 17

CONCENTRATION OF SELECTED GAMMA EMITTING ISOTOPES IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP	NRC REGION 1	Radionuclide Concentration (pCi/L)				
SAMPLE ID	SAMPLE ID	Cs-134	Co-58	Mn-54	Zn-65	Co-60
0737M021	Sample #1 sludge dewatering, polymer added	68 ± 43^{a}	2840 ± 180	13,890 ± 770	4700 ± 210	27,330 ± 410
0737 M 022	Sample #1 primary digestor dewatering, sludge sample, polymer added	49 ± 22	1670 ± 100	16,330 ± 880	3300 ± 130	$17,520 \pm 250$
0737M023	Sample #1 sludge dewatering, sludge sample only	140 ± 81	5910 ± 350	19,950 ± 1110	9600 ± 390	42,530 ± 650
0737M024	Sample #2 sludge dewatering sludge sample, polymer added	100 ± 50	2310 ± 160	12,300 ± 690	4225 ± 225	21, 230 ± 340
0737M025	Sample #3 sludge sample, polymer added, cell A-B	124 ± 76	5700 ± 340	17,630 ± 980	10,070 ± 410	35,050 ± 540
0737M026	Sample #5 sludge sample, polymer added	83 ± 49	3250 ± 200	11,830 ± 660	5770 ± 260	24,120 ± 380
0737M027	Sample #1 filtrate from sludge dewatering	1.8 ± 8.5	45 ± 21	278 ± 28	66 ± 23	545 ± 31

TABLE 6 (continued)

CONCENTRATION OF SELECTED GAMMA EMITTING ISOTOPES IN LIQUID SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP	NRC REGION 1	Radionuclide Concentration (pCi/L)				
SAMPLE ID	SAMPLE ID	Cs-134	Co-58	Mn-54	Zn-65	Co-60
0737M028	Sample #1 river sample effluent	3.0 ± 3.8	8.2 ± 4.7	1.9 ± 3.5	8.1 ± 7.7	38.8 ± 6.9
0737M029	Sample #1 filtrate from primary digestor	5.6 ± 5.4	5.2 ± 9.2	126 ± 13	11 ± 11	132 ± 14
0737M030	Sample #2 filtrate from sludge dewatering	8.8 ± 4.7	86 ± 11	294 ± 19	73 ± 12	709 ± 18
0737M031	Sample #3 filtrate from sludge dewatering	4 ± 12	93 ± 25	290 ± 30	83 ± 40	900 ± 40
0737M032	Sample #4 filtrate	8 ± 13	377 ± 38	740 ± 50	310 ± 50	1500 ± 50
0737M033	Sample #5 filtrate	7±11	60 ± 20	220 ± 30	176 ± 56	920 ± 40

PERCENT MOISTURE IN REED BED SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	Percent Moisture ^a
0737M015	Sample #1 sludge dewatering filter cake	83.77
0737M016	Sample #2 sludge filter pressed cake	82.84
0737M017	Sample #3 sludge filter cake	83.26
0737M018	Sample #4 sludge dewatering filter cake	84.17
0737M019	Sample #5 pressed filter cake	82.17
0737M020	Sample #5 sludge filter cake	78.37
0737M021	Sample #1 sludge dewatering, polymer added	96.41
0737M022	Sample #1 primary digestor sludge sample, polymer added	98.72
0737M023	Sample #1 sludge dewatering, sludge sample only	97.96
0737M024	Sample #2 sludge dewatering sludge sample, polymer added	96.96
0737M025	Sample #3 sludge sample, polymer added, cell A-B	96.32
0737M026	Sample #5 sludge sample, polymer added	98.14

TABLE 7 (continued)

PERCENT MOISTURE IN REED BED SAMPLES ROYERSFORD WASTEWATER TREATMENT FACILITY ROYERSFORD, PENNSYLVANIA

ESSAP SAMPLE ID	NRC SAMPLE ID	Percent Moisture ^a
0737M027	Sample #1 filtrate from sludge dewatering	99.89
0737M028	Sample #1 river sample effluent	99.93
0737M029	Sample #1 filtrate from primary digestor	99.92
0737M030	Sample #2 filtrate from sludge dewatering	99.87
0737M031	Sample #3 filtrate from sludge dewatering	99.87
0737M032	Sample #4 filtrate	99.77
0737M033	Sample #5 filtrate	99.91

^a Percent moisture was calculated by:

Percent Moisture = $\left(\frac{wet weight - dry weight}{wet weight}\right) x 100$

	: (FOR LFMS USE)
	: INFORMATION FROM LTS
BETWEEN:	
	:
License Fee Management Branch, ARM and	: Program Code: 03218
	: Status Code: 0
Regional Licensing Sections	: Fee Category: 6A
	: Exp. Date: 20050831
	: Fee Comments: CALIBRATION IS FOR THEM
	: Decom Fin Assur Reqd: Y

LICENSE FEE TRANSMITTAL

A. REGION I

- 1. APPLICATION ATTACHED
 Applicant/Licensee: UNITECH SERVICES GROUP, INC.
 Received Date: 20020212
 Docket No: 3020934
 Control No.: 131047
 License No.: 37-23341-01
 Action Type: Notifications
- 2. FEE ATTACHED Amount: Check No.:
- 3. COMMENTS

M. a. Perkim Signed Date

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered /__/)

1. Fee Category and Amount:

2. Correct Fee Paid. Application may be processed for: Amendment Renewal License

OTHER

Signed ____ Date
