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 15; May 2006

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?[b]	Analyzed by:
MAPEP - 06 - GrF15 Gross Alpha/Beta Air Filter							
Gross Alpha	Air Filter	Bq/sample	0.361	0.187	>0.0–0.722	Yes	ELAB
Gross Beta	Air Filter	Bq/sample	0.481	0.426	0.241–0.722	Yes	ELAB
MAPEP - 06 - RdF15 Radiological Air Filter							
Am-241	Air Filter	Bq/sample	0.093	0.086	0.065–0.121	Yes	GEL
Cs-137	Air Filter	Bq/sample	2.531	2.438	1.772–3.290	Yes	GEL
Co-60	Air Filter	Bq/sample	2.186	2.220	1.530–2.842	Yes	GEL
Pu-238	Air Filter	Bq/sample	0.067	0.067	0.047–0.087	Yes	GEL
Pu-239/240	Air Filter	Bq/sample	0.00041	0.002	[c]	Yes	GEL
Sr-90	Air Filter	Bq/sample	0.792	0.563	0.554–1.030	Pass	GEL
U-233/234	Air Filter	Bq/sample	0.020	0.028	0.014–0.026	No	GEL
U-238	Air Filter	Bq/sample	0.021	0.025	0.015–0.027	Yes	GEL
MAPEP - 06 - GrW15 Gross Alpha/Beta Water Standard							
Gross Alpha	Water	Bq/L	0.581	0.339	>0.0–1.162	Yes	ELAB
Gross Beta	Water	Bq/L	1.13	1.33	0.56–1.70	Yes	ELAB
Gross Alpha	Water	Bq/L	0.581	0.465	>0.0–1.162	Yes	GEL
Gross Beta	Water	Bq/L	1.13	1.313	0.56–1.70	Yes	GEL
MAPEP - 06 - MaW15 Water Standard - Radionuclides							
Cs-137	Water	Bq/L	[c]	0.10	[c]	Yes	ELAB
Co-60	Water	Bq/L	153.50	150	107.45–199.55	Yes	ELAB
H-3	Water	Bq/L	952.01	934	666.41–1,237.61	Yes	ELAB
Sr-90	Water	Bq/L	13.16	12.5	9.21–17.11	Yes	ELAB
Am-241	Water	Bq/L	1.30	1.195	0.91–1.69	Yes	GEL
Cs-137	Water	Bq/L	[c]	0.2	[c]	Yes	GEL
Co-60	Water	Bq/L	153.50	152.3	107.45–199.55	Yes	GEL
H-3	Water	Bq/L	952.01	965.01	666.41–1,237.61	Yes	GEL
Pu-238	Water	Bq/L	0.931	0.91	0.64–1.18	Yes	GEL
Pu-239/240	Water	Bq/L	0.0071	0.013	[c]	Yes	GEL
Sr-90	Water	Bq/L	13.16	10.4	9.21–17.11	Pass	GEL
Tc-99	Water	Bq/L	23.38	22.6	16.37–30.39	Yes	GEL
U-233/234	Water	Bq/L	2.09	2.110	1.46–2.72	Yes	GEL
U-238	Water	Bq/L	2.17	2.160	1.52–2.82	Yes	GEL

ELAB - Environmental Laboratory
GEL - General Engineering Laboratory
Note: This report includes only those matrix/analyte combinations performed in support of the analysis of samples collected at the WVDP and for which results are presented in this Annual Site Environmental Report.
[a] *MAPEP monitors performance and requests corrective action as required.*
[b] *"Yes" - Result acceptable; "Pass" - Result acceptable with warning; "No" - Result not acceptable.*
[c] *Although no actual value or acceptance 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 15; May 2006

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?[b]	Analyzed by:
MAPEP - 06 - RdV15 Vegetation Standard							
Cs-137	Veg	Bq/sample	3.074	2.713	2.152–3.996	Yes	GEL
Co-60	Veg	Bq/sample	4.520	4.033	3.164–5.876	Yes	GEL
Sr-90	Veg	Bq/sample	1.561	1.163	1.093–2.029	Pass	GEL
MAPEP - 06 - MaW15 Water Standard - Metals							
Antimony	Water	mg/L	3.046	2.94	2.132–3.960	Yes	LVLI
Arsenic	Water	mg/L	3.44	3.29	2.41–4.47	Yes	LVLI
Barium	Water	mg/L	4.13	4.81	2.89–5.37	Yes	LVLI
Beryllium	Water	mg/L	[c]	<0.0002	[c]	Yes	LVLI
Cadmium	Water	mg/L	0.196	0.019	0.137–0.255	No	LVLI
Chromium	Water	mg/L	[c]	0.0013	[c]	Yes	LVLI
Cobalt	Water	mg/L	[c]	0.0014	[c]	Yes	LVLI
Copper	Water	mg/L	0.688	690	0.482–0.894	No	LVLI
Lead	Water	mg/L	2.262	2.21	1.583–2.941	Yes	LVLI
Nickel	Water	mg/L	3.92	3.82	2.74–5.10	Yes	LVLI
Selenium	Water	mg/L	0.2850	0.277	0.1995–0.3705	Yes	LVLI
Silver	Water	mg/L	[c]	0.0007	[c]	Yes	LVLI
Thallium	Water	mg/L	2.940	2.85	2.058–3.822	Yes	LVLI
Vanadium	Water	mg/L	2.557	2.55	1.790–3.324	Yes	LVLI
Zinc	Water	mg/L	0.885	0.872	0.620–1.150	Yes	LVLI
MAPEP - 06 - OrW15 Water Standard - Organic Compounds							
1,3-Dichlorobenzene	Water	µg/L	44.1	31	6.1–53.5	Yes	LVLI
1,4-Dichlorobenzene	Water	µg/L	39.9	27	4.0–51.6	Yes	LVLI
2,4-Dimethylphenol	Water	µg/L	109.2	81	23.3–143.3	Yes	LVLI
1,2,4-Trichlorobenzene	Water	µg/L	89.6	68	19.4–107.6	Yes	LVLI
Napthalene	Water	µg/L	64.5	48	18.4–79.0	Yes	LVLI
Hexachlorobutadiene	Water	µg/L	148.1	110	18.4–173.2	Yes	LVLI
2-Methylphenol	Water	µg/L	[c]	<10	[c]	Yes	LVLI
2,6-Dinitrotoluene	Water	µg/L	[c]	<10	[c]	Yes	LVLI
2,4-Dinitrotoluene	Water	µg/L	175.2	130	66.6–213.0	Yes	LVLI
4-Nitrophenol	Water	µg/L	123.8	140	12.4–167.2	Yes	LVLI
Diethylphthalate	Water	µg/L	58.2	51	9.5–84.5	Yes	LVLI
Hexachlorobenzene	Water	µg/L	24.9	18	9.8–33.8	Yes	LVLI
Anthracene	Water	µg/L	163.7	120	68.5–202.3	Yes	LVLI
Pyrene	Water	µg/L	49.5	41	16.3–70.3	Yes	LVLI
Benzo(a)anthracene	Water	µg/L	98.0	73	44.5–124.3	Yes	LVLI

GEL - General Engineering Laboratories
LVLI - Lionville Laboratories, Inc.
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[b] "Yes" - Result acceptable; "Pass" - Result acceptable with warning; "No" - Result not acceptable.
[c] 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 15; May 2006

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?[b]	Analyzed by:
MAPEP - 06 - MaS15 Soil Standard - Metals							
Antimony	Soil	mg/kg	72.1	67.2	50.5–93.7	Yes	LVLI
Arsenic	Soil	mg/kg	59.4	55.0	41.6–77.2	Yes	LVLI
Barium	Soil	mg/kg	318	326	223–413	Yes	LVLI
Beryllium	Soil	mg/kg	14.82	13.9	10.37–19.27	Yes	LVLI
Chromium	Soil	mg/kg	68	73.8	48–88	Yes	LVLI
Cobalt	Soil	mg/kg	8.0	8.2	5.6–10.4	Yes	LVLI
Copper	Soil	mg/kg	22	21.1	15–29	Yes	LVLI
Lead	Soil	mg/kg	31.9	30.9	22.3–41.5	Yes	LVLI
Mercury	Soil	mg/kg	0.368	0.36	0.258–0.478	Yes	LVLI
Nickel	Soil	mg/kg	153	146	107–199	Yes	LVLI
Selenium	Soil	mg/kg	8.43	8.0	5.90–10.96	Yes	LVLI
Silver	Soil	mg/kg	68.9	64.6	48.2–89.6	Yes	LVLI
Thallium	Soil	mg/kg	3.55	3.1	2.48–4.62	Yes	LVLI
Vanadium	Soil	mg/kg	35	35.6	24–46	Yes	LVLI
Zinc	Soil	mg/kg	121	130	84.7–157	Yes	LVLI

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Table J-2
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 16; October 2006

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?[b]	Analyzed by:
MAPEP - 06 - GrF16 Gross Alpha/Beta Air Filter							
Gross Alpha	Air Filter	Bq/sample	0.290	0.109	>0.0–0.580	Yes	ELAB
Gross Beta	Air Filter	Bq/sample	0.359	0.384	0.180–0.538	Yes	ELAB
MAPEP - 06 - RdF16 Radiological Air Filter							
Am-241	Air Filter	Bq/sample	0.142	0.120	0.10–0.18	Yes	GEL
Cs-137	Air Filter	Bq/sample	1.805	1.539	1.26–2.35	Yes	GEL
Co-60	Air Filter	Bq/sample	1.577	1.412	1.10–2.05	Yes	GEL
Pu-238	Air Filter	Bq/sample	0.118	0.107	0.08–0.15	Yes	GEL
Pu-239/240	Air Filter	Bq/sample	[c]	0.0016	[c]	Yes	GEL
Sr-90	Air Filter	Bq/sample	0.62	0.441	0.43–0.81	Pass	GEL
U-233/234	Air Filter	Bq/sample	0.134	0.121	0.09–0.17	Yes	GEL
U-238	Air Filter	Bq/sample	0.139	0.133	0.10–0.18	Yes	GEL
MAPEP - 06 - GrW16 Gross Alpha/Beta Water Standard							
Gross Alpha	Water	Bq/L	1.033	1.016	>0.0–2.066	Yes	ELAB
Gross Beta	Water	Bq/L	1.03	1.10	0.52–1.54	Yes	ELAB
Gross Alpha	Water	Bq/L	1.033	0.820	>0.0–2.066	Yes	GEL
Gross Beta	Water	Bq/L	1.03	0.977	0.52–1.54	Yes	GEL
MAPEP - 06 - MaW16 Water Standard							
Cs-137	Water	Bq/L	196.14	195	137.30–254.98	Yes	ELAB
Co-60	Water	Bq/L	47.5	46.7	33.2–61.8	Yes	ELAB
H-3	Water	Bq/L	428.85	396	300.20–557.50	Yes	ELAB
Sr-90	Water	Bq/L	15.69	14.1	10.98–20.40	Yes	ELAB
Am-241	Water	Bq/L	2.31	2.110	1.62–3.00	Yes	GEL
Cs-137	Water	Bq/L	196.14	197.6	137.30–254.98	Yes	GEL
Co-60	Water	Bq/L	47.5	47.6	33.2–61.8	Yes	GEL
H-3	Water	Bq/L	428.85	456.3	300.20–557.50	Yes	GEL
Pu-238	Water	Bq/L	1.39	1.330	0.97–1.81	Yes	GEL
Pu-239/240	Water	Bq/L	1.94	1.787	1.36–2.52	Yes	GEL
Sr-90	Water	Bq/L	15.69	13.45	10.98–20.40	Yes	GEL
Tc-99	Water	Bq/L	27.15	25.4	19.00–35.29	Yes	GEL
U-233/234	Water	Bq/L	2.15	2.137	1.50–2.80	Yes	GEL
U-238	Water	Bq/L	2.22	2.310	1.55–2.89	Yes	GEL
MAPEP - 06 - RdV16 Vegetation Standard							
Cs-137	Veg	Bq/sample	5.495	5.668	3.85–7.14	Yes	GEL
Co-60	Veg	Bq/sample	5.806	6.154	4.06–7.55	Yes	GEL
Sr-90	Veg	Bq/sample	1.137	1.095	0.77–1.42	Yes	GEL

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Table J-2 (continued)
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 16; October 2006

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?[b]	Analyzed by:
MAPEP - 06 - MaW16 Water Standard - Metals							
Antimony	Water	mg/L	0.547	0.55	0.382–0.711	Yes	LVLI
Arsenic	Water	mg/L	1.86	1.8	1.30–2.42	Yes	LVLI
Barium	Water	mg/L	<0.2	0.065	[c]	Yes	LVLI
Beryllium	Water	mg/L	0.2962	0.29	0.2073–0.3851	Yes	LVLI
Cadmium	Water	mg/L	0.659	0.66	0.461–0.857	Yes	LVLI
Chromium	Water	mg/L	3.237	3.3	2.266–4.208	Yes	LVLI
Cobalt	Water	mg/L	9.19	9.2	6.43–11.95	Yes	LVLI
Copper	Water	mg/L	1.607	1.6	1.125–2.089	Yes	LVLI
Lead	Water	mg/L	3.027	3.0	2.119–3.935	Yes	LVLI
Mercury	Water	mg/L	0.00452	0.0043	0.00316–0.00588	Yes	LVLI
Nickel	Water	mg/L	7.39	7.3	5.17–9.61	Yes	LVLI
Selenium	Water	mg/L	0.819	0.80	0.573–1.065	Yes	LVLI
Silver	Water	mg/L	<0.01	<0.0011	[c]	Yes	LVLI
Thallium	Water	mg/L	4.655	4.6	3.258–6.052	Yes	LVLI
Vanadium	Water	mg/L	6.13	6.2	4.29–7.97	Yes	LVLI
Zinc	Water	mg/L	12.12	12.4	8.48–15.76	Yes	LVLI
MAPEP - 06 - OrW16 Water Standard - Organic Compounds							
2-Chlorophenol	Water	µg/L	[c]	<10	[c]	Yes	LVLI
1,3-Dichlorobenzene	Water	µg/L	54.7	37	7.3–65.6	Yes	LVLI
Hexachloroethane	Water	µg/L	90.4	56	9.0–106.5	Yes	LVLI
Nitrobenzene	Water	µg/L	104.5	72	32.7–127.2	Yes	LVLI
1,2,4-Trichlorobenzene	Water	µg/L	116.9	84	26.0–138.8	Yes	LVLI
Napthalene	Water	µg/L	44.8	30	13.9–56.3	Yes	LVLI
Hexachlorobutadiene	Water	µg/L	104.5	73	12.0–124.7	Yes	LVLI
2-Methylphenol	Water	µg/L	[c]	<10	[c]	Yes	LVLI
2,6-Dinitrotoluene	Water	µg/L	90.1	66	37.0–113.0	Yes	LVLI
2,4-Dinitrotoluene	Water	µg/L	148.1	110	56.0–180.8	Yes	LVLI
Diethylphthalate	Water	µg/L	89.5	72	15.9–125.0	Yes	LVLI
Hexachlorobenzene	Water	µg/L	49.7	27	21.0–63.1	Yes	LVLI
Anthracene	Water	µg/L	79.5	46	33.6–99.6	Yes	LVLI
Fluoranthene	Water	µg/L	107.4	79	47.4–128.9	Yes	LVLI
Pyrene	Water	µg/L	84.5	58	27.9–115.9	Yes	LVLI
Benzo(a)anthracene	Water	µg/L	109.3	64	49.8–138.3	Yes	LVLI

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Table J-2 (concluded)
Crosscheck Sample Comparisons From the DOE Mixed Analyte Performance Evaluation Program (MAPEP)[a]; Study 16; October 2006

Analyte	Matrix	Units	Actual	Reported	Acceptance Range	Accept?[b]	Analyzed by:
MAPEP - 06 - MaS16 Soil Standard							
Antimony	Soil	mg/kg	90.4	31.6	63.3–117.5	No	LVLI
Arsenic	Soil	mg/kg	79.6	72.7	55.7–103.5	Yes	LVLI
Barium	Soil	mg/kg	634	596	444–824	Yes	LVLI
Beryllium	Soil	mg/kg	23.55	22.1	16.48–30.61	Yes	LVLI
Cadmium	Soil	mg/kg	16.53	14.9	11.57–21.49	Yes	LVLI
Chromium	Soil	mg/kg	42	43.9	29–55	Yes	LVLI
Cobalt	Soil	mg/kg	102.7	94.4	71.9–133.5	Yes	LVLI
Copper	Soil	mg/kg	94	90.0	66–122	Yes	LVLI
Lead	Soil	mg/kg	69.8	65.2	48.9–90.7	Yes	LVLI
Mercury	Soil	mg/kg	0.945	0.92	0.661–1.228	Yes	LVLI
Nickel	Soil	mg/kg	65	60.6	46–84	Yes	LVLI
Selenium	Soil	mg/kg	18.98	17.0	13.28–24.67	Yes	LVLI
Silver	Soil	mg/kg	37.7	35.4	26.4–49.0	Yes	LVLI
Thallium	Soil	mg/kg	54.2	50.2	37.9–70.5	Yes	LVLI
Vanadium	Soil	mg/kg	198	179	139–257	Yes	LVLI
Zinc	Soil	mg/kg	316	287	221–411	Yes	LVLI
Am-241	Soil	Bq/kg	105.47	83.63	73.83–137.11	Pass	GEL
Cs-137	Soil	Bq/kg	525.73	498.3	368.01–683.45	Yes	GEL
Co-60	Soil	Bq/kg	1.98	0.7	[c]	Yes	GEL
Pu-238	Soil	Bq/kg	82	72.13	57–107	Yes	GEL
Pu-239/240	Soil	Bq/kg	0.93	0.76	[c]	Yes	GEL
K-40	Soil	Bq/kg	604	643.3	423–785	Yes	GEL
Sr-90	Soil	Bq/kg	223.3	211.2	156.3–290.3	Yes	GEL
U-233/234	Soil	Bq/kg	152.44	142.33	106.71–198.17	Yes	GEL
U-238	Soil	Bq/kg	158.73	153.00	111.11–206.35	Yes	GEL

LVLI - Lionville Laboratories, Inc.
GEL - General Engineering Laboratories
ND - Not detected
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[a] *MAPEP monitors performance and requests corrective action as required.*
[b] *"Yes" - Result acceptable; "Pass" - Result acceptable with warning; "No" - Result not acceptable.*
[c] *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 2006 Discharge Monitoring Report - Quality Assurance (DMR-QA) Study 26 for the National Pollutant Discharge Elimination System (NPDES)

Analyte	Units	Actual	Reported	Acceptance Range[a]	Accept?[b]	Analyzed by:
Aluminum	µg/L	1,220	1,246	990–1,440	Yes	STL
Ammonia (as Nitrogen)	mg/L	10.9	8.62	8.08–13.6	Pass	STL
Antimony	µg/L	275	276	186–334	Yes	STL
Arsenic	µg/L	384	363	320–451	Yes	STL
Barium	µg/L	1,300	1,330	1,130–1,470	Yes	STL
Biochemical oxygen demand	mg/L	67.1	69.0	33.8–100	Yes	STL
Cadmium	µg/L	471	438	402–535	Yes	STL
Chlorine (total residual)	mg/L	1.05	1.08	0.756–1.31	Yes	WWTF
Chromium	µg/L	305	307	264–346	Yes	STL
Chromium (hexavalent)	µg/L	558	410	454–656	No	STL
Cobalt	µg/L	773	766	680–866	Yes	STL
Copper	µg/L	463	474	417–509	Yes	STL
Cyanide, total	mg/L	0.433	0.491	0.245–0.625	Yes	STL
Iron	µg/L	440	518	386–501	No	STL
Lead	µg/L	282	273	242–321	Yes	STL
Manganese	µg/L	474	486	425–527	Yes	STL
Mercury	µg/L	20.4	20.7	12.5–27.5	Yes	STL
Nickel	µg/L	203	201	177–230	Yes	STL
Nitrate (as Nitrogen)	mg/L	4.27	3.96	3.32–5.17	Yes	STL
Nitrite (as Nitrogen)	mg/L	1.67	1.54	1.39–1.95	Yes	STL
Nitrogen (total Kjeldahl)	mg/L	14.8	9.89	9.80–19.1	Pass	STL
Oil & Grease (Gravimetric)	mg/L	57.5	43.6	38.0–69.3	Yes	STL
pH	SU	7.45	7.46	7.25–7.65	Yes	ELAB
Phosphorus (total, as P)	mg/L	1.50	1.63	1.18–1.87	Yes	STL
Selenium	µg/L	1,150	1,109	915–1,330	Yes	STL
Silver	µg/L	274	270	235–314	Yes	STL
Sulfate	mg/L	28.0	28.1	22.3–33.0	Yes	STL
Settleable solids	mL/L	24.2	30	18.8–31.2	Yes	WWTF
Suspended solids (total)	mg/L	50.9	40.0	39.6–58.2	Pass	STL
Total dissolved solids	mg/L	284	292	212–356	Yes	ELAB
Vanadium	µg/L	490	481	429–548	Yes	STL
Zinc	µg/L	1,230	1,207	1,060–1,410	Yes	STL

STL - Severn Trent Laboratories
WWTF - 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.
[b] "Yes" - Result acceptable; "Pass" - Result acceptable but outside warning limits; "No" - Result not acceptable.

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