Appendix J

Summary of Quality Assurance Crosscheck Analyses

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Table J-1
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 13; May 2005

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?	Analyzed by:
MAPEP - 05 - GrF13 Gross Alpha/Beta Air Filter							
Gross Alpha	Air Filter	Bq/sample	0.232	0.0730	0.000–0.464	Yes	ELAB
Gross Beta	Air Filter	Bq/sample	0.297	0.369	0.148–0.446	Yes	ELAB
MAPEP - 05 - RdF13 Radiological Air Filter							
Cs-137	Air Filter	Bq/sample	2.26	2.24	1.58–2.94	Yes	ELAB
Co-60	Air Filter	Bq/sample	3.03	3.04	2.12–3.94	Yes	ELAB
Am-241	Air Filter	Bq/sample	0.102	0.102	0.07–0.13	Yes	GEL
Cs-137	Air Filter	Bq/sample	2.26	2.277	1.58–2.94	Yes	GEL
Co-60	Air Filter	Bq/sample	3.03	3.190	2.12–3.94	Yes	GEL
Pu-238	Air Filter	Bq/sample	0.195	0.173	0.14–0.25	Yes	GEL
Pu-239/240	Air Filter	Bq/sample	0.165	0.165	0.12–0.21	Yes	GEL
Sr-90	Air Filter	Bq/sample	1.35	1.453	0.94–1.75	Yes	GEL
U-233/234	Air Filter	Bq/sample	0.34	0.336	0.24–0.44	Yes	GEL
U-238	Air Filter	Bq/sample	0.352	0.356	0.25–0.46	Yes	GEL
MAPEP - 05 - GrW13 Gross Alpha/Beta Water Standard							
Gross Alpha	Water	Bq/L	0.525	0.265	0.000–1.050	Yes	ELAB
Gross Beta	Water	Bq/L	1.67	1.80	0.835–2.505	Yes	ELAB
Gross Alpha	Water	Bq/L	0.525	0.291	0.000–1.050	Yes	GEL
Gross Beta	Water	Bq/L	1.67	1.645	0.835–2.505	Yes	GEL
MAPEP - 05 - MaW13 Water Standard - Radionuclides							
Cs-137	Water	Bq/L	332	319	232.40–431.60	Yes	ELAB
Co-60	Water	Bq/L	251	241	175.70–326.30	Yes	ELAB
H-3	Water	Bq/L	280	280	196.00–364.00	Yes	ELAB
Sr-90	Water	Bq/L	[b]	0.132	[b]	Yes	ELAB
Am-241	Water	Bq/L	1.72	1.803	1.20–2.24	Yes	GEL
Cs-137	Water	Bq/L	332	318.0	232.40–431.60	Yes	GEL
Co-60	Water	Bq/L	251	247.3	175.70–326.30	Yes	GEL
H-3	Water	Bq/L	280	279.7	196.00–364.00	Yes	GEL
Pu-238	Water	Bq/L	0.018	0.016	[b]	Yes	GEL
Pu-239/240	Water	Bq/L	2.4	2.400	1.68–3.12	Yes	GEL
Sr-90	Water	Bq/L	[b]	0.14	[b]	Yes	GEL
Tc-99	Water	Bq/L	42.9	37.5	30.03–55.77	Yes	GEL
U-233/234	Water	Bq/L	3.24	3.273	2.27–4.21	Yes	GEL
U-238	Water	Bq/L	3.33	3.400	2.33–4.33	Yes	GEL

ELAB - Environmental Laboratory
GEL - General Engineering Laboratory
Note: This report has been excerpted to include only those matrix/analyte combinations performed in support of the analyses of samples collected at the WVDP and which are presented in this Annual Site Environmental Report.
[a] MAPEP monitors performance and requests corrective action as required.
[b] Although no actual values or acceptable range was provided, the results were assessed by MAPEP as acceptable.

Table J-1 (continued)
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 13; May 2005

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?	Analyzed by:
MAPEP - 05 - RdV13 Vegetation Standard							
Cs-137	Veg	Bq/sample	4.11	3.45	2.88–5.34	Yes	GEL
Sr-90	Veg	Bq/sample	1.65	1.89	1.15–2.14	Yes	GEL
MAPEP - 05 - MaW13 Water Standard - Metals							
Arsenic	Water	mg/L	[b]	0.003	[b]	Yes	LVLI
Barium	Water	mg/L	2.63	2.68	1.84–3.42	Yes	LVLI
Beryllium	Water	mg/L	0.417	0.408	0.29–0.54	Yes	LVLI
Cadmium	Water	mg/L	0.303	0.297	0.21–0.39	Yes	LVLI
Chromium	Water	mg/L	1.67	1.83	1.17–2.17	Yes	LVLI
Copper	Water	mg/L	1.92	1.95	1.34–2.50	Yes	LVLI
Lead	Water	mg/L	1.21	1.2	0.85–1.57	Yes	LVLI
Mercury	Water	mg/L	0.102	0.103	0.07–0.13	Yes	LVLI
Nickel	Water	mg/L	0.968	0.963	0.68–1.26	Yes	LVLI
Selenium	Water	mg/L	0.362	0.343	0.25–0.47	Yes	LVLI
Vanadium	Water	mg/L	3.67	3.65	2.57–4.77	Yes	LVLI
Zinc	Water	mg/L	1.33	1.3	0.93–1.73	Yes	LVLI
MAPEP - 05 - OrW13 Water Standard - Organic Compounds							
1,3-Dichlorobenzene	Water	µg/L	30.7	37	6.94–54.53	Yes	LVLI
1,4-Dichlorobenzene	Water	µg/L	27.2	32	6.25–48.11	Yes	LVLI
2,4-Dimethylphenol	Water	µg/L	49.9	60	20.10–79.70	Yes	LVLI
1,2,4-Trichlorobenzene	Water	µg/L	31.5	35	9.07–53.95	Yes	LVLI
Napthalene	Water	µg/L	37	42	13.02–61.02	Yes	LVLI
Hexachlorobutadiene	Water	µg/L	28.8	34	2.31–55.20	Yes	LVLI
2-Methylphenol	Water	µg/L	41.5	59	QL–110.80	Yes	LVLI
2,6-Dichlorophenol	Water	µg/L	44.8	46	12.60–77.04	Yes	LVLI
2,6-Dinitrotoluene	Water	µg/L	55.9	58	19.02–92.73	Yes	LVLI
2,4-Dinitrotoluene	Water	µg/L	57.6	69	3.76–111.35	Yes	LVLI
4-Nitrophenol	Water	µg/L	50.8	74	QL–133.57	Yes	LVLI
Diethylphthalate	Water	µg/L	53.4	57	23.70–83.14	Yes	LVLI
Hexachlorobenzene	Water	µg/L	31.9	38	QL–77.09	Yes	LVLI
Anthracene	Water	µg/L	41.3	54	QL–106.29	Yes	LVLI
1,3-Dinitrobenzene	Water	µg/L	50.5	58	QL–109.67	Yes	LVLI
Pyrene	Water	µg/L	42.1	56	QL–109.11	Yes	LVLI
Benzo(a)anthracene	Water	µg/L	27.3	34	QL–67.32	Yes	LVLI

GEL - General Engineering Laboratories
LVLI - Lionville Laboratories, Inc.
QL - Quantitation Limit
Note: This report has been excerpted to include only those matrix/analyte combinations performed in support of the analyses of samples collected at the WVDP and which are presented in this Annual Site Environmental Report.
[a] *MAPEP monitors performance and requests corrective action as required.*
[b] *Although no actual values or acceptable range was provided, the results were assessed by MAPEP as acceptable.*

Table J-1 (concluded)
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 13; May 2005

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?	Analyzed by:
MAPEP - 05 - MaS13 Soil Standard - Metals							
Antimony	Soil	mg/kg	30.9	13.5	21.63–40.17	No	LVLI
Arsenic	Soil	mg/kg	51.9	47.9	36.33–67.47	Yes	LVLI
Barium	Soil	mg/kg	792	785	554.40–1,029.60	Yes	LVLI
Beryllium	Soil	mg/kg	10.3	10.5	7.21–13.39	Yes	LVLI
Cadmium	Soil	mg/kg	13.2	11.7	9.24–17.16	Yes	LVLI
Chromium	Soil	mg/kg	57.2	64.8	40.04–74.36	Yes	LVLI
Lead	Soil	mg/kg	69.0	65.1	48.30–89.70	Yes	LVLI
Mercury	Soil	mg/kg	0.437	0.45	0.31–0.57	Yes	LVLI
Nickel	Soil	mg/kg	144	141	100.80–187.20	Yes	LVLI
Silver	Soil	mg/kg	43.1	42.4	30.17–56.03	Yes	LVLI
Thallium	Soil	mg/kg	61.8	52.7	43.26–80.34	Yes	LVLI
Vanadium	Soil	mg/kg	92.7	84.1	64.89–120.51	Yes	LVLI
Zinc	Soil	mg/kg	200	193	140.00–260.00	Yes	LVLI

LVLI - Lionville Laboratories, Inc.
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[a] MAPEP monitors performance and requests corrective action as required.

Table J-2
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 14; November 2005

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?	Analyzed by:
MAPEP - 05 - GrF14 Gross Alpha/Beta Air Filter							
Gross Alpha	Air Filter	Bq/sample	0.482	0.204	-0.17–0.80	Yes	ELAB
Gross Beta	Air Filter	Bq/sample	0.827	0.899	0.55–1.22	Yes	ELAB
MAPEP - 05 - RdF14 Radiological Air Filter							
Cs-137	Air Filter	Bq/sample	3.23	3.03	2.26–4.20	Yes	ELAB
Co-60	Air Filter	Bq/sample	2.85	2.66	1.99–3.70	Yes	ELAB
Am-241	Air Filter	Bq/sample	0.158	0.164	0.11–0.21	Yes	GEL
Cs-137	Air Filter	Bq/sample	3.23	3.113	2.26–4.20	Yes	GEL
Co-60	Air Filter	Bq/sample	2.85	2.867	1.99–3.70	Yes	GEL
Pu-238	Air Filter	Bq/sample	0.0969	0.093	0.07–0.13	Yes	GEL
Pu-239/240	Air Filter	Bq/sample	0.0898	0.079	0.06–0.12	Yes	GEL
Sr-90	Air Filter	Bq/sample	2.25	2.465	1.58–2.92	Yes	GEL
U-233/234	Air Filter	Bq/sample	0.273	0.280	0.19–0.35	Yes	GEL
U-238	Air Filter	Bq/sample	0.283	0.281	0.20–0.37	Yes	GEL
MAPEP - 05 - GrW14 Gross Alpha/Beta Water Standard							
Gross Alpha	Water	Bq/L	0.790	0.845	0.21–1.38	Yes	ELAB
Gross Beta	Water	Bq/L	1.350	1.50	0.85–1.92	Yes	ELAB
Gross Alpha	Water	Bq/L	0.790	0.673	0.21–1.38	Yes	GEL
Gross Beta	Water	Bq/L	1.350	1.343	0.85–1.92	Yes	GEL
MAPEP - 05 - MaW14 Water Standard							
Cs-137	Water	Bq/L	333	316	233.10–432.90	Yes	ELAB
Co-60	Water	Bq/L	261	254	182.70–339.30	Yes	ELAB
H-3	Water	Bq/L	527	530	368.90–685.10	Yes	ELAB
Sr-90	Water	Bq/L	8.98	8.39	6.29–11.67	Yes	ELAB
Am-241	Water	Bq/L	2.23	1.987	1.56–2.90	Yes	GEL
Cs-137	Water	Bq/L	333	315.0	233.10–432.90	Yes	GEL
Co-60	Water	Bq/L	261	257.0	182.70–339.30	Yes	GEL
H-3	Water	Bq/L	527	512.7	368.90–685.10	Yes	GEL
Pu-238	Water	Bq/L	1.67	1.523	1.34–2.48	Yes	GEL
Pu-239/240	Water	Bq/L	2.45	2.273	1.92–3.58	Yes	GEL
Sr-90	Water	Bq/L	8.98	7.42	6.29–11.67	Yes	GEL
Tc-99	Water	Bq/L	66.5	65.1	46.55–86.45	Yes	GEL
U-233/234	Water	Bq/L	4.1	4.033	2.87–5.33	Yes	GEL
U-238	Water	Bq/L	4.26	4.197	2.98–5.54	Yes	GEL
MAPEP - 05 - RdV14 Vegetation Standard							
Cs-137	Veg	Bq/sample	5.43	2.853	3.80–7.06	No	GEL
Sr-90	Veg	Bq/sample	2.42	2.030	1.69–3.15	Yes	GEL

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[a] MAPEP monitors performance and requests corrective action as required.

Table J-2 (continued)
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 14; November 2005

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?	Analyzed by:
MAPEP - 05 - MaW14 Water Standard - Metals							
Antimony	Water	mg/L	1.77	1.8	1.24–2.30	Yes	LVLI
Arsenic	Water	mg/L	2.04	2.1	1.43–2.65	Yes	LVLI
Barium	Water	mg/L	16.34	16.4	11.44–21.24	Yes	LVLI
Beryllium	Water	mg/L	1.276	1.3	0.89–1.66	Yes	LVLI
Cadmium	Water	mg/L	[b]	<0.00030	[b]	Yes	LVLI
Chromium	Water	mg/L	1.27	1.3	0.89–1.65	Yes	LVLI
Copper	Water	mg/L	3.80	3.8	2.66–4.94	Yes	LVLI
Lead	Water	mg/L	[b]	<0.0025	[b]	Yes	LVLI
Mercury	Water	mg/L	0.00885	0.0080	0.01–0.01	Yes	LVLI
Nickel	Water	mg/L	1.457	1.5	1.02–1.89	Yes	LVLI
Selenium	Water	mg/L	0.443	0.45	0.31–0.58	Yes	LVLI
Silver	Water	mg/L	[b]	0.0023	[b]	Yes	LVLI
Thallium	Water	mg/L	4.97	5.1	3.48–6.46	Yes	LVLI
Vanadium	Water	mg/L	0.876	0.89	0.61–1.14	Yes	LVLI
Zinc	Water	mg/L	4.57	4.5	3.20–5.94	Yes	LVLI
MAPEP - 05 - OrW14 Water Standard - Organic Compounds							
2-Chlorophenol	Water	µg/L	81.4	85	17.50–145.33	Yes	LVLI
1,3-Dichlorobenzene	Water	µg/L	34.2	39	7.93–60.51	Yes	LVLI
Hexachloroethane	Water	µg/L	39.5	43	8.78–70.19	Yes	LVLI
Nitrobenzene	Water	µg/L	52.2	51	17.19–87.18	Yes	LVLI
2,4-Dimethylphenol	Water	µg/L	70.8	74	25.44–116.24	Yes	LVLI
1,2,4-Trichlorobenzene	Water	µg/L	38.5	41	9.57–67.39	Yes	LVLI
Napthalene	Water	µg/L	41.9	43	15.60–68.28	Yes	LVLI
Hexachlorobutadiene	Water	µg/L	41.2	49	2.66–80.89	Yes	LVLI
2-Methylphenol	Water	µg/L	63.2	68	6.47–119.98	Yes	LVLI
2,6-Dichlorophenol	Water	µg/L	50.5	50	15.21–85.75	Yes	LVLI
2,6-Dinitrotoluene	Water	µg/L	48.3	50	20.16–76.44	Yes	LVLI
2,4-Dinitrotoluene	Water	µg/L	94.1	100	34.65–153.47	Yes	LVLI
Diethylphthalate	Water	µg/L	53.5	55	27.29–79.77	Yes	LVLI
Hexachlorobenzene	Water	µg/L	35.7	43	QL–110.16	Yes	LVLI
Anthracene	Water	µg/L	34.9	42	QL–110.34	Yes	LVLI
1,3-Dinitrobenzene	Water	µg/L	39.1	41	2.53–75.62	Yes	LVLI
Fluoranthene	Water	µg/L	37.6	49	QL–95.13	Yes	LVLI
Pyrene	Water	µg/L	31.1	36	QL–89.40	Yes	LVLI
Benzo(a)anthracene	Water	µg/L	28.9	32	QL–79.44	Yes	LVLI

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[b] Although no actual value or acceptance range was provided, the results were assessed by MAPEP as acceptable.

Table J-2 (concluded)
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 14; November 2005

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?	Analyzed by:
MAPEP - 05 - MaS14 Soil Standard							
Antimony	Soil	mg/kg	51	49.8	35.70–66.30	No	LVLI
Arsenic	Soil	mg/kg	38.7	42.0	27.09–50.31	Yes	LVLI
Barium	Soil	mg/kg	400	445	280.00–520.00	Yes	LVLI
Beryllium	Soil	mg/kg	29.1	31.8	20.37–37.83	Yes	LVLI
Cadmium	Soil	mg/kg	6.8	7.1	4.76–8.84	Yes	LVLI
Chromium	Soil	mg/kg	34.1	40.9	23.87–44.33	Yes	LVLI
Copper	Soil	mg/kg	22	20.5	[b]	Yes	LVLI
Lead	Soil	mg/kg	41	42.9	28.70–53.30	Yes	LVLI
Mercury	Soil	mg/kg	1.53	1.5	1.07–1.99	Yes	LVLI
Nickel	Soil	mg/kg	71	76.4	49.70–92.30	Yes	LVLI
Selenium	Soil	mg/kg	15.01	16.5	10.51–19.51	Yes	LVLI
Silver	Soil	mg/kg	[b]	0.13	[b]	Yes	LVLI
Thallium	Soil	mg/kg	[b]	<0.75	[b]	Yes	LVLI
Vanadium	Soil	mg/kg	127.1	128	88.97–165.23	Yes	LVLI
Zinc	Soil	mg/kg	158	167	110.60–205.40	Yes	LVLI
Am-241	Soil	Bq/kg	81.1	74.13	56.77–105.43	Yes	GEL
Cs-137	Soil	Bq/kg	439	451.7	307.30–570.70	Yes	GEL
Co-60	Soil	Bq/kg	287	299.0	200.90–373.10	Yes	GEL
Pu-238	Soil	Bq/kg	60.8	62.90	42.56–79.04	Yes	GEL
Pu-239/240	Soil	Bq/kg	[b]	0.86	[b]	Yes	GEL
K-40	Soil	Bq/kg	604	671.3	422.80–785.20	Yes	GEL
Sr-90	Soil	Bq/kg	757	810.0	529.90–984.10	Yes	GEL
U-233/234	Soil	Bq/kg	52.5	48.47	36.75–68.25	Yes	GEL
U-238	Soil	Bq/kg	168	167.33	117.60–218.40	Yes	GEL

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[a] MAPEP monitors performance and requests corrective action as required.
[b] Although no actual value or acceptance range was provided, the results were assessed by MAPEP as acceptable.

Table J-3
Comparisons of Results From Crosscheck Samples Analyzed for Water Quality Parameters as Part of the EPA's 2005 Discharge Monitoring Report - Quality Assurance (DMR-QA) Study 25 for the National Pollutant Discharge Elimination System (NPDES)

Analyte	Units	Actual	Reported	Acceptance Range[a]	Accept?	Analyzed by
Aluminum	µg/L	818	912	653–978	Yes	STL
Ammonia (as Nitrogen)	mg/L	9.58	9.63	7.08–12.0	Yes	STL
Arsenic	µg/L	407	407	340–478	Yes	STL
Biochemical oxygen demand	mg/L	110	108	55.6–164	Yes	STL
Cadmium	µg/L	341	336	291–388	Yes	STL
Chlorine, total residual	mg/L	0.880	0.890	0.635–1.10	Yes	WVNSCO - OTS
Chromium	µg/L	675	695	588–763	Yes	STL
Cobalt	µg/L	730	743	642–818	Yes	STL
Copper	µg/L	445	471	403–490	Yes	STL
Cyanide, total	mg/L	0.703	0.496	0.439–0.968	Pass	STL
Grease and Oil (Gravimetric)	mg/L	42.0	40.1	26.0–52.2	Yes	STL
Iron	µg/L	310	374	271–355	No	STL
Lead	µg/L	468	471	407–528	Yes	STL
Manganese	µg/L	552	581	495–613	Yes	STL
Mercury	µg/L	2.96	3.43	1.84–4.15	Yes	STL
Nickel	µg/L	321	331	285–362	Yes	STL
Nitrate (as Nitrogen)	mg/L	7.72	8.06	8.01–9.32	Yes	STL
Nitrogen (total Kjeldahl)	mg/L	24.5	25.7	16.1–31.5	Yes	STL
pH	SU	6.48	6.50	6.28–6.68	Yes	ELAB
Phosphorus (total, as P)	mg/L	2.98	1.07	2.42–3.80	No	STL
Selenium	µg/L	716	706	568–829	Yes	STL
Suspended solids, total	mg/L	57.6	56.0	45.5–65.3	Yes	STL
Vanadium	µg/L	597	613	523–668	Yes	STL
Zinc	µg/L	871	886	748–1,000	Yes	STL

STL - Severn Trent Laboratories
WVNSCO - OTS - WVDP Wastewater Treatment Facility Laboratory
ELAB - WVDP Environmental Laboratory
Note: Samples provided by Environmental Research Associates (ERA)
[a] Acceptance limits are determined by ERA or the New York State Department of Health (NYSDOH), as applicable.

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