Superfund Records Center
SITE: Cerro Gordo
BREAK: 3.2
OTHER: 35816

Section 6
Tentatively Identified Compound (TIC) Results

SDMS DocID 35816

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 4 Sep 2001 11:23 pm
Data File: H:\A\DATA\SQA176\A6481.D
Name: ZE43PB
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.87	1239.7	ng	479489	1	25.85	387174	1001.0
Cycloheptasiloxan...	25.62	448.6	ng	173517	1	25.85	387174	1001.0
unknown	28.95	121.2	ng	46858	1	25.85	387174	1001.0

SAMPLE_NO NA
LAB_ID ZE43PB
LABORATORY BATO
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 4:36 am
Data File: H:\A\DATA\SQA176\A6485.D
Name: W5493
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Nonanoic acid, me...	26.24	6662.4	ng	2439810	1	25.86	366575	1001.0
Heptadecane	29.65	13235.3	ng	4846900	1	25.86	366575	1001.0
Methyl tetradecan...	30.09	12081.6	ng	4424390	1	25.86	366575	1001.0
9-Hexadecenoic ac...	33.27	16930.5	ng	6200110	1	25.86	366575	1001.0
Hexadecanoic acid...	33.59	31710.1	ng	11612500	1	25.86	366575	1001.0
9,12-Octadecadien...	36.32	6039.6	ng	2211770	1	25.86	366575	1001.0
10-Octadecenoic a...	36.41	42096.4	ng	15416100	1	25.86	366575	1001.0
14-Octadecenoic a...	36.47	8984.5	ng	3290180	1	25.86	366575	1001.0
Octadecanoic acid...	36.73	9700.8	ng	3552530	1	25.86	366575	1001.0
Squalene	46.74	43261.1	ng	15842600	1	25.86	366575	1001.0

SAMPLE_NO LPX AE 4001
LAB_ID W5493 01
LABORATORY BATD
SOG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 7:11 am
Data File: H:\A\DATA\SQA176\A6487.D
Name: W5409
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.87	3714.9	ng	1130410	1	25.85	304595	1001.0
Heptadecane	29.63	5351.3	ng	1628360	1	25.85	304595	1001.0
Methyl tetradecan...	30.09	4159.6	ng	1265740	1	25.85	304595	1001.0
unknown	32.89	4570.6	ng	1390780	1	25.85	304595	1001.0
9-Hexadecenoic ac...	33.26	8390.0	ng	2553010	1	25.85	304595	1001.0
Hexadecanoic acid...	33.57	15282.9	ng	4650440	1	25.85	304595	1001.0
9-Octadecenoic ac...	36.38	18900.3	ng	5751180	1	25.85	304595	1001.0
11-Octadecenoic a...	36.45	3983.3	ng	1212100	1	25.85	304595	1001.0
Octadecanoic acid...	36.72	3812.6	ng	1160140	1	25.85	304595	1001.0
Squalene	46.70	18208.3	ng	5540630	1	25.85	304595	1001.0

SAMPLE_NO APC AE 4001
LAB_ID W5409 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 8:29 am
Data File: H:\A\DATA\SQA176\A6488.D
Name: W5410
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	29.64	7467.9	ng	2176630	1	25.85	291758	1001.0
Methyl tetradecan...	30.08	9144.4	ng	2665280	1	25.85	291758	1001.0
9-Hexadecenoic ac...	33.26	15916.0	ng	4638990	1	25.85	291758	1001.0
Hexadecanoic acid...	33.57	24250.9	ng	7068330	1	25.85	291758	1001.0
9,12-Octadecadien...	36.31	3608.5	ng	1051750	1	25.85	291758	1001.0
10-Octadecenoic a...	36.39	35981.2	ng	10487300	1	25.85	291758	1001.0
9-Octadecenoic ac...	36.46	7308.2	ng	2130090	1	25.85	291758	1001.0
Octadecanoic acid...	36.72	6804.6	ng	1983330	1	25.85	291758	1001.0
5,8,11,14-Eicosat...	38.78	3537.4	ng	1031030	1	25.85	291758	1001.0
Squalene	46.72	46932.4	ng	13679200	1	25.85	291758	1001.0

SAMPLE_NO APC AE 4002
LAB_ID W5410 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 9:46 am
Data File: H:\A\DATA\SQA176\A6489.D
Name: W5411
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Dodecanoic acid, ...	26.23	3832.3	ng	1457890	1	25.85	380803	1001.0
Methyl tetradecan...	30.09	8370.0	ng	3184150	1	25.85	380803	1001.0
unknown	32.89	2880.0	ng	1095630	1	25.85	380803	1001.0
Z-5-Nonadecene	33.03	2840.9	ng	1080760	1	25.85	380803	1001.0
9-Hexadecenoic ac...	33.26	11944.9	ng	4544110	1	25.85	380803	1001.0
Hexadecanoic acid...	33.57	17728.6	ng	6744340	1	25.85	380803	1001.0
10-Octadecenoic a...	36.38	20107.0	ng	7649160	1	25.85	380803	1001.0
15-Octadecenoic a...	36.46	5060.7	ng	1925210	1	25.85	380803	1001.0
Octadecanoic acid...	36.72	3836.3	ng	1459400	1	25.85	380803	1001.0
Squalene	46.70	12844.5	ng	4886330	1	25.85	380803	1001.0

SAMPLE_NO APC AE 4003
LAB_ID W5411 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 12:22 pm
Data File: H:\A\DATA\SQA176\A6491.D
Name: W5412
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	29.63	8521.4	ng	3201880	1	25.84	376120	1001.0
Methyl tetradecan...	30.08	7643.0	ng	2871820	1	25.84	376120	1001.0
9-Hexadecenoic ac...	33.26	13826.1	ng	5195080	1	25.84	376120	1001.0
Hexadecanoic acid...	33.57	24831.1	ng	9330150	1	25.84	376120	1001.0
9,12-Octadecadien...	36.30	5331.9	ng	2003420	1	25.84	376120	1001.0
13-Octadecenoic a...	36.39	24791.0	ng	9315070	1	25.84	376120	1001.0
Octadecanoic acid...	36.71	6874.8	ng	2583170	1	25.84	376120	1001.0
5,8,11,14-Eicosat...	38.78	3659.7	ng	1375110	1	25.84	376120	1001.0
unknown	38.88	2919.9	ng	1097130	1	25.84	376120	1001.0
Squalene	46.70	23389.7	ng	8788550	1	25.84	376120	1001.0

SAMPLE_NO APC AE 4004
LAB_ID W5412 01
LABORATORY BATO
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 1:40 pm
Data File: H:\A\DATA\SQA176\A6492.D
Name: W5413
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Pentadecane	25.74	1001.0	ng	1693270	1	25.84	1693270	1001.0
Heptadecane	29.63	1292.9	ng	2187060	1	25.84	1693270	1001.0
Methyl tetradecan...	30.08	2062.7	ng	3489140	1	25.84	1693270	1001.0
9-Hexadecenoic ac...	33.26	3212.4	ng	5434020	1	25.84	1693270	1001.0
Hexadecanoic acid...	33.57	5786.9	ng	9788970	1	25.84	1693270	1001.0
10-Octadecenoic a...	36.39	8125.1	ng	13744300	1	25.84	1693270	1001.0
12-Octadecenoic a...	36.46	1679.7	ng	2841410	1	25.84	1693270	1001.0
Octadecanoic acid...	36.72	1779.7	ng	3010530	1	25.84	1693270	1001.0
Squalene	46.70	5657.1	ng	9569430	1	25.84	1693270	1001.0

SAMPLE_NO APC AE 4005
LAB_ID W5413 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 4:17 pm
Data File: H:\A\DATA\SQA176\A6493.D
Name: W5414
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	26.35	4873.7	ng	1668700	1	25.84	342733	1001.0
Methyl tetradecan...	30.08	7220.4	ng	2472200	1	25.84	342733	1001.0
Cyclopropaneoctan...	33.25	15982.0	ng	5472100	1	25.84	342733	1001.0
Hexadecanoic acid...	33.56	24191.6	ng	8282970	1	25.84	342733	1001.0
E-11-Hexadecenal	34.80	4130.6	ng	1414280	1	25.84	342733	1001.0
9-Octadecenoic ac...	36.39	31677.1	ng	10845900	1	25.84	342733	1001.0
14-Octadecenoic a...	36.45	6554.4	ng	2244170	1	25.84	342733	1001.0
Octadecanoic acid...	36.71	6920.2	ng	2369420	1	25.84	342733	1001.0
unknown	38.78	4172.9	ng	1428770	1	25.84	342733	1001.0
Squalene	46.68	17502.6	ng	5992720	1	25.84	342733	1001.0

SAMPLE_NO APC AE 4006
LAB_ID W5414 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 5:35 pm
Data File: H:\A\DATA\SQA176\A6494.D
Name: W5415
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Pentadecane	25.74	1001.0	ng	2925610	1	25.84	2925610	1001.0
Heptadecane	29.63	2159.7	ng	6312030	1	25.84	2925610	1001.0
1-Heptadecanol	32.85	2372.0	ng	6932620	1	25.84	2925610	1001.0
1-Heptadecene	33.04	2435.4	ng	7117950	1	25.84	2925610	1001.0
9-Hexadecenoic ac...	33.26	2523.5	ng	7375460	1	25.84	2925610	1001.0
Hexadecanoic acid...	33.57	3195.5	ng	9339540	1	25.84	2925610	1001.0
9,12-Octadecadien...	36.30	1533.1	ng	4480610	1	25.84	2925610	1001.0
14-Octadecenoic a...	36.39	4564.4	ng	13340400	1	25.84	2925610	1001.0
Squalene	46.71	3846.8	ng	11243100	1	25.84	2925610	1001.0
unknown	53.86	899.0	ng	2627590	1	25.84	2925610	1001.0

SAMPLE_NO APC AE 4007
LAB_ID W5415 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 11:13 am
Data File: H:\A\DATA\SQA176\A6541.D
Name: W5415DUP
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	25.74	1001.0	ng	3212570	1	25.83	3212570	1001.0
Heptadecane	29.62	2084.7	ng	6690650	1	25.83	3212570	1001.0
unknown	32.87	851.6	ng	2733070	1	25.83	3212570	1001.0
1-Heptadecene	33.03	2150.7	ng	6902500	1	25.83	3212570	1001.0
9-Hexadecenoic ac...	33.25	2259.0	ng	7249900	1	25.83	3212570	1001.0
Hexadecanoic acid...	33.56	2985.0	ng	9580030	1	25.83	3212570	1001.0
9,12-Octadecadien...	36.29	993.8	ng	3189460	1	25.83	3212570	1001.0
10-Octadecenoic a...	36.38	2553.7	ng	8195720	1	25.83	3212570	1001.0
Squalene	46.69	3927.9	ng	12605900	1	25.83	3212570	1001.0
unknown	61.32	9078.4	ng	29135900	1	25.83	3212570	1001.0

SAMPLE_NO APC AE 4007
LAB_ID W5415DUP 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 12:30 pm
Data File: H:\A\DATA\SQA176\A6496.D
Name: W5416
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.86	4517.3	ng	2330080	1	25.83	516326	1001.0
Dodecanoic acid, ...	26.22	12131.4	ng	6257490	1	25.83	516326	1001.0
Heptadecane	29.63	8536.9	ng	4403420	1	25.83	516326	1001.0
Methyl tetradecan...	30.08	8037.1	ng	4145630	1	25.83	516326	1001.0
Nonadecane	33.13	4984.4	ng	2571000	1	25.83	516326	1001.0
9-Hexadecenoic ac...	33.25	8529.1	ng	4399390	1	25.83	516326	1001.0
Hexadecanoic acid...	33.56	16302.1	ng	8408800	1	25.83	516326	1001.0
9,12-Octadecadien...	36.30	6180.4	ng	3187910	1	25.83	516326	1001.0
14-Octadecenoic a...	36.38	16613.3	ng	8569290	1	25.83	516326	1001.0
Squalene	46.69	20629.5	ng	10640900	1	25.83	516326	1001.0

SAMPLE_NO APC AE 4008
LAB_ID W5416 01
LABORATORY BATO
SOG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 1:47 pm
Data File: H:\A\DATA\SQA176\A6497.D
Name: W5417
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal	21.33	2209.2	ng	2030390	1	25.84	919975	1001.0
2,4-Nonadienal, (...	21.87	3942.1	ng	3622980	1	25.84	919975	1001.0
Methyl tetradecan...	30.07	2883.1	ng	2649730	1	25.84	919975	1001.0
9-Hexadecenoic ac...	33.25	6182.7	ng	5682220	1	25.84	919975	1001.0
Hexadecanoic acid...	33.56	9186.5	ng	8442880	1	25.84	919975	1001.0
14-Octadecenoic a...	36.39	13546.5	ng	12449900	1	25.84	919975	1001.0
11-Octadecenoic a...	36.45	2653.0	ng	2438230	1	25.84	919975	1001.0
Octadecanoic acid...	36.71	2754.0	ng	2531070	1	25.84	919975	1001.0
Squalene	46.70	10887.9	ng	10006600	1	25.84	919975	1001.0
Cholesterol	54.17	4382.0	ng	4027320	1	25.84	919975	1001.0

SAMPLE_NO APC AE 4009
LAB_ID W5417 01
LABORATORY BATO
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 3:05 pm
Data File: H:\A\DATA\SQA176\A6498.D
Name: W5418
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Methyl tetradecan...	30.09	11428.1	ng	3767420	1	25.85	329991	1001.0
9-Eicosene, (E)-	33.04	5555.0	ng	1831260	1	25.85	329991	1001.0
9-Hexadecenoic ac...	33.27	20384.0	ng	6719820	1	25.85	329991	1001.0
Hexadecanoic acid...	33.58	30063.1	ng	9910640	1	25.85	329991	1001.0
14-Octadecenoic a...	36.41	47773.6	ng	15749100	1	25.85	329991	1001.0
14-Octadecenoic a...	36.47	12260.6	ng	4041850	1	25.85	329991	1001.0
Octadecanoic acid...	36.73	9381.0	ng	3092550	1	25.85	329991	1001.0
5,8,11,14-Eicosat...	38.79	8977.2	ng	2959430	1	25.85	329991	1001.0
unknown	39.26	7027.3	ng	2316610	1	25.85	329991	1001.0
Squalene	46.74	62603.9	ng	20638100	1	25.85	329991	1001.0

SAMPLE_NO APC AE 4010
LAB_ID W5418 01
LABORATORY BATO
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 4:23 pm
Data File: H:\A\DATA\SQA176\A6499.D
Name: W5494
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Octadienal, (...	21.89	1553.2	ng	3911650	1	25.86	2521020	1001.0
Hexadecane	25.76	1001.0	ng	2521020	1	25.86	2521020	1001.0
Heptadecane	29.65	1981.6	ng	4990610	1	25.86	2521020	1001.0
Methyl tetradecan...	30.09	1120.8	ng	2822650	1	25.86	2521020	1001.0
9-Hexadecenoic ac...	33.27	2293.1	ng	5775100	1	25.86	2521020	1001.0
Hexadecanoic acid...	33.59	3940.3	ng	9923610	1	25.86	2521020	1001.0
10-Octadecenoic a...	36.41	4737.3	ng	11931000	1	25.86	2521020	1001.0
10-Octadecenoic a...	36.48	1121.1	ng	2823570	1	25.86	2521020	1001.0
Octadecanoic acid...	36.74	1217.9	ng	3067260	1	25.86	2521020	1001.0
Squalene	46.73	4499.7	ng	11332500	1	25.86	2521020	1001.0

SAMPLE_NO LPX AE 4002
LAB_ID W5494 01
LABORATORY BATD
SDG D1373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 11:28 am
Data File: H:\A\DATA\SQA176\A6543.D
Name: W5495
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.88	2896.2	ng	1710710	1	25.85	591261	1001.0
8-Heptadecene	29.29	2322.4	ng	1371790	1	25.85	591261	1001.0
Heptadecane	29.64	4929.6	ng	2911770	1	25.85	591261	1001.0
Methyl tetradecan...	30.09	4048.8	ng	2391480	1	25.85	591261	1001.0
9-Hexadecenoic ac...	33.26	5684.8	ng	3357830	1	25.85	591261	1001.0
Hexadecanoic acid...	33.58	12156.9	ng	7180720	1	25.85	591261	1001.0
14-Octadecenoic a...	36.39	15056.7	ng	8893570	1	25.85	591261	1001.0
10-Octadecenoic a...	36.46	3187.3	ng	1882610	1	25.85	591261	1001.0
Octadecanoic acid...	36.72	3780.2	ng	2232860	1	25.85	591261	1001.0
2,6,10-Dodecatrie...	46.72	15901.2	ng	9392370	1	25.85	591261	1001.0

SAMPLE_NO LPX AE 4003
LAB_ID W5495 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 12:47 pm
Data File: H:\A\DATA\SQA176\A6502.D
Name: W5496
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.88	1002.2	ng	4387480	1	25.86	4382430	1001.0
Pentadecane	25.76	1001.0	ng	4382430	1	25.86	4382430	1001.0
Pentadecane	27.61	646.5	ng	2830640	1	25.86	4382430	1001.0
Heptadecane	29.65	1146.2	ng	5017930	1	25.86	4382430	1001.0
9-Hexadecenoic ac...	33.27	928.8	ng	4066330	1	25.86	4382430	1001.0
Hexadecanoic acid...	33.58	1961.1	ng	8585960	1	25.86	4382430	1001.0
14-Octadecenoic a...	36.41	2396.8	ng	10493200	1	25.86	4382430	1001.0
13-Octadecenoic a...	36.47	619.9	ng	2714080	1	25.86	4382430	1001.0
Octadecanoic acid...	36.73	738.5	ng	3233420	1	25.86	4382430	1001.0
Squalene	46.73	3010.8	ng	13181700	1	25.86	4382430	1001.0

SAMPLE_NO LPX AE 4004
LAB_ID W5496 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 2:09 pm
Data File: H:\A\DATA\SQA176\A6503.D
Name: W5497
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.90	2742.5	ng	3894120	1	25.86	1421340	1001.0
Decane, 2,4,6-tri...	27.62	3106.2	ng	4410580	1	25.86	1421340	1001.0
Heptadecane	29.65	3043.6	ng	4321670	1	25.86	1421340	1001.0
Methyl tetradecan...	30.09	2051.5	ng	2912990	1	25.86	1421340	1001.0
9-Hexadecenoic ac...	33.28	3925.4	ng	5573780	1	25.86	1421340	1001.0
Hexadecanoic acid...	33.59	7262.6	ng	10312400	1	25.86	1421340	1001.0
13-Octadecenoic a...	36.42	7030.1	ng	9982250	1	25.86	1421340	1001.0
14-Octadecenoic a...	36.48	2515.2	ng	3571450	1	25.86	1421340	1001.0
Octadecanoic acid...	36.74	2414.4	ng	3428260	1	25.86	1421340	1001.0
Squalene	46.75	10265.4	ng	14576100	1	25.86	1421340	1001.0

SAMPLE_NO LPX AE 4005
LAB_ID W5497 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 3:29 pm
Data File: H:\A\DATA\SQA176\A6504.D
Name: W5499
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Nonadienal, (...	21.89	4801.4	ng	3317530	1	25.87	691642	1001.0
Heptadecane	29.65	6573.6	ng	4542060	1	25.87	691642	1001.0
Methyl tetradecan...	30.11	5062.5	ng	3497950	1	25.87	691642	1001.0
unknown	31.87	3696.5	ng	2554110	1	25.87	691642	1001.0
9-Hexadecenoic ac...	33.28	10004.0	ng	6912290	1	25.87	691642	1001.0
Hexadecanoic acid...	33.60	16821.5	ng	11622900	1	25.87	691642	1001.0
10-Octadecenoic a...	36.43	24711.1	ng	17074200	1	25.87	691642	1001.0
9-Octadecenoic ac...	36.49	4283.3	ng	2959540	1	25.87	691642	1001.0
Octadecanoic acid...	36.75	5716.4	ng	3949740	1	25.87	691642	1001.0
Squalene	46.78	35556.9	ng	24568100	1	25.87	691642	1001.0

SAMPLE_NO LPX AE 4006
LAB_ID W5499 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 4:49 pm
Data File: H:\A\DATA\SQA176\A6505.D
Name: W5500
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
2,4-Decadienal, (...	21.91	4298.0	ng	4684910	1	25.88	1091110	1001.0
Heptadecane	29.66	3297.4	ng	3594240	1	25.88	1091110	1001.0
Methyl tetradecan...	30.11	2645.1	ng	2883150	1	25.88	1091110	1001.0
unknown	32.92	2464.3	ng	2686130	1	25.88	1091110	1001.0
9-Hexadecenoic ac...	33.29	5712.8	ng	6227080	1	25.88	1091110	1001.0
Hexadecanoic acid...	33.61	9301.5	ng	10138800	1	25.88	1091110	1001.0
10-Octadecenoic a...	36.44	15335.9	ng	16716400	1	25.88	1091110	1001.0
12-Octadecenoic a...	36.50	2539.2	ng	2767750	1	25.88	1091110	1001.0
Octadecanoic acid...	36.76	2972.4	ng	3239950	1	25.88	1091110	1001.0
Squalene	46.79	18101.8	ng	19731300	1	25.88	1091110	1001.0

SAMPLE_NO LPX AE 4007
LAB_ID W5500 01
LABORATORY BATO
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 6:11 pm
Data File: H:\A\DATA\SQA176\A6506.D
Name: W5485
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.92	4264.5	ng	2680800	1	25.91	629263	1001.0
5-Octadecene, (E)-	29.55	5011.2	ng	3150240	1	25.91	629263	1001.0
Pentadecane	29.69	8212.8	ng	5162840	1	25.91	629263	1001.0
Methyl tetradecan...	30.13	6178.1	ng	3883760	1	25.91	629263	1001.0
9-Hexadecenoic ac...	33.32	11884.7	ng	7471120	1	25.91	629263	1001.0
Hexadecanoic acid...	33.63	17298.0	ng	10874100	1	25.91	629263	1001.0
13-Octadecenoic a...	36.46	23398.4	ng	14709000	1	25.91	629263	1001.0
13-Octadecenoic a...	36.52	5554.5	ng	3491730	1	25.91	629263	1001.0
Octadecanoic acid...	36.78	6322.1	ng	3974320	1	25.91	629263	1001.0
2,6,10,14,18,22-T...	46.81	26151.9	ng	16440000	1	25.91	629263	1001.0

SAMPLE_NO LPX AE 4008
LAB_ID W5485 01
LABORATORY BATD
SOG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 7:32 pm
Data File: H:\A\DATA\SQA176\A6507.D
Name: W5486
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal	21.40	3685.0	ng	3382980	1	25.93	918967	1001.0
2,4-Nonadienal, (...	21.95	7317.1	ng	6717460	1	25.93	918967	1001.0
Heptadecane	29.69	3845.1	ng	3529960	1	25.93	918967	1001.0
Methyl tetradecan...	30.14	4732.0	ng	4344230	1	25.93	918967	1001.0
9-Hexadecenoic ac...	33.33	8070.1	ng	7408750	1	25.93	918967	1001.0
Hexadecanoic acid...	33.65	14321.2	ng	13147600	1	25.93	918967	1001.0
14-Octadecenoic a...	36.48	19308.7	ng	17726300	1	25.93	918967	1001.0
13-Octadecenoic a...	36.54	3874.7	ng	3557130	1	25.93	918967	1001.0
Octadecanoic acid...	36.79	4068.0	ng	3734650	1	25.93	918967	1001.0
Squalene	46.84	21538.1	ng	19773000	1	25.93	918967	1001.0

SAMPLE_NO LPX AE 4009
LAB_ID W5486 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 8:53 pm
Data File: H:\A\DATA\SQA176\A6508.D
Name: W5487
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.43	1343.4	ng	4527420	1	25.94	3373570	1001.0
2,4-Nonadienal, (...	21.97	1633.0	ng	5503390	1	25.94	3373570	1001.0
Heptadecane	29.71	1215.1	ng	4095260	1	25.94	3373570	1001.0
Methyl tetradecan...	30.16	1349.5	ng	4547970	1	25.94	3373570	1001.0
9-Hexadecenoic ac...	33.35	2413.6	ng	8134430	1	25.94	3373570	1001.0
Hexadecanoic acid...	33.67	4129.3	ng	13916500	1	25.94	3373570	1001.0
10-Octadecenoic a...	36.50	6743.2	ng	22725900	1	25.94	3373570	1001.0
15-Octadecenoic a...	36.56	1342.8	ng	4525330	1	25.94	3373570	1001.0
Octadecanoic acid...	36.81	1343.1	ng	4526460	1	25.94	3373570	1001.0
Squalene	46.88	7712.8	ng	25993600	1	25.94	3373570	1001.0

SAMPLE_NO LPX AE 4010
LAB_ID W5487 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 11:33 pm
Data File: H:\A\DATA\SQA176\A6510.D
Name: ZE49PB
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.89	1047.6	ng	264790	1	25.94	253024	1001.0
column bleed	25.63	355.5	ng	89858	1	25.94	253024	1001.0
unknown	39.31	774.9	ng	195862	1	25.94	253024	1001.0
unknown	40.49	307.3	ng	77669	1	25.94	253024	1001.0
9-Octadecenal	41.76	678.5	ng	171517	1	25.94	253024	1001.0

SAMPLE_NO NA
LAB_ID ZE49PB
LABORATORY BATO
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 4:52 am
Data File: H:\A\DATA\SQA176\A6514.D
Name: W5475
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
7-Hexadecene, (Z)-	29.36	3179.4	ng	5663700	1	25.93	1783160	1001.0
Heptadecane	29.72	4694.4	ng	8362450	1	25.93	1783160	1001.0
1-Octadecene	33.13	5098.4	ng	9082090	1	25.93	1783160	1001.0
9-Hexadecenoic ac...	33.37	9136.6	ng	16275800	1	25.93	1783160	1001.0
Hexadecanoic acid...	33.68	8484.3	ng	15113700	1	25.93	1783160	1001.0
Ethyl 9-hexadecen...	34.49	14081.4	ng	25084200	1	25.93	1783160	1001.0
Hexadecanoic acid...	34.76	4785.0	ng	8523950	1	25.93	1783160	1001.0
14-Octadecenoic a...	36.50	7615.4	ng	13565900	1	25.93	1783160	1001.0
5,8,11,14-Eicosat...	39.76	2973.3	ng	5296520	1	25.93	1783160	1001.0
2,6,10,14,18,22-T...	46.85	8196.9	ng	14601700	1	25.93	1783160	1001.0

SAMPLE_NO APC WS 4008
LAB_ID W5475 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 6:12 am
Data File: H:\A\DATA\SQA176\A6515.D
Name: W5475DUP
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.36	3238.1	ng	5139090	1	25.93	1588670	1001.0
Heptadecane	29.72	4896.8	ng	7771710	1	25.93	1588670	1001.0
9-Nonadecene	33.13	5405.7	ng	8579380	1	25.93	1588670	1001.0
9-Hexadecenoic ac...	33.38	12340.3	ng	19585200	1	25.93	1588670	1001.0
Hexadecanoic acid...	33.68	11098.9	ng	17614900	1	25.93	1588670	1001.0
Ethyl 9-hexadecen...	34.48	13540.8	ng	21490500	1	25.93	1588670	1001.0
Nonadecanoic acid...	34.76	4863.7	ng	7719130	1	25.93	1588670	1001.0
13-Octadecenoic a...	36.51	9784.3	ng	15528500	1	25.93	1588670	1001.0
Octadecanoic acid...	36.82	3034.0	ng	4815180	1	25.93	1588670	1001.0
Squalene	46.85	8517.1	ng	13517400	1	25.93	1588670	1001.0

SAMPLE_NO APC WS 4008
LAB_ID W5475DUP 01
LABORATORY BATO
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 8:48 am
Data File: H:\A\DATA\SQA176\A6517.D
Name: W5420
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.33	3524.8	ng	5692550	1	25.92	1616610	1001.0
5-Eicosene, (E)-	29.58	3674.6	ng	5934440	1	25.92	1616610	1001.0
Heptadecane	29.71	4444.7	ng	7178130	1	25.92	1616610	1001.0
9-Nonadecene	33.12	3990.9	ng	6445240	1	25.92	1616610	1001.0
7-Hexadecenoic ac...	33.36	8429.8	ng	13614000	1	25.92	1616610	1001.0
Hexadecanoic acid...	33.66	8847.4	ng	14288500	1	25.92	1616610	1001.0
E-11-Hexadecenoic...	34.44	2868.4	ng	4632510	1	25.92	1616610	1001.0
9-Octadecenoic ac...	36.49	4083.2	ng	6594290	1	25.92	1616610	1001.0
Octadecanoic acid...	36.81	2987.3	ng	4824450	1	25.92	1616610	1001.0
Squalene	46.82	5084.4	ng	8211260	1	25.92	1616610	1001.0

SAMPLE_NO APC WS 4001
LAB_ID W5420 01
LABORATORY BATD
SOG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 10:06 am
Data File: H:\A\DATA\SQA176\A6518.D
Name: W5421
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.34	6774.1	ng	6331920	1	25.93	935660	1001.0
Heptadecane	29.70	5142.0	ng	4806330	1	25.93	935660	1001.0
Methyl tetradecan...	30.15	3360.7	ng	3141330	1	25.93	935660	1001.0
9-Hexadecenoic ac...	33.37	18962.9	ng	17725100	1	25.93	935660	1001.0
Tridecanoic acid,...	33.67	17394.2	ng	16258800	1	25.93	935660	1001.0
E-11-Hexadecenoic...	34.46	13813.9	ng	12912200	1	25.93	935660	1001.0
14-Octadecenoic a...	36.49	12955.0	ng	12109400	1	25.93	935660	1001.0
Octadecanoic acid...	36.81	4993.9	ng	4667880	1	25.93	935660	1001.0
5,8,11,14,17-Eico...	39.86	3253.0	ng	3040670	1	25.93	935660	1001.0
Squalene	46.82	10337.1	ng	9662360	1	25.93	935660	1001.0

SAMPLE_NO APC WS 4002
LAB_ID W5421 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 12:44 pm
Data File: H:\A\DATA\SQA176\A6520.D
Name: W5422
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.33	2765.9	ng	4695940	1	25.91	1699500	1001.0
1-Octadecene	29.57	2642.5	ng	4486450	1	25.91	1699500	1001.0
Heptadecane	29.70	3544.5	ng	6017890	1	25.91	1699500	1001.0
9-Hexadecenoic ac...	33.34	6120.6	ng	10391600	1	25.91	1699500	1001.0
Hexadecanoic acid...	33.64	5911.9	ng	10037100	1	25.91	1699500	1001.0
E-11-Hexadecenoic...	34.45	7868.0	ng	13358300	1	25.91	1699500	1001.0
Nonadecanoic acid...	34.73	2547.8	ng	4325730	1	25.91	1699500	1001.0
14-Octadecenoic a...	36.47	3406.4	ng	5783370	1	25.91	1699500	1001.0
5,8,11,14-Eicosat...	39.73	2503.3	ng	4250100	1	25.91	1699500	1001.0
Squalene	46.81	5281.5	ng	8966860	1	25.91	1699500	1001.0

SAMPLE_NO APC WS 4003
LAB_ID W5422 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 2:03 pm
Data File: H:\A\DATA\SQA176\A6521.D
Name: W5423
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	29.71	5685.2	ng	8013100	1	25.92	1410890	1001.0
9-Hexadecenoic ac...	33.36	13457.6	ng	18968100	1	25.92	1410890	1001.0
Hexadecanoic acid...	33.67	13259.5	ng	18689000	1	25.92	1410890	1001.0
E-11-Hexadecenoic...	34.48	23511.3	ng	33138600	1	25.92	1410890	1001.0
Hexadecanoic acid...	34.74	5263.7	ng	7419080	1	25.92	1410890	1001.0
10-Octadecenoic a...	36.50	9538.8	ng	13444700	1	25.92	1410890	1001.0
Octadecanoic acid...	36.81	4626.6	ng	6521060	1	25.92	1410890	1001.0
5,8,11,14-Eicosat...	39.75	4660.8	ng	6569300	1	25.92	1410890	1001.0
5,8,11,14,17-Eico...	39.87	5361.0	ng	7556210	1	25.92	1410890	1001.0
2,6,10,14,18,22-T...	46.83	9778.5	ng	13782500	1	25.92	1410890	1001.0

SAMPLE_NO APC WS 4004
LAB_ID W5423 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 3:22 pm
Data File: H:\A\DATA\SQA176\A6522.D
Name: W5424
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
7-Hexadecene, (Z)-	29.37	3064.0	ng	8163610	1	25.92	2667000	1001.0
Heptadecane	29.72	3664.9	ng	9764610	1	25.92	2667000	1001.0
9-Hexadecenoic ac...	33.36	5338.5	ng	14223600	1	25.92	2667000	1001.0
Hexadecanoic acid...	33.66	5129.3	ng	13666100	1	25.92	2667000	1001.0
Ethyl 9-hexadecen...	34.50	13754.0	ng	36645200	1	25.92	2667000	1001.0
Hexadecanoic acid...	34.75	3686.1	ng	9820930	1	25.92	2667000	1001.0
13-Octadecenoic a...	36.49	3155.1	ng	8406280	1	25.92	2667000	1001.0
5,8,11,14-Eicosat...	39.76	3544.3	ng	9443190	1	25.92	2667000	1001.0
5,8,11,14,17-Eico...	39.88	3608.3	ng	9613740	1	25.92	2667000	1001.0
Squalene	46.83	4541.0	ng	12098700	1	25.92	2667000	1001.0

SAMPLE_NO APC WS 4005
LAB_ID W5424 01
LABORATORY BATD
SOG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 4:40 pm
Data File: H:\A\DATA\SQA176\A6523.D
Name: W5473
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.35	4578.8	ng	7581740	1	25.93	1657490	1001.0
1-Heptadecene	29.61	6567.7	ng	10875000	1	25.93	1657490	1001.0
9-Hexadecenoic ac...	33.38	12856.1	ng	21287500	1	25.93	1657490	1001.0
Hexadecanoic acid...	33.68	8836.4	ng	14631500	1	25.93	1657490	1001.0
Ethyl 9-hexadecen...	34.52	36251.8	ng	60026900	1	25.93	1657490	1001.0
Hexadecanoic acid...	34.76	5794.4	ng	9594480	1	25.93	1657490	1001.0
10-Octadecenoic a...	36.49	4200.9	ng	6955930	1	25.93	1657490	1001.0
5,8,11,14-Eicosat...	39.77	6672.2	ng	11048000	1	25.93	1657490	1001.0
5,8,11,14,17-Eico...	39.88	4409.6	ng	7301520	1	25.93	1657490	1001.0
Squalene	46.84	7385.0	ng	12228300	1	25.93	1657490	1001.0

SAMPLE_NO APC WS 4006
LAB_ID W5473 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 8 Sep 2001 5:59 pm
Data File: H:\A\DATA\SQA176\A6524.D
Name: W5474
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.36	4371.4	ng	7056040	1	25.94	1615750	1001.0
9-Hexadecenoic ac...	33.37	9205.3	ng	14858600	1	25.94	1615750	1001.0
Hexadecanoic acid...	33.68	9430.5	ng	15222100	1	25.94	1615750	1001.0
Ethyl 9-hexadecen...	34.50	21369.0	ng	34492500	1	25.94	1615750	1001.0
Hexadecanoic acid...	34.77	6867.2	ng	11084500	1	25.94	1615750	1001.0
13-Octadecenoic a...	36.51	9223.0	ng	14887200	1	25.94	1615750	1001.0
Linoleic acid eth...	37.42	4003.1	ng	6461590	1	25.94	1615750	1001.0
5,8,11,14-Eicosat...	39.78	6926.1	ng	11179600	1	25.94	1615750	1001.0
5,8,11,14,17-Eico...	39.89	5343.6	ng	8625240	1	25.94	1615750	1001.0
Squalene	46.86	9135.8	ng	14746500	1	25.94	1615750	1001.0

SAMPLE_NO APC WS 4007
LAB_ID W5474 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 9 Sep 2001 9:59 pm
Data File: H:\A\DATA\SQA176\A6545.D
Name: W5477
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Nonadienal, (...	21.96	2414.9	ng	5851870	1	25.92	2425650	1001.0
Eicosane	29.72	5115.1	ng	12395000	1	25.92	2425650	1001.0
9-Hexadecenoic ac...	33.36	6400.8	ng	15510500	1	25.92	2425650	1001.0
Tridecanoic acid,...	33.66	6703.5	ng	16244000	1	25.92	2425650	1001.0
Ethyl 9-hexadecen...	34.47	8327.5	ng	20179300	1	25.92	2425650	1001.0
Hexadecanoic acid...	34.75	3725.6	ng	9027950	1	25.92	2425650	1001.0
13-Octadecenoic a...	36.49	5234.5	ng	12684300	1	25.92	2425650	1001.0
Hexadecane	37.57	42017.3	ng	101817000	1	25.92	2425650	1001.0
5,8,11,14,17-Eico...	39.86	2287.2	ng	5542430	1	25.92	2425650	1001.0
Squalene	46.82	4030.3	ng	9766190	1	25.92	2425650	1001.0

SAMPLE_NO APC WS 4009
LAB_ID W5477 01
LABORATORY BATD
SOG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 9 Sep 2001 11:16 pm
Data File: H:\A\DATA\SQA176\A6526.D
Name: W5478
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
9-Octadecene, (E)-	29.34	3447.0	ng	4159220	1	25.92	1207820	1001.0
5-Octadecene, (E)-	29.59	9559.4	ng	11534600	1	25.92	1207820	1001.0
Heptadecane	29.71	3741.9	ng	4515050	1	25.92	1207820	1001.0
1-Octadecene	33.11	2961.2	ng	3573040	1	25.92	1207820	1001.0
9-Hexadecenoic ac...	33.36	10696.3	ng	12906300	1	25.92	1207820	1001.0
Tridecanoic acid,...	33.66	10316.1	ng	12447600	1	25.92	1207820	1001.0
14-Octadecenoic a...	36.48	8665.0	ng	10455400	1	25.92	1207820	1001.0
9-Octadecenoic ac...	36.54	2398.0	ng	2893490	1	25.92	1207820	1001.0
Octadecanoic acid...	36.81	3359.6	ng	4053800	1	25.92	1207820	1001.0
2,6,10-Dodecatrie...	46.82	7187.1	ng	8672040	1	25.92	1207820	1001.0

SAMPLE_NO APC WS 4010
LAB_ID W5478 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 12:35 am
Data File: H:\A\DATA\SQA176\A6527.D
Name: W5479
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	26.30	8348.3	ng	6657910	1	25.93	798315	1001.0
unknown	27.67	5275.9	ng	4207600	1	25.93	798315	1001.0
8-Heptadecene	29.37	6806.3	ng	5428160	1	25.93	798315	1001.0
5-Octadecene, (E)-	29.60	15487.3	ng	12351400	1	25.93	798315	1001.0
Tetracontane, 3,5...	29.72	9608.0	ng	7662570	1	25.93	798315	1001.0
9-Hexadecenoic ac...	33.36	17119.8	ng	13653300	1	25.93	798315	1001.0
Hexadecanoic acid...	33.66	21287.7	ng	16977300	1	25.93	798315	1001.0
E-11-Hexadecenoic...	34.44	7778.4	ng	6203420	1	25.93	798315	1001.0
14-Octadecenoic a...	36.48	5413.9	ng	4317670	1	25.93	798315	1001.0
Octadecanoic acid...	36.81	5305.8	ng	4231450	1	25.93	798315	1001.0

SAMPLE_NO LPX WS 4001
LAB_ID W5479 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 1:53 am
Data File: H:\A\DATA\SQA176\A6528.D
Name: W5480
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	26.59	5866.5	ng	4923670	1	25.92	840128	1001.0
8-Heptadecene	29.37	10178.1	ng	8542380	1	25.92	840128	1001.0
1-Heptadecene	29.63	47652.4	ng	39994100	1	25.92	840128	1001.0
Hexatriacontane	29.73	10998.8	ng	9231170	1	25.92	840128	1001.0
9-Hexadecenoic ac...	33.36	18331.6	ng	15385500	1	25.92	840128	1001.0
Tridecanoic acid,...	33.67	25530.1	ng	21427100	1	25.92	840128	1001.0
Ethyl 9-hexadecen...	34.44	5827.4	ng	4890910	1	25.92	840128	1001.0
14-Octadecenoic a...	36.49	7130.7	ng	5984720	1	25.92	840128	1001.0
Octadecanoic acid...	36.82	7437.6	ng	6242260	1	25.92	840128	1001.0
Squalene	46.82	8102.0	ng	6799930	1	25.92	840128	1001.0

SAMPLE_NO LPX WS 4002
LAB_ID W5480 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 4:29 am
Data File: H:\A\DATA\SQA176\A6530.D
Name: W5481
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	26.43	3696.1	ng	2389520	1	25.91	647138	1001.0
1-Pentadecene	29.58	12839.6	ng	8300690	1	25.91	647138	1001.0
Heptadecane	29.69	7024.8	ng	4541490	1	25.91	647138	1001.0
9-Hexadecenoic ac...	33.34	20544.1	ng	13281600	1	25.91	647138	1001.0
Hexadecanoic acid...	33.65	19115.7	ng	12358100	1	25.91	647138	1001.0
E-11-Hexadecenoic...	34.43	8964.8	ng	5795650	1	25.91	647138	1001.0
13-Octadecenoic a...	36.46	11560.5	ng	7473750	1	25.91	647138	1001.0
13-Octadecenoic a...	36.53	5364.2	ng	3467920	1	25.91	647138	1001.0
Octadecanoic acid...	36.80	6360.5	ng	4112000	1	25.91	647138	1001.0
Squalene	46.80	10102.7	ng	6531310	1	25.91	647138	1001.0

SAMPLE_NO LPX WS 4003
LAB_ID W5481 01
LABORATORY BATD
SDG 01374 FRACTION W.

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 5:46 am
Data File: H:\A\DATA\SQA176\A6531.D
Name: W5482
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	26.29	16377.9	ng	8196520	1	25.91	500963	1001.0
8-Heptadecene	29.34	5808.7	ng	2907020	1	25.91	500963	1001.0
5-Octadecene, (E)-	29.58	22934.7	ng	11478000	1	25.91	500963	1001.0
10-Methylnonadecane	29.70	14149.8	ng	7081440	1	25.91	500963	1001.0
Methyl tetradecan...	30.14	5629.5	ng	2817380	1	25.91	500963	1001.0
9-Hexadecenoic ac...	33.34	20495.4	ng	10257200	1	25.91	500963	1001.0
Tridecanoic acid,...	33.64	24411.5	ng	12217000	1	25.91	500963	1001.0
14-Octadecenoic a...	36.46	19310.7	ng	9664280	1	25.91	500963	1001.0
Octadecanoic acid...	36.79	6905.3	ng	3455820	1	25.91	500963	1001.0
2,6,10,14,18-Pent...	46.80	14659.7	ng	7336640	1	25.91	500963	1001.0

SAMPLE_NO LPX WS 4004
LAB_ID W5482 01
LABORATORY BATO
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 7:03 am
Data File: H:\A\DATA\SQA176\A6532.D
Name: W5483
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Nonadienal, (...	21.96	5247.6	ng	6529440	1	25.92	1245520	1001.0
Pentacosane	27.67	7468.6	ng	9292930	1	25.92	1245520	1001.0
8-Heptadecene	29.37	5730.7	ng	7130510	1	25.92	1245520	1001.0
1-Hexadecene	29.67	50348.7	ng	62647500	1	25.92	1245520	1001.0
Tetradecane	29.75	10647.0	ng	13247800	1	25.92	1245520	1001.0
unknown	32.99	11140.6	ng	13861900	1	25.92	1245520	1001.0
9-Hexadecenoic ac...	33.38	19284.9	ng	23995700	1	25.92	1245520	1001.0
Hexadecanoic acid...	33.68	18385.4	ng	22876400	1	25.92	1245520	1001.0
12-Octadecenoic a...	36.51	16486.6	ng	20513800	1	25.92	1245520	1001.0
Squalene	46.86	20148.1	ng	25069700	1	25.92	1245520	1001.0

SAMPLE_NO LPX WS 4005
LAB_ID W5483 01
LABORATORY BATD
SOG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 8:21 am
Data File: H:\A\DATA\SQA176\A6533.D
Name: W5488
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.37	3894.9	ng	4359870	1	25.94	1120500	1001.0
E-14-Hexadecenal	29.64	39184.0	ng	43861900	1	25.94	1120500	1001.0
Hexatriacontane	29.74	8166.9	ng	9141840	1	25.94	1120500	1001.0
9-Hexadecenoic ac...	33.38	17002.0	ng	19031700	1	25.94	1120500	1001.0
Hexadecanoic acid...	33.68	19344.5	ng	21653900	1	25.94	1120500	1001.0
E-11-Hexadecenoic...	34.47	10664.1	ng	11937200	1	25.94	1120500	1001.0
13-Octadecenoic a...	36.51	16462.7	ng	18428100	1	25.94	1120500	1001.0
14-Octadecenoic a...	36.57	4515.2	ng	5054190	1	25.94	1120500	1001.0
Octadecanoic acid...	36.82	5458.1	ng	6109680	1	25.94	1120500	1001.0
2,6,10,14,18,22-T...	46.84	8720.8	ng	9761940	1	25.94	1120500	1001.0

SAMPLE_NO LPX WS 4006
LAB_ID W5488 01
LABORATORY BATD
SOG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 9:39 am
Data File: H:\A\DATA\SQA176\A6534.D
Name: W5489
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	26.63	4289.3	ng	7387910	1	25.94	1724120	1001.0
1-Octadecene	29.66	28588.1	ng	49240100	1	25.94	1724120	1001.0
3-Heptadecene, (Z)-	29.76	6309.4	ng	10867400	1	25.94	1724120	1001.0
7-Hexadecenoic ac...	33.40	15572.9	ng	26822700	1	25.94	1724120	1001.0
Hexadecanoic acid...	33.70	15617.5	ng	26899600	1	25.94	1724120	1001.0
Ethyl 9-hexadecen...	34.49	9743.2	ng	16781600	1	25.94	1724120	1001.0
10-Octadecenoic a...	36.52	10794.0	ng	18591600	1	25.94	1724120	1001.0
13-Octadecenoic a...	36.59	4039.0	ng	6956830	1	25.94	1724120	1001.0
Octadecane	37.50	10768.7	ng	18548000	1	25.94	1724120	1001.0
Squalene	46.87	9211.9	ng	15866600	1	25.94	1724120	1001.0

SAMPLE_NO LPX WS 4007
LAB_ID W5489 01
LABORATORY BATO
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 10:59 am
Data File: H:\A\DATA\SQA176\A6535.D
Name: W5490
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	26.62	4699.6	ng	6222440	1	25.95	1325360	1001.0
8-Heptadecene	29.38	3961.6	ng	5245300	1	25.95	1325360	1001.0
E-14-Hexadecenal	29.65	27025.5	ng	35782800	1	25.95	1325360	1001.0
Heptadecane	29.74	5741.7	ng	7602280	1	25.95	1325360	1001.0
9-Hexadecenoic ac...	33.38	11844.2	ng	15682200	1	25.95	1325360	1001.0
Pentadecanoic aci...	33.69	13915.2	ng	18424300	1	25.95	1325360	1001.0
E-11-Hexadecenoic...	34.46	4225.7	ng	5594990	1	25.95	1325360	1001.0
14-Octadecenoic a...	36.51	6471.2	ng	8568120	1	25.95	1325360	1001.0
Ethyl Oleate	37.48	5068.6	ng	6711060	1	25.95	1325360	1001.0
Squalene	46.86	7360.4	ng	9745410	1	25.95	1325360	1001.0

SAMPLE_NO LPX WS 4008
LAB_ID W5490 01
LABORATORY BATD
SOG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 12:18 pm
Data File: H:\A\DATA\SQA176\A6536.D
Name: W5491
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
8-Heptadecene	29.39	13063.2	ng	11680800	1	25.95	895074	1001.0
5-Octadecene, (E)-	29.65	28065.4	ng	25095500	1	25.95	895074	1001.0
Heptadecane	29.75	13906.6	ng	12435000	1	25.95	895074	1001.0
1,2-Dioctylcyclop...	32.99	6189.6	ng	5534640	1	25.95	895074	1001.0
9-Hexadecenoic ac...	33.40	26714.4	ng	23887400	1	25.95	895074	1001.0
Hexadecanoic acid...	33.70	28797.5	ng	25750200	1	25.95	895074	1001.0
E-11-Hexadecenoic...	34.50	21803.3	ng	19496100	1	25.95	895074	1001.0
14-Octadecenoic a...	36.52	10163.9	ng	9088390	1	25.95	895074	1001.0
Octadecanoic acid...	36.83	5984.3	ng	5351070	1	25.95	895074	1001.0
Hexadecane	37.52	25305.4	ng	22627600	1	25.95	895074	1001.0

SAMPLE_NO LPX WS 4009
LAB_ID W5491 01
LABORATORY BATD
SDG 01374 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 10 Sep 2001 1:38 pm
Data File: H:\A\DATA\SQA176\A6537.D
Name: W5492
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
5-Octadecene, (E)-	29.63	18487.1	ng	24937200	1	25.95	1350240	1001.0
Hexatriacontane	29.74	6310.5	ng	8512250	1	25.95	1350240	1001.0
9-Hexadecenoic ac...	33.38	13755.0	ng	18554000	1	25.95	1350240	1001.0
Pentadecanoic aci...	33.69	14982.9	ng	20210300	1	25.95	1350240	1001.0
E-11-Hexadecenoic...	34.48	8264.1	ng	11147400	1	25.95	1350240	1001.0
14-Octadecenoic a...	36.52	9586.3	ng	12930900	1	25.95	1350240	1001.0
Octadecanoic acid...	36.84	4465.0	ng	6022850	1	25.95	1350240	1001.0
unknown	37.49	10057.0	ng	13565800	1	25.95	1350240	1001.0
5,8,11,14,17-Eico...	39.88	3056.5	ng	4122930	1	25.95	1350240	1001.0
Squalene	46.87	8832.9	ng	11914600	1	25.95	1350240	1001.0

SAMPLE_NO LPX WS 4010
LAB_ID W5492 01
LABORATORY BATD
SDG 01374 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 21 Sep 2001 9:00 pm
Data File: H:\E\DATA\SQE032\E1187.D
Name: ZF01PB
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	462.3	ng	278882	1	26.35	603811	1001.0
Phenol, 2,4-bis(1...	26.58	111.1	ng	67032	1	26.35	603811	1001.0
Diethyl Phthalate	28.30	300.5	ng	181287	1	26.35	603811	1001.0
Octadecanol	38.46	381.1	ng	229881	1	26.35	603811	1001.0
Triphenylphosphin...	43.36	216.5	ng	130616	1	26.35	603811	1001.0
unknown	44.85	281.3	ng	169693	1	26.35	603811	1001.0

SAMPLE_NO NA
LAB_ID ZF01PB
LABORATORY BATD
SDG 01375 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 6:06 am
Data File: H:\E\DATA\SQE032\E1194.D
Name: W5501
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	22098.1	ng	10454200	1	26.35	473554	1001.0
Cycloheptasiloxan...	26.19	12367.8	ng	5850970	1	26.35	473554	1001.0
N-(Trifluoroacety...	29.54	5780.5	ng	2734630	1	26.35	473554	1001.0
Hexadecanoic acid...	38.16	8493.6	ng	4018170	1	26.35	473554	1001.0
Octadecanoic acid...	40.98	8621.5	ng	4078670	1	26.35	473554	1001.0
unknown	41.41	4625.3	ng	2188150	1	26.35	473554	1001.0
unknown	43.24	5202.7	ng	2461300	1	26.35	473554	1001.0
Cyclononasiloxane...	45.22	5461.3	ng	2583650	1	26.35	473554	1001.0
Cyclononasiloxane...	47.53	5813.1	ng	2750050	1	26.35	473554	1001.0
Cyclononasiloxane...	50.35	4957.7	ng	2345410	1	26.35	473554	1001.0

SAMPLE_NO LPX LB 4001
LAB_ID W5501 01
LABORATORY BATD
SDG 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 7:24 am
Data File: H:\E\DATA\SQE032\E1195.D
Name: W5502
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.38	5288.9	ng	3583570	1	26.35	678241	1001.0
unknown	26.90	8361.3	ng	5665320	1	26.35	678241	1001.0
9-Hexadecenoic ac...	33.81	9664.7	ng	6548440	1	26.35	678241	1001.0
Hexadecanoic acid...	34.13	20327.2	ng	13772900	1	26.35	678241	1001.0
Octadecanal	35.69	6294.5	ng	4264910	1	26.35	678241	1001.0
9,15-Octadecadien...	36.85	5527.7	ng	3745340	1	26.35	678241	1001.0
9-Octadecenoic ac...	36.95	15902.9	ng	10775200	1	26.35	678241	1001.0
Octadecanoic acid...	37.28	8042.3	ng	5449170	1	26.35	678241	1001.0
5,8,11,14-Eicosat...	39.34	4663.6	ng	3159880	1	26.35	678241	1001.0
Docosa-2,6,10,14,...	47.55	12403.2	ng	8403980	1	26.35	678241	1001.0

SAMPLE_NO LPX LB 4001
LAB_ID W5502 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 10:01 am
Data File: H:\E\DATA\SQE032\E1197.D
Name: W5503
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	1488.4	ng	710207	1	26.35	477627	1001.0
unknown	26.87	2291.2	ng	1093260	1	26.35	477627	1001.0
9-Hexadecenoic ac...	33.79	1527.8	ng	729007	1	26.35	477627	1001.0
Hexadecanoic acid...	34.10	6492.2	ng	3097750	1	26.35	477627	1001.0
9,12-Octadecadien...	36.84	724.9	ng	345901	1	26.35	477627	1001.0
8-Octadecenoic ac...	36.92	2375.4	ng	1133440	1	26.35	477627	1001.0
9-Octadecenoic ac...	37.00	793.6	ng	378682	1	26.35	477627	1001.0
Octadecanoic acid...	37.26	1422.5	ng	678727	1	26.35	477627	1001.0
4,7,10,13,16,19-D...	42.01	857.4	ng	409096	1	26.35	477627	1001.0
2,6,10,14,18,22-T...	47.53	2443.3	ng	1165840	1	26.35	477627	1001.0

SAMPLE_NO LPX LB 4002
LAB_ID W5503 01
LABORATORY BATD
SDG 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 11:20 am
Data File: H:\E\DATA\SQE032\E1198.D
Name: W5504
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.37	836.0	ng	6515140	1	26.35	7801480	1001.0
Cyclohexasiloxane...	22.44	1523.2	ng	11871400	1	26.35	7801480	1001.0
column bleed	26.20	1001.0	ng	7801480	1	26.35	7801480	1001.0
9-Hexadecenoic ac...	33.81	915.2	ng	7132800	1	26.35	7801480	1001.0
Hexadecanoic acid...	34.14	2248.8	ng	17526100	1	26.35	7801480	1001.0
9-Octadecenoic ac...	36.96	1540.8	ng	12008200	1	26.35	7801480	1001.0
Octadecanoic acid...	37.28	772.7	ng	6022040	1	26.35	7801480	1001.0
Hexadecanoic acid...	38.17	693.2	ng	5402410	1	26.35	7801480	1001.0
Octadecanoic acid...	40.98	766.6	ng	5974730	1	26.35	7801480	1001.0
unknown	47.56	1921.4	ng	14975000	1	26.35	7801480	1001.0

SAMPLE_NO LPX LB 4002
LAB_ID W5504 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 12:38 pm
Data File: H:\E\DATA\SQE032\E1199.D
Name: W5505
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	27602.8	ng	10892900	1	26.36	395025	1001.0
Cycloheptasiloxan...	26.19	15789.7	ng	6231080	1	26.36	395025	1001.0
unknown	29.54	7251.1	ng	2861490	1	26.36	395025	1001.0
Hexadecanoic acid...	38.16	8092.1	ng	3193380	1	26.36	395025	1001.0
Octadecanoic acid...	40.98	8925.1	ng	3522110	1	26.36	395025	1001.0
unknown	43.25	6161.3	ng	2431440	1	26.36	395025	1001.0
Oleic acid, eicos...	45.67	8621.3	ng	3402220	1	26.36	395025	1001.0
Cyclononasiloxane...	47.53	7191.4	ng	2837940	1	26.36	395025	1001.0
Cyclononasiloxane...	50.36	7863.2	ng	3103070	1	26.36	395025	1001.0
Cyclononasiloxane...	53.94	6258.2	ng	2469670	1	26.36	395025	1001.0

SAMPLE_NO LPX LB 4003
LAB_ID W5505 01
LABORATORY BATO
SDG 01375 FRACTION F

Sample was
re-extracted
in SDG # 01-672.
DTDahle 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 1:57 pm
Data File: H:\E\DATA\SQE032\E1200.D
Name: W5506
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	4106.1	ng	2194490	1	26.36	534982	1001.0
unknown	22.50	4901.8	ng	2619740	1	26.36	534982	1001.0
unknown	26.91	14261.6	ng	7622080	1	26.36	534982	1001.0
unknown	27.05	9314.9	ng	4978310	1	26.36	534982	1001.0
9-Hexadecenoic ac...	33.81	5904.9	ng	3155850	1	26.36	534982	1001.0
Hexadecanoic acid...	34.13	22714.1	ng	12139500	1	26.36	534982	1001.0
9,12-Octadecadien...	36.86	3948.5	ng	2110260	1	26.36	534982	1001.0
9-Octadecenoic ac...	36.94	10885.6	ng	5817790	1	26.36	534982	1001.0
Octadecanoic acid...	37.28	7434.6	ng	3973400	1	26.36	534982	1001.0
Docosa-2,6,10,14,...	47.55	5663.8	ng	3027000	1	26.36	534982	1001.0

SAMPLE_NO LPX LB 4003
LAB_ID W5506 01
LABORATORY BATO
SOG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 3:15 pm
Data File: H:\E\DATA\SQE032\E1201.D
Name: W5507
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	381.3	ng	225917	1	26.36	593076	1001.0
Hexadecanoic acid...	34.10	611.2	ng	362150	1	26.36	593076	1001.0
unknown methyl ester	36.92	118.4	ng	70152	1	26.36	593076	1001.0
Octadecanoic acid...	37.26	100.7	ng	59650	1	26.36	593076	1001.0
Formylmethylenetr...	43.37	182.1	ng	107871	1	26.36	593076	1001.0

SAMPLE_NO LPX LB 4004
LAB_ID W5507 01
LABORATORY BATD
SDG 01375 FRACTION F

Sample was re-extracted in SDG # 01-672
DDahle 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 4:34 pm
Data File: H:\E\DATA\SQE032\E1202.D
Name: W5507DUP
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	21.96	252.8	ng	130571	1	26.36	516939	1001.0
Cyclohexasiloxane...	22.42	520.4	ng	268759	1	26.36	516939	1001.0
unknown	26.86	266.2	ng	137489	1	26.36	516939	1001.0
unknown	33.79	107.4	ng	55454	1	26.36	516939	1001.0
Hexadecanoic acid...	34.10	1298.7	ng	670693	1	26.36	516939	1001.0
Triolein	36.92	248.9	ng	128565	1	26.36	516939	1001.0
Octadecanoic acid...	37.26	208.5	ng	107661	1	26.36	516939	1001.0
Triphenylphosphin...	43.37	141.9	ng	73262	1	26.36	516939	1001.0
.psi.,.psi.-Carot...	47.53	261.2	ng	134907	1	26.36	516939	1001.0

SAMPLE_NO LPX LB 4004
LAB_ID W5507DUP 01
LABORATORY BATD
SDG 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 5:52 pm
Data File: H:\E\DATA\SQE032\E1203.D
Name: W5508
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	21.96	3152.1	ng	2352120	1	26.35	746949	1001.0
Cyclohexasiloxane...	22.43	8790.8	ng	6559700	1	26.35	746949	1001.0
Cycloheptasiloxan...	26.19	3764.8	ng	2809280	1	26.35	746949	1001.0
unknown	26.88	2375.7	ng	1772760	1	26.35	746949	1001.0
unknown	29.54	2171.8	ng	1620600	1	26.35	746949	1001.0
Hexadecanoic acid...	38.16	2800.6	ng	2089780	1	26.35	746949	1001.0
Octadecanoic acid...	40.98	2892.3	ng	2158230	1	26.35	746949	1001.0
column bleed	43.24	1973.7	ng	1472750	1	26.35	746949	1001.0
Cyclononasiloxane...	45.22	2064.5	ng	1540500	1	26.35	746949	1001.0
Cyclononasiloxane...	47.53	2820.8	ng	2104860	1	26.35	746949	1001.0

SAMPLE_NO LPX LB 4004
LAB_ID W5508 01
LABORATORY BATO
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 7:10 pm
Data File: H:\E\DATA\SQE032\E1204.D
Name: W5508DUP
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.44	34457.9	ng	13641300	1	26.35	396280	1001.0
column bleed	26.19	13664.6	ng	5409580	1	26.35	396280	1001.0
unknown	29.54	8007.6	ng	3170080	1	26.35	396280	1001.0
Hexadecanoic acid...	38.16	12094.5	ng	4788030	1	26.35	396280	1001.0
Octadecanoic acid...	40.98	12647.9	ng	5007080	1	26.35	396280	1001.0
column bleed	41.41	5950.5	ng	2355700	1	26.35	396280	1001.0
column bleed	43.24	6927.6	ng	2742510	1	26.35	396280	1001.0
Cyclononasiloxane...	45.22	7009.6	ng	2774980	1	26.35	396280	1001.0
Cyclononasiloxane...	47.53	7246.2	ng	2868640	1	26.35	396280	1001.0
Cyclononasiloxane...	50.35	6079.9	ng	2406940	1	26.35	396280	1001.0
Cyclononasiloxane...	50.35	6079.9	ng	2406940	1	26.35	396280	1001.0

SAMPLE_NO LPX LB 4004
LAB_ID W5508DUP 01
LABORATORY BATD
SOG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 8:29 pm
Data File: H:\E\DATA\SQE032\E1205.D
Name: W5511
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	7554.2	ng	2833190	1	26.36	375425	1001.0
3-Isopropoxy-1,1,...	26.18	3889.8	ng	1458870	1	26.36	375425	1001.0
unknown	29.53	1937.5	ng	726672	1	26.36	375425	1001.0
unknown	32.42	1359.0	ng	509707	1	26.36	375425	1001.0
Hexadecanoic acid...	34.10	3165.9	ng	1187380	1	26.36	375425	1001.0
Hexadecanoic acid...	38.15	2971.8	ng	1114560	1	26.36	375425	1001.0
Octadecanoic acid...	40.97	3061.3	ng	1148150	1	26.36	375425	1001.0
column bleed	43.24	1350.3	ng	506431	1	26.36	375425	1001.0
Cyclononasiloxane...	45.22	1327.7	ng	497945	1	26.36	375425	1001.0
Cyclononasiloxane...	47.53	1917.2	ng	719056	1	26.36	375425	1001.0

SAMPLE_NO LPX LB 4005
LAB_ID W5511 01
LABORATORY BATD
SDG 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Sep 2001 9:47 pm
Data File: H:\E\DATA\SQE032\E1206.D
Name: W5512
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	21.96	5183.6	ng	1969340	1	26.35	380299	1001.0
unknown	26.75	1832.2	ng	696068	1	26.35	380299	1001.0
unknown	26.89	9955.1	ng	3782150	1	26.35	380299	1001.0
Hexadecanoic acid...	34.10	8871.2	ng	3370330	1	26.35	380299	1001.0
9-Octadecenal, (Z)-	35.34	1785.6	ng	678373	1	26.35	380299	1001.0
Hexadecanal	35.68	2670.5	ng	1014580	1	26.35	380299	1001.0
9,12-Octadecadien...	36.85	2190.9	ng	832380	1	26.35	380299	1001.0
9-Octadecenoic ac...	36.92	3924.9	ng	1491140	1	26.35	380299	1001.0
Octadecanoic acid...	37.27	2112.9	ng	802751	1	26.35	380299	1001.0
2,6,10,14,18,22-T...	47.53	3935.3	ng	1495080	1	26.35	380299	1001.0

SAMPLE_NO LPX LB 4005
LAB_ID W5512 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 12:22 am
Data File: H:\E\DATA\SQE032\E1208.D
Name: W5513
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	42726.5	ng	12244600	1	26.35	286867	1001.0
unknown	26.19	18754.0	ng	5374530	1	26.35	286867	1001.0
unknown	29.54	10871.3	ng	3115500	1	26.35	286867	1001.0
1,1,1,5,7,7,7-Hep...	32.42	8078.2	ng	2315040	1	26.35	286867	1001.0
Hexadecanoic acid...	38.16	9691.8	ng	2777480	1	26.35	286867	1001.0
Octadecanoic acid...	40.98	9893.5	ng	2835290	1	26.35	286867	1001.0
1,1,1,5,7,7,7-Hep...	41.41	8267.1	ng	2369200	1	26.35	286867	1001.0
Cyclononasiloxane...	43.24	9603.4	ng	2752140	1	26.35	286867	1001.0
Cyclononasiloxane...	45.22	9610.9	ng	2754300	1	26.35	286867	1001.0
Cyclononasiloxane...	47.53	9339.9	ng	2676640	1	26.35	286867	1001.0

SAMPLE_NO LPX LB 4006
LAB_ID W5513 01
LABORATORY BATO
SOG 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 1:40 am
Data File: H:\E\DATA\SQE032\E1209.D
Name: W5514
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.37	508.5	ng	2988350	1	26.35	5882320	1001.0
Cyclohexasiloxane...	22.44	1769.0	ng	10395500	1	26.35	5882320	1001.0
column bleed	26.19	1001.0	ng	5882320	1	26.35	5882320	1001.0
unknown	29.54	573.3	ng	3369200	1	26.35	5882320	1001.0
Hexadecanoic acid...	38.16	527.8	ng	3101590	1	26.35	5882320	1001.0
Octadecanoic acid...	40.98	505.1	ng	2968120	1	26.35	5882320	1001.0
column bleed	43.25	633.9	ng	3725170	1	26.35	5882320	1001.0
column bleed	45.22	610.1	ng	3585350	1	26.35	5882320	1001.0
column bleed	47.54	1288.0	ng	7568690	1	26.35	5882320	1001.0
column bleed	50.36	629.6	ng	3699850	1	26.35	5882320	1001.0

SAMPLE_NO LPX LB 4006
LAB_ID W5514 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 2:58 am
Data File: H:\E\DATA\SQE032\E1210.D
Name: W5515
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	17646.5	ng	6050370	1	26.35	343207	1001.0
Cycloheptasiloxan...	26.19	9519.5	ng	3263910	1	26.35	343207	1001.0
unknown	29.53	4691.2	ng	1608440	1	26.35	343207	1001.0
1,1,1,5,7,7,7-Hep...	32.42	3320.6	ng	1138510	1	26.35	343207	1001.0
Hexadecanoic acid...	38.15	3808.0	ng	1305640	1	26.35	343207	1001.0
Octadecanoic acid...	40.97	4087.6	ng	1401480	1	26.35	343207	1001.0
column bleed	41.40	3257.1	ng	1116750	1	26.35	343207	1001.0
column bleed	43.24	3774.8	ng	1294230	1	26.35	343207	1001.0
column bleed	45.22	3567.2	ng	1223070	1	26.35	343207	1001.0
column bleed	47.52	4020.4	ng	1378450	1	26.35	343207	1001.0

SAMPLE_NO LPX LB 4007
LAB_ID W5515 01
LABORATORY BATD
SOG 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 4:15 am
Data File: H:\E\DATA\SQE032\E1211.D
Name: W5516
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.40	1247.0	ng	5933990	1	26.36	4763460	1001.0
unknown	26.90	1001.0	ng	4763460	1	26.36	4763460	1001.0
9-Hexadecenoic ac...	33.80	650.3	ng	3094700	1	26.36	4763460	1001.0
Hexadecanoic acid...	34.11	1504.4	ng	7159160	1	26.36	4763460	1001.0
9,12-Octadecadien...	36.86	964.3	ng	4588890	1	26.36	4763460	1001.0
9-Octadecenoic ac...	36.95	1857.4	ng	8838920	1	26.36	4763460	1001.0
Linoleic acid eth...	37.86	622.2	ng	2960810	1	26.36	4763460	1001.0
5,8,11,14-Eicosat...	40.22	699.4	ng	3328130	1	26.36	4763460	1001.0
2,6,10,14,18,22-T...	47.57	2341.2	ng	11141100	1	26.36	4763460	1001.0
Cholesta-3,5-diene	49.83	827.3	ng	3936960	1	26.36	4763460	1001.0

SAMPLE_NO LPX LB 4007
LAB_ID W5516 01
LABORATORY BATD
SOG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 5:33 am
Data File: H:\E\DATA\SQE032\E1212.D
Name: W5517
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	21.98	577.3	ng	405151	1	26.37	702480	1001.0
Cyclohexasiloxane...	22.42	578.0	ng	405627	1	26.37	702480	1001.0
unknown	26.88	370.6	ng	260058	1	26.37	702480	1001.0
unknown methyl ester	33.80	507.2	ng	355912	1	26.37	702480	1001.0
Hexadecanoic acid...	34.11	4373.9	ng	3069510	1	26.37	702480	1001.0
9-Octadecenoic ac...	36.93	1093.9	ng	767701	1	26.37	702480	1001.0
Octadecanoic acid...	37.28	746.3	ng	523735	1	26.37	702480	1001.0
5,8,11,14-Eicosat...	39.35	418.0	ng	293353	1	26.37	702480	1001.0
Squalene	47.55	731.3	ng	513209	1	26.37	702480	1001.0
Cholest-5-ene, 3-...	49.83	662.7	ng	465057	1	26.37	702480	1001.0

SAMPLE_NO LPX LB 4008
LAB_ID W5517 01
LABORATORY BATO
SO6 01375 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 6:50 am
Data File: H:\E\DATA\SQE032\E1213.D
Name: W5518
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Benzeneacetaldehy...	21.46	4208.2	ng	1936050	1	26.37	460522	1001.0
Indole	21.99	4642.7	ng	2135950	1	26.37	460522	1001.0
3-Buten-2-one, 4-...	23.44	5287.0	ng	2432360	1	26.37	460522	1001.0
unknown	26.89	4158.0	ng	1912960	1	26.37	460522	1001.0
9-Hexadecenoic ac...	33.81	3818.3	ng	1756660	1	26.37	460522	1001.0
Hexadecanoic acid...	34.12	11569.2	ng	5322540	1	26.37	460522	1001.0
9-Octadecenoic ac...	36.95	10639.6	ng	4894880	1	26.37	460522	1001.0
Octadecanoic acid...	37.28	3503.1	ng	1611630	1	26.37	460522	1001.0
5,8,11,14-Eicosat...	39.35	3499.3	ng	1609910	1	26.37	460522	1001.0
Squalene	47.57	14273.6	ng	6566760	1	26.37	460522	1001.0

SAMPLE_NO LPX LB 4008
LAB_ID W5518 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 8:08 am
Data File: H:\E\DATA\SQE032\E1214.D
Name: W5629
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	22.00	22308.3	ng	8888190	1	26.36	398824	1001.0
Cyclohexasiloxane...	22.44	29634.2	ng	11807000	1	26.36	398824	1001.0
Cycloheptasiloxan...	26.19	13386.8	ng	5333660	1	26.36	398824	1001.0
unknown	29.54	7745.6	ng	3086040	1	26.36	398824	1001.0
Hexadecanoic acid...	38.17	10317.9	ng	4110920	1	26.36	398824	1001.0
Octadecanoic acid...	40.99	10536.4	ng	4197980	1	26.36	398824	1001.0
unknown	43.25	6513.6	ng	2595200	1	26.36	398824	1001.0
column bleed	45.22	6770.9	ng	2697710	1	26.36	398824	1001.0
Cyclononasiloxane...	47.53	8164.4	ng	3252890	1	26.36	398824	1001.0
Cyclononasiloxane...	50.36	5798.3	ng	2310190	1	26.36	398824	1001.0

SAMPLE_NO LPX LB 4009
LAB_ID ~~W5629~~ 01
LABORATORY BATD
SDG D1375 FRACTION F

W5629 XID
DTD 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 9:26 am
Data File: H:\E\DATA\SQE032\E1215.D
Name: W5630
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	2100.7	ng	29340700	1	26.38	13981300	1001.0
Cycloheptasiloxan...	26.21	1001.0	ng	13981300	1	26.38	13981300	1001.0
unknown	29.55	478.7	ng	6686120	1	26.38	13981300	1001.0
Hexadecanoic acid...	34.15	884.1	ng	12348500	1	26.38	13981300	1001.0
Ethyl 9-hexadecen...	34.95	692.4	ng	9671260	1	26.38	13981300	1001.0
9-Octadecenoic ac...	36.98	904.6	ng	12634800	1	26.38	13981300	1001.0
5,8,11,14-Eicosat...	40.27	851.7	ng	11896400	1	26.38	13981300	1001.0
column bleed	43.26	556.3	ng	7769800	1	26.38	13981300	1001.0
Cyclononasiloxane...	47.56	657.5	ng	9183470	1	26.38	13981300	1001.0
Cholest-5-en-3-ol...	49.93	917.0	ng	12808600	1	26.38	13981300	1001.0

SAMPLE_NO LPX LB 4009
LAB_ID ~~W5530~~ (1) 01
LABORATORY BATO
SDG 01375 FRACTION 0

(1) X ID, S/B
W5630
DD 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 10:43 am
Data File: H:\E\DATA\SQE032\E1216.D
Name: W5631
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	22.03	24439.3	ng	8154030	1	26.39	333978	1001.0
Cyclohexasiloxane...	22.43	24685.1	ng	8236030	1	26.39	333978	1001.0
Cycloheptasiloxan...	26.19	14625.6	ng	4879750	1	26.39	333978	1001.0
unknown	29.54	5974.4	ng	1993330	1	26.39	333978	1001.0
unknown	43.25	5765.7	ng	1923710	1	26.39	333978	1001.0
column bleed	45.22	5558.7	ng	1854630	1	26.39	333978	1001.0
column bleed	47.54	7637.4	ng	2548160	1	26.39	333978	1001.0
Cholesta-3,5-diene	49.87	6158.3	ng	2054690	1	26.39	333978	1001.0
Cyclononasiloxane...	50.37	6130.5	ng	2045410	1	26.39	333978	1001.0
column bleed	53.94	5534.4	ng	1846530	1	26.39	333978	1001.0

SAMPLE_NO LPX LB 4010
LAB_ID ~~W5531~~ ① 01
LABORATORY BATD
SDG 01375 FRACTION F

① X ID S/B W5631
DTD 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 12:01 pm
Data File: H:\E\DATA\SQE032\E1217.D
Name: W5632
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	22.02	737.4	ng	5416620	1	26.39	7352980	1001.0
Cyclohexasiloxane...	22.45	2070.1	ng	15206300	1	26.39	7352980	1001.0
Cycloheptasiloxan...	26.20	1001.0	ng	7352980	1	26.39	7352980	1001.0
Hexadecanoic acid...	34.15	1174.7	ng	8629060	1	26.39	7352980	1001.0
Ethyl 9-hexadecen...	34.96	1661.7	ng	12206000	1	26.39	7352980	1001.0
9,12-Octadecadien...	36.89	700.5	ng	5145320	1	26.39	7352980	1001.0
9-Octadecenoic ac...	36.98	1131.4	ng	8311070	1	26.39	7352980	1001.0
Triolein	39.38	717.0	ng	5266850	1	26.39	7352980	1001.0
5,8,11,14-Eicosat...	40.28	1768.4	ng	12990200	1	26.39	7352980	1001.0
2,6,10,14,18-Pent...	47.60	1087.9	ng	7991540	1	26.39	7352980	1001.0

SAMPLE_NO LPX LB 4010
LAB_ID ~~W5532~~ (6) 01
LABORATORY BATO
SDG 01375 FRACTION 0

(1) x 10 S/B W5632
DM 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 8:01 pm
Data File: H:\E\DATA\SQE032\E1220.D
Name: ZF16PB
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	136.6	ng	95339	1	26.38	349370	500.5
unknown	36.92	151.3	ng	105606	1	26.38	349370	500.5
Acetic acid, octa...	38.49	61.4	ng	42863	1	26.38	349370	500.5
2-Propenoic acid,...	40.28	476.6	ng	332718	1	26.38	349370	500.5
unknown	43.24	66.6	ng	46517	1	26.38	349370	500.5
unknown	43.40	70.5	ng	49241	1	26.38	349370	500.5
Squalene	47.56	1333.2	ng	930653	1	26.38	349370	500.5

SAMPLE_NO NA
LAB_ID ZF16PB
LABORATORY BATO
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 2:29 am
Data File: H:\E\DATA\SQE032\E1225.D
Name: W5599
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	30.21	965.7	ng	885175	1	26.42	458768	500.5
Methyl tetradecan...	30.66	1203.9	ng	1103490	1	26.42	458768	500.5
Nonadecane	33.73	690.4	ng	632811	1	26.42	458768	500.5
9-Octadecenoic ac...	33.84	2037.5	ng	1867580	1	26.42	458768	500.5
Hexadecanoic acid...	34.15	3538.3	ng	3243250	1	26.42	458768	500.5
9,12-Octadecadien...	36.90	687.9	ng	630535	1	26.42	458768	500.5
9-Octadecenoic ac...	36.98	3534.6	ng	3239890	1	26.42	458768	500.5
9-Octadecenoic ac...	37.05	775.1	ng	710433	1	26.42	458768	500.5
Octadecanoic acid...	37.32	600.0	ng	549927	1	26.42	458768	500.5
Squalene	47.62	1706.6	ng	1564320	1	26.42	458768	500.5

SAMPLE_NO GMP AE 5001
LAB_ID W5599 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 3:46 am
Data File: H:\E\DATA\SQE032\E1226.D
Name: ZF19DUP
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	30.21	1102.9	ng	924978	1	26.41	419755	500.5
Methyl tetradecan...	30.66	1350.4	ng	1132530	1	26.41	419755	500.5
9-Hexadecenoic ac...	33.84	2004.0	ng	1680700	1	26.41	419755	500.5
Hexadecanoic acid...	34.15	3951.1	ng	3313710	1	26.41	419755	500.5
9-Octadecenal, (Z)-	35.39	651.2	ng	546109	1	26.41	419755	500.5
9,12-Octadecadien...	36.90	761.5	ng	638617	1	26.41	419755	500.5
9-Octadecenoic ac...	36.98	3835.0	ng	3216330	1	26.41	419755	500.5
9-Octadecenoic ac...	37.05	895.0	ng	750576	1	26.41	419755	500.5
Octadecanoic acid...	37.32	687.3	ng	576439	1	26.41	419755	500.5
Squalene	47.62	1926.2	ng	1615410	1	26.41	419755	500.5

SAMPLE_NO GMP AE 5001
LAB_ID ZF19DUP 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 7:39 am
Data File: H:\E\DATA\SQE032\E1229.D
Name: W5600
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	26.79	7251.8	ng	6278590	1	26.41	433334	500.5
Tridecanoic acid,...	28.07	3734.8	ng	3233600	1	26.41	433334	500.5
Methyl tetradecan...	30.66	6977.2	ng	6040870	1	26.41	433334	500.5
unknown	33.47	3222.8	ng	2790310	1	26.41	433334	500.5
9-Hexadecenoic ac...	33.84	5741.8	ng	4971280	1	26.41	433334	500.5
Hexadecanoic acid...	34.16	12187.8	ng	10552200	1	26.41	433334	500.5
9-Octadecenoic ac...	36.99	15750.2	ng	13636600	1	26.41	433334	500.5
9-Octadecenoic ac...	37.05	2761.5	ng	2390940	1	26.41	433334	500.5
Octadecanoic acid...	37.32	2951.3	ng	2555260	1	26.41	433334	500.5
Squalene	47.60	3724.2	ng	3224440	1	26.41	433334	500.5

SAMPLE_NO GMP AE 5002
LAB_ID W5600 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 8:57 am
Data File: H:\E\DATA\SQE032\E1230.D
Name: W5601
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.41	812.6	ng	2446220	1	26.41	1506660	500.5
Heptadecane	30.21	828.1	ng	2492990	1	26.41	1506660	500.5
Methyl tetradecan...	30.66	2164.2	ng	6515030	1	26.41	1506660	500.5
7-Hexadecenoic ac...	33.85	2899.9	ng	8729520	1	26.41	1506660	500.5
Hexadecanoic acid...	34.17	5872.5	ng	17678200	1	26.41	1506660	500.5
9-Octadecenoic ac...	37.00	6391.6	ng	19240800	1	26.41	1506660	500.5
9-Octadecenoic ac...	37.06	1647.7	ng	4959940	1	26.41	1506660	500.5
Octadecanoic acid...	37.32	1092.2	ng	3287830	1	26.41	1506660	500.5
5,8,11,14-Eicosat...	39.38	901.5	ng	2713680	1	26.41	1506660	500.5
Squalene	47.62	2219.6	ng	6681760	1	26.41	1506660	500.5

SAMPLE_NO GMP AE 5003
LAB_ID W5601 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 10:15 am
Data File: H:\E\DATA\SQE032\E1231.D
Name: W5602
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	1494.0	ng	4282340	1	26.40	1434630	500.5
Dodecanoic acid, ...	26.80	3474.5	ng	9959280	1	26.40	1434630	500.5
Tridecanoic acid,...	28.07	1623.0	ng	4652220	1	26.40	1434630	500.5
Methyl tetradecan...	30.66	3183.0	ng	9123770	1	26.40	1434630	500.5
9-Hexadecenoic ac...	33.85	2983.7	ng	8552590	1	26.40	1434630	500.5
Hexadecanoic acid...	34.17	6362.9	ng	18238600	1	26.40	1434630	500.5
9-Octadecenoic ac...	37.02	10147.9	ng	29088100	1	26.40	1434630	500.5
9-Octadecenoic ac...	37.06	1637.8	ng	4694710	1	26.40	1434630	500.5
Octadecanoic acid...	37.32	1914.0	ng	5486390	1	26.40	1434630	500.5
2,6,10,14,18,22-T...	47.61	1817.3	ng	5209050	1	26.40	1434630	500.5

SAMPLE_NO GMP AE 5004
LAB_ID W5602 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 11:34 am
Data File: H:\E\DATA\SQE032\E1232.D
Name: W5603
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	26.80	4093.8	ng	8020610	1	26.41	980583	500.5
Tridecanoic acid,...	28.07	2875.9	ng	5634520	1	26.41	980583	500.5
Methyl tetradecan...	30.67	5794.8	ng	11353200	1	26.41	980583	500.5
9-Hexadecenoic ac...	33.86	7591.8	ng	14873900	1	26.41	980583	500.5
Hexadecanoic acid...	34.19	15483.2	ng	30334800	1	26.41	980583	500.5
9,12-Octadecadien...	36.90	1815.1	ng	3556140	1	26.41	980583	500.5
9-Octadecenoic ac...	37.04	25118.9	ng	49213200	1	26.41	980583	500.5
Octadecanoic acid...	37.33	4501.3	ng	8819040	1	26.41	980583	500.5
5,8,11,14-Eicosat...	39.39	1757.5	ng	3443390	1	26.41	980583	500.5
Squalene	47.63	4994.3	ng	9784830	1	26.41	980583	500.5

SAMPLE_NO GMP AE 5005
LAB_ID W5603 01
LABORATORY BATD
SOG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 12:53 pm
Data File: H:\E\DATA\SQE032\E1233.D
Name: W5604
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Dodecanoic acid, ...	26.80	3126.3	ng	11148600	1	26.40	1784840	500.5
Tridecanoic acid,...	28.07	2056.1	ng	7332160	1	26.40	1784840	500.5
unknown	30.22	1150.0	ng	4101030	1	26.40	1784840	500.5
Methyl Z-11-tetra...	30.31	1279.6	ng	4563160	1	26.40	1784840	500.5
Methyl tetradecan...	30.68	3939.9	ng	14050200	1	26.40	1784840	500.5
9-Hexadecenoic ac...	33.87	4942.0	ng	17623800	1	26.40	1784840	500.5
Hexadecanoic acid...	34.19	9042.7	ng	32247300	1	26.40	1784840	500.5
9-Octadecenoic ac...	37.03	12058.6	ng	43002200	1	26.40	1784840	500.5
Octadecanoic acid...	37.33	2112.1	ng	7531830	1	26.40	1784840	500.5
Squalene	47.62	1876.5	ng	6691940	1	26.40	1784840	500.5

SAMPLE_NO GMP AE 5006
LAB_ID W5604 01
LABORATORY BATO
SDG 01378 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 2:12 pm
Data File: H:\E\DATA\SQE032\E1234.D
Name: W5605
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.41	1426.2	ng	2856820	1	26.40	1002540	500.5
Dodecanoic acid, ...	26.79	3299.6	ng	6609390	1	26.40	1002540	500.5
Tridecanoic acid,...	28.06	1655.4	ng	3315860	1	26.40	1002540	500.5
Heptadecane	30.21	1258.1	ng	2520130	1	26.40	1002540	500.5
Methyl tetradecan...	30.67	3529.4	ng	7069680	1	26.40	1002540	500.5
11-Hexadecenoic a...	33.86	5107.6	ng	10231000	1	26.40	1002540	500.5
Hexadecanoic acid...	34.17	9429.7	ng	18888400	1	26.40	1002540	500.5
9-Octadecenoic ac...	37.01	14401.6	ng	28847500	1	26.40	1002540	500.5
Octadecanoic acid...	37.32	2795.4	ng	5599460	1	26.40	1002540	500.5
Squalene	47.62	4245.2	ng	8503520	1	26.40	1002540	500.5

SAMPLE_NO GMP AE 5007
LAB_ID W5605 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 3:31 pm
Data File: H:\E\DATA\SQE032\E1235.D
Name: W5606
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	26.79	5152.1	ng	6954990	1	26.40	675644	500.5
Tridecanoic acid,...	28.06	3188.0	ng	4303560	1	26.40	675644	500.5
unknown	30.21	1813.2	ng	2447690	1	26.40	675644	500.5
7-Hexadecenoic ac...	30.31	1894.6	ng	2557550	1	26.40	675644	500.5
Methyl tetradecan...	30.66	5051.0	ng	6818510	1	26.40	675644	500.5
7-Hexadecenoic ac...	33.84	4443.4	ng	5998270	1	26.40	675644	500.5
Hexadecanoic acid...	34.16	8826.2	ng	11914900	1	26.40	675644	500.5
9-Octadecenoic ac...	36.99	10522.2	ng	14204300	1	26.40	675644	500.5
9-Octadecenoic ac...	37.05	1971.5	ng	2661440	1	26.40	675644	500.5
Squalene	47.60	1903.6	ng	2569690	1	26.40	675644	500.5

SAMPLE_NO GMP AE 5008
LAB_ID W5606 01
LABORATORY BATO
SOG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 11:44 am
Data File: H:\A\DATA\SQA181\A6753.D
Name: W5607
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	25.96	1905.8	ng	5874930	1	25.53	1542840	500.5
Tridecanoic acid,...	27.22	907.5	ng	2797340	1	25.53	1542840	500.5
Tridecanoic acid,...	27.93	471.3	ng	1452800	1	25.53	1542840	500.5
unknown	29.36	616.2	ng	1899600	1	25.53	1542840	500.5
7-Hexadecenoic ac...	29.45	500.3	ng	1542280	1	25.53	1542840	500.5
Methyl tetradecan...	29.81	1847.5	ng	5695190	1	25.53	1542840	500.5
7-Hexadecenoic ac...	32.98	1760.3	ng	5426210	1	25.53	1542840	500.5
Hexadecanoic acid...	33.29	3500.2	ng	10789600	1	25.53	1542840	500.5
10-Octadecenoic a...	36.10	4482.2	ng	13816700	1	25.53	1542840	500.5
Octadecanoic acid...	36.43	574.7	ng	1771440	1	25.53	1542840	500.5

SAMPLE_NO GMP AE 5009
LAB_ID W5607 01
LABORATORY BATD
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 1:11 am
Data File: H:\E\DATA\SQE032\E1224.D
Name: W5628
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Methyl tetradecan...	30.68	3007.9	ng	10845100	1	26.41	1804560	500.5
unknown	32.47	1780.4	ng	6419130	1	26.41	1804560	500.5
unknown	33.09	4498.6	ng	16219700	1	26.41	1804560	500.5
9-Hexadecenoic ac...	33.88	5011.6	ng	18069200	1	26.41	1804560	500.5
Hexadecanoic acid...	34.20	9822.9	ng	35416500	1	26.41	1804560	500.5
unknown	35.74	10952.8	ng	39490600	1	26.41	1804560	500.5
9,12-Octadecadien...	36.93	4120.1	ng	14855000	1	26.41	1804560	500.5
9-Octadecenoic ac...	37.06	14079.4	ng	50763400	1	26.41	1804560	500.5
Octadecanoic acid...	37.34	2952.1	ng	10643800	1	26.41	1804560	500.5
Docosa-2,6,10,14,...	47.69	9579.4	ng	34538600	1	26.41	1804560	500.5

SAMPLE_NO GMP AE 5010
LAB_ID W5628 01
LABORATORY BATD
SDG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 1:04 pm
Data File: H:\A\DATA\SQA181\A6754.D
Name: W5639
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Benzeneacetaldehy...	20.67	58.4	ng	3921970	1	25.53	33593100	500.5
Tridecane	21.14	145.6	ng	9774180	1	25.53	33593100	500.5
Methyl tetradecan...	29.82	138.3	ng	9285300	1	25.53	33593100	500.5
9-Hexadecenoic ac...	33.00	346.7	ng	23272000	1	25.53	33593100	500.5
Hexadecanoic acid...	33.33	612.4	ng	41101800	1	25.53	33593100	500.5
9,12-Octadecadien...	36.03	117.0	ng	7852140	1	25.53	33593100	500.5
Octadecanoic acid...	36.45	94.3	ng	6326490	1	25.53	33593100	500.5
5,8,11,14-Eicosat...	38.49	75.6	ng	5072390	1	25.53	33593100	500.5
5,8,11,14,17-Eico...	38.60	58.3	ng	3914740	1	25.53	33593100	500.5
2,6,10,14,18,22-T...	46.30	115.2	ng	7731590	1	25.53	33593100	500.5

SAMPLE_NO RAB AE 5001
LAB_ID W5639 01
LABORATORY BATD
SDG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 2:24 pm
Data File: H:\A\DATA\SQA181\A6755.D
Name: W5640
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Tridecane	21.12	109.6	ng	2267560	1	25.54	10355600	500.5
Hexadecane	25.49	500.5	ng	10355600	1	25.54	10355600	500.5
Methyl tetradecan...	29.80	123.4	ng	2554000	1	25.54	10355600	500.5
9-Hexadecenoic ac...	32.97	317.6	ng	6571990	1	25.54	10355600	500.5
Hexadecanoic acid...	33.29	381.9	ng	7902470	1	25.54	10355600	500.5
Ethyl 9-hexadecen...	34.07	150.5	ng	3113770	1	25.54	10355600	500.5
9,12-Octadecadien...	36.01	108.6	ng	2247240	1	25.54	10355600	500.5
10-Octadecenoic a...	36.10	482.8	ng	9990230	1	25.54	10355600	500.5
Ethyl Oleate	37.08	128.3	ng	2654140	1	25.54	10355600	500.5
2,6,10,14,18,22-T...	46.27	120.9	ng	2501880	1	25.54	10355600	500.5

SAMPLE_NO RAB AE 5002
LAB_ID W5640 01
LABORATORY BATD
SDG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 3:45 pm
Data File: H:\A\DATA\SQA181\A6756.D
Name: W5641
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Tridecane	21.13	73.7	ng	3320140	1	25.53	22549800	500.5
Methyl tetradecan...	29.80	78.1	ng	3520010	1	25.53	22549800	500.5
9-Hexadecenoic ac...	32.98	200.1	ng	9016560	1	25.53	22549800	500.5
Hexadecanoic acid...	33.30	314.5	ng	14168300	1	25.53	22549800	500.5
9,12-Octadecadien...	36.01	78.9	ng	3553630	1	25.53	22549800	500.5
10-Octadecenoic a...	36.11	438.6	ng	19760400	1	25.53	22549800	500.5
Octadecanoic acid...	36.43	50.6	ng	2277890	1	25.53	22549800	500.5
2,6,10,14,18,22-T...	46.28	128.9	ng	5808770	1	25.53	22549800	500.5

SAMPLE_NO RAB AE 5003
LAB_ID W5641 01
LABORATORY BATO
SDG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 5:06 pm
Data File: H:\A\DATA\SQA181\A6757.D
Name: W5646
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Tridecane	21.13	80.5	ng	2404570	1	25.53	14958100	500.5
Methyl tetradecan...	29.80	184.9	ng	5526780	1	25.53	14958100	500.5
9-Hexadecenoic ac...	32.98	379.0	ng	11325800	1	25.53	14958100	500.5
Hexadecanoic acid...	33.30	634.8	ng	18972800	1	25.53	14958100	500.5
9,15-Octadecadien...	36.01	93.9	ng	2807050	1	25.53	14958100	500.5
14-Octadecenoic a...	36.12	771.4	ng	23054300	1	25.53	14958100	500.5
Octadecanoic acid...	36.43	94.7	ng	2830930	1	25.53	14958100	500.5
9-Octadecenoic ac...	37.07	66.0	ng	1971610	1	25.53	14958100	500.5
unknown	38.49	66.6	ng	1991740	1	25.53	14958100	500.5
2,6,10,14-Hexadec...	46.29	149.8	ng	4476480	1	25.53	14958100	500.5

SAMPLE_NO RAB AE 5004
LAB_ID W5646 01
LABORATORY BATD
SDG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 6:27 pm
Data File: H:\A\DATA\SQA181\A6758.D
Name: W5647
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	25.95	81.9	ng	1918690	1	25.53	11719500	500.5
8-Heptadecene	28.98	65.6	ng	1536660	1	25.53	11719500	500.5
Hexadecane	29.35	71.5	ng	1673750	1	25.53	11719500	500.5
Methyl tetradecan...	29.80	163.5	ng	3827890	1	25.53	11719500	500.5
9-Hexadecenoic ac...	32.98	347.4	ng	8133290	1	25.53	11719500	500.5
Hexadecanoic acid...	33.29	600.4	ng	14059700	1	25.53	11719500	500.5
9,12-Octadecadien...	36.01	103.0	ng	2411430	1	25.53	11719500	500.5
14-Octadecenoic a...	36.11	826.1	ng	19342900	1	25.53	11719500	500.5
Octadecanoic acid...	36.43	97.5	ng	2282400	1	25.53	11719500	500.5
2,6,10,14,18,22-T...	46.28	182.8	ng	4279320	1	25.53	11719500	500.5

SAMPLE_NO RAB AE 5005
LAB_ID W5647 01
LABORATORY BATD
SDG 01376 FRACTION W

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 7:47 pm
Data File: H:\A\DATA\SQA181\A6759.D
Name: W5655
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Tridecane	21.14	183.4	ng	11405100	1	25.53	31123400	500.5
5-Octadecene, (E)-	29.23	77.4	ng	4812390	1	25.53	31123400	500.5
Methyl tetradecan...	29.81	115.4	ng	7178090	1	25.53	31123400	500.5
9-Hexadecenoic ac...	33.00	347.1	ng	21587300	1	25.53	31123400	500.5
Hexadecanoic acid...	33.32	608.4	ng	37830700	1	25.53	31123400	500.5
9,12-Octadecadien...	36.03	136.6	ng	8494050	1	25.53	31123400	500.5
Octadecanoic acid...	36.45	125.3	ng	7790100	1	25.53	31123400	500.5
5,8,11,14-Eicosat...	38.50	99.7	ng	6196770	1	25.53	31123400	500.5
5,8,11,14,17-Eico...	38.60	65.3	ng	4059970	1	25.53	31123400	500.5
Squalene	46.32	313.0	ng	19461100	1	25.53	31123400	500.5

SAMPLE_NO RAB AE 5006
LAB_ID W5655 01
LABORATORY BATO
SDG 01376 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Sep 2001 6:09 pm
Data File: H:\E\DATA\SQE032\E1237.D
Name: ZG16PB
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.44	28721.7	ng	10567200	1	26.39	368284	1001.0
column bleed	26.20	15956.5	ng	5870640	1	26.39	368284	1001.0
unknown	29.55	6249.8	ng	2299410	1	26.39	368284	1001.0
Octadecanoic acid...	41.01	4884.5	ng	1797080	1	26.39	368284	1001.0
column bleed	41.42	4305.1	ng	1583910	1	26.39	368284	1001.0
column bleed	43.26	4996.7	ng	1838370	1	26.39	368284	1001.0
(DEL) Alkane: Str...	45.24	5194.3	ng	1911050	1	26.39	368284	1001.0
column bleed	47.55	5298.8	ng	1949530	1	26.39	368284	1001.0
Cyclononasiloxane...	50.37	4840.3	ng	1780830	1	26.39	368284	1001.0
column bleed	53.96	4597.1	ng	1691330	1	26.39	368284	1001.0

SAMPLE_NO NA
LAB_ID ZG16PB
LABORATORY BATD
SDG 01377 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 3:22 am
Data File: H:\E\DATA\SQE032\E1244.D
Name: W5608
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.44	48803.5	ng	13587700	1	26.38	278695	1001.0
Cycloheptasiloxan...	26.20	26135.5	ng	7276570	1	26.38	278695	1001.0
unknown	29.55	10234.7	ng	2849500	1	26.38	278695	1001.0
Hexadecanoic acid...	38.19	8104.7	ng	2256470	1	26.38	278695	1001.0
Octadecanoic acid...	41.01	7511.6	ng	2091340	1	26.38	278695	1001.0
unknown	43.26	8230.9	ng	2291620	1	26.38	278695	1001.0
Cyclononasiloxane...	45.23	8277.8	ng	2304680	1	26.38	278695	1001.0
Cyclononasiloxane...	47.54	8486.4	ng	2362760	1	26.38	278695	1001.0
Cyclononasiloxane...	50.37	8178.6	ng	2277070	1	26.38	278695	1001.0
Cyclononasiloxane...	53.96	7494.2	ng	2086520	1	26.38	278695	1001.0

SAMPLE_NO GMP LB 5001
LAB_ID W5608 01
LABORATORY BATD
SOG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 4:41 am
Data File: H:\E\DATA\SQE032\E1245.D
Name: W5609
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	19958.2	ng	6401720	1	26.38	321078	1001.0
Cycloheptasiloxan...	26.19	8265.4	ng	2651180	1	26.38	321078	1001.0
unknown	26.92	11742.5	ng	3766500	1	26.38	321078	1001.0
unknown	29.54	4590.0	ng	1472270	1	26.38	321078	1001.0
9-Hexadecenoic ac...	33.82	5321.8	ng	1707010	1	26.38	321078	1001.0
Hexadecanoic acid...	34.13	12138.5	ng	3893500	1	26.38	321078	1001.0
9-Octadecenoic ac...	36.95	7760.5	ng	2489250	1	26.38	321078	1001.0
Hexadecanoic acid...	38.17	3931.4	ng	1261040	1	26.38	321078	1001.0
Octadecanoic acid...	40.99	3947.3	ng	1266120	1	26.38	321078	1001.0
Cyclononasiloxane...	47.54	4971.4	ng	1594610	1	26.38	321078	1001.0

SAMPLE_NO GMP LB 5001
LAB_ID W5609 01
LABORATORY BATO
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 6:00 am
Data File: H:\E\DATA\SQE032\E1246.D
Name: W5610
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	25533.2	ng	9171230	1	26.38	359548	1001.0
column bleed	26.19	13590.9	ng	4881690	1	26.38	359548	1001.0
unknown	29.54	5513.6	ng	1980430	1	26.38	359548	1001.0
Cyclononasiloxane...	32.43	3598.7	ng	1292620	1	26.38	359548	1001.0
column bleed	41.41	3358.0	ng	1206170	1	26.38	359548	1001.0
unknown	43.25	3899.8	ng	1400760	1	26.38	359548	1001.0
Cyclononasiloxane...	45.22	4010.8	ng	1440620	1	26.38	359548	1001.0
Cyclononasiloxane...	47.54	4215.0	ng	1513970	1	26.38	359548	1001.0
Cyclononasiloxane...	50.37	3992.7	ng	1434130	1	26.38	359548	1001.0
Cyclononasiloxane...	53.94	3734.2	ng	1341270	1	26.38	359548	1001.0

SAMPLE_NO GMP LB 5002
LAB_ID W5610 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 8:37 am
Data File: H:\E\DATA\SQE032\E1248.D
Name: W5611
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	29037.7	ng	9969520	1	26.38	343674	1001.0
column bleed	26.19	12290.5	ng	4219700	1	26.38	343674	1001.0
unknown	29.54	6958.1	ng	2388950	1	26.38	343674	1001.0
unknown	32.43	5598.7	ng	1922220	1	26.38	343674	1001.0
Hexadecanoic acid...	34.13	11408.8	ng	3916980	1	26.38	343674	1001.0
Hexadecanoic acid...	38.17	6934.3	ng	2380740	1	26.38	343674	1001.0
Octadecanoic acid...	40.99	7668.3	ng	2632760	1	26.38	343674	1001.0
column bleed	43.25	5267.7	ng	1808550	1	26.38	343674	1001.0
column bleed	45.22	5434.3	ng	1865760	1	26.38	343674	1001.0
Cyclononasiloxane...	47.53	6094.9	ng	2092570	1	26.38	343674	1001.0

SAMPLE_NO GMP LB 5002
LAB_ID W5611 01
LABORATORY BATO
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 9:56 am
Data File: H:\E\DATA\SQE032\E1249.D
Name: W5612
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	25689.4	ng	9350850	1	26.38	364360	1001.0
column bleed	26.19	13558.9	ng	4935390	1	26.38	364360	1001.0
unknown	29.54	5490.2	ng	1998420	1	26.38	364360	1001.0
Hexadecanoic acid...	38.17	6832.9	ng	2487140	1	26.38	364360	1001.0
Octadecanoic acid...	40.99	5972.9	ng	2174130	1	26.38	364360	1001.0
column bleed	41.41	4140.9	ng	1507280	1	26.38	364360	1001.0
column bleed	43.25	4742.0	ng	1726060	1	26.38	364360	1001.0
Cyclononasiloxane...	45.22	4655.4	ng	1694560	1	26.38	364360	1001.0
Cyclononasiloxane...	47.53	4894.5	ng	1781580	1	26.38	364360	1001.0
Cyclononasiloxane...	50.35	4419.3	ng	1608600	1	26.38	364360	1001.0

SAMPLE_NO GMP LB 5003
LAB_ID W5612 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 11:15 am
Data File: H:\E\DATA\SQE032\E1250.D
Name: W5613
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	21186.7	ng	10366500	1	26.38	489785	1001.0
column bleed	26.19	9402.4	ng	4600550	1	26.38	489785	1001.0
unknown	29.54	5296.2	ng	2591420	1	26.38	489785	1001.0
column bleed	32.43	4044.7	ng	1979050	1	26.38	489785	1001.0
Hexadecanoic acid...	34.12	4988.8	ng	2440990	1	26.38	489785	1001.0
Hexadecanoic acid...	38.17	6076.4	ng	2973130	1	26.38	489785	1001.0
Octadecanoic acid...	40.99	5434.1	ng	2658870	1	26.38	489785	1001.0
column bleed	43.24	4160.7	ng	2035820	1	26.38	489785	1001.0
Cyclononasiloxane...	45.22	3988.2	ng	1951390	1	26.38	489785	1001.0
Cyclononasiloxane...	47.53	5132.4	ng	2511260	1	26.38	489785	1001.0

SAMPLE_NO GMP LB 5003
LAB_ID W5613 01
LABORATORY BATD
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 12:34 pm
Data File: H:\E\DATA\SQE032\E1251.D
Name: W5614
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	3264.9	ng	2127180	1	26.38	652176	1001.0
Cycloheptasiloxan...	26.19	1418.0	ng	923869	1	26.38	652176	1001.0
unknown	29.54	695.8	ng	453307	1	26.38	652176	1001.0
unknown	32.42	472.2	ng	307665	1	26.38	652176	1001.0
Hexadecanoic acid...	38.16	678.2	ng	441886	1	26.38	652176	1001.0
Octadecanoic acid...	40.98	670.6	ng	436911	1	26.38	652176	1001.0
unknown	43.24	461.7	ng	300801	1	26.38	652176	1001.0
9-Octadecenoic ac...	45.65	2035.4	ng	1326140	1	26.38	652176	1001.0
Cyclononasiloxane...	47.53	552.4	ng	359922	1	26.38	652176	1001.0
column bleed	50.34	449.0	ng	292521	1	26.38	652176	1001.0

SAMPLE_NO GMP LB 5004
LAB_ID W5614 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 1:54 pm
Data File: H:\E\DATA\SQE032\E1252.D
Name: W5615
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	19317.1	ng	9176690	1	26.38	475530	1001.0
column bleed	26.19	10442.5	ng	4960780	1	26.38	475530	1001.0
unknown	26.89	3696.3	ng	1755950	1	26.38	475530	1001.0
unknown	29.54	4446.6	ng	2112370	1	26.38	475530	1001.0
Hexadecanoic acid...	34.12	4051.3	ng	1924570	1	26.38	475530	1001.0
Hexadecanoic acid...	38.17	4923.3	ng	2338830	1	26.38	475530	1001.0
Octadecanoic acid...	40.99	4304.1	ng	2044660	1	26.38	475530	1001.0
column bleed	43.24	3510.0	ng	1667430	1	26.38	475530	1001.0
column bleed	45.22	3531.4	ng	1677630	1	26.38	475530	1001.0
Cyclononasiloxane...	47.53	4062.5	ng	1929930	1	26.38	475530	1001.0

SAMPLE_NO GMP LB 5004
LAB_ID W5615 01
LABORATORY BATD
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 3:14 pm
Data File: H:\E\DATA\SQE032\E1253.D
Name: W5616
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	12080.8	ng	4289290	1	26.37	355406	1001.0
column bleed	26.19	6436.0	ng	2285110	1	26.37	355406	1001.0
unknown	29.54	2915.8	ng	1035240	1	26.37	355406	1001.0
Hexadecanoic acid...	34.11	2228.6	ng	791252	1	26.37	355406	1001.0
Hexadecanoic acid...	38.16	2654.3	ng	942430	1	26.37	355406	1001.0
Octadecanoic acid...	40.98	2716.3	ng	964411	1	26.37	355406	1001.0
column bleed	43.24	2464.1	ng	874886	1	26.37	355406	1001.0
Cyclononasiloxane...	45.21	2389.7	ng	848448	1	26.37	355406	1001.0
Cyclononasiloxane...	47.52	2619.6	ng	930079	1	26.37	355406	1001.0
column bleed	50.35	2217.8	ng	787427	1	26.37	355406	1001.0

SAMPLE_NO GMP LB 5005
LAB_ID W5616 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 4:35 pm
Data File: H:\E\DATA\SQE032\E1254.D
Name: W5616DUP
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	11872.2	ng	3961870	1	26.37	334043	1001.0
Cycloheptasiloxan...	26.19	6253.3	ng	2086790	1	26.37	334043	1001.0
unknown	29.54	2830.8	ng	944682	1	26.37	334043	1001.0
unknown	32.42	1994.5	ng	665590	1	26.37	334043	1001.0
Hexadecanoic acid...	38.16	2850.9	ng	951359	1	26.37	334043	1001.0
Octadecanoic acid...	40.98	2877.8	ng	960355	1	26.37	334043	1001.0
column bleed	43.24	2360.2	ng	787605	1	26.37	334043	1001.0
column bleed	45.21	2394.5	ng	799055	1	26.37	334043	1001.0
Cyclononasiloxane...	47.52	2665.0	ng	889337	1	26.37	334043	1001.0
column bleed	50.35	2146.8	ng	716393	1	26.37	334043	1001.0

SAMPLE_NO GMP LB 5005
LAB_ID W5616DUP 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 5:57 pm
Data File: H:\E\DATA\SQE032\E1255.D
Name: W5617
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	11466.9	ng	4129010	1	26.37	360441	1001.0
Cycloheptasiloxan...	26.19	5884.5	ng	2118900	1	26.37	360441	1001.0
unknown	29.54	2631.0	ng	947362	1	26.37	360441	1001.0
Hexadecanoic acid...	34.11	3672.3	ng	1322340	1	26.37	360441	1001.0
9-Octadecenoic ac...	36.93	2556.6	ng	920593	1	26.37	360441	1001.0
Hexadecanoic acid...	38.16	2748.0	ng	989499	1	26.37	360441	1001.0
Octadecanoic acid...	40.98	2696.8	ng	971060	1	26.37	360441	1001.0
column bleed	43.24	1948.5	ng	701627	1	26.37	360441	1001.0
column bleed	45.22	1937.5	ng	697657	1	26.37	360441	1001.0
Cyclononasiloxane...	47.53	2102.2	ng	756957	1	26.37	360441	1001.0

SAMPLE_NO GMP LB 5005
LAB_ID W5617 01
LABORATORY BATD
SDG 01377 FRACTION 0

Sample was re-extracted in SDG #01-672.
DMD 6/4/02

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 7:19 pm
Data File: H:\E\DATA\SQE032\E1256.D
Name: W5617DUP
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	22.38	3539.4	ng	1355900	1	26.38	383472	1001.0
Cyclohexasiloxane...	22.43	9571.0	ng	3666530	1	26.38	383472	1001.0
Cycloheptasiloxan...	26.19	4858.4	ng	1861190	1	26.38	383472	1001.0
Methyl tetradecan...	30.62	3222.3	ng	1234440	1	26.38	383472	1001.0
9-Hexadecenoic ac...	33.81	7701.6	ng	2950390	1	26.38	383472	1001.0
Hexadecanoic acid...	34.13	22059.4	ng	8450720	1	26.38	383472	1001.0
9-Octadecenoic ac...	36.95	18657.8	ng	7147610	1	26.38	383472	1001.0
9-Octadecenoic ac...	37.02	3902.4	ng	1494960	1	26.38	383472	1001.0
Octadecanoic acid...	37.28	4593.4	ng	1759670	1	26.38	383472	1001.0
Cyclononasiloxane...	47.53	4654.3	ng	1783010	1	26.38	383472	1001.0

SAMPLE_NO GMP LB 5005
LAB_ID W5617DUP 01
LABORATORY BATD
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 8:41 pm
Data File: H:\E\DATA\SQE032\E1257.D
Name: W5618
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	1004.4	ng	367330	1	26.37	366092	1001.0
column bleed	26.19	369.0	ng	134945	1	26.37	366092	1001.0
unknown	29.53	164.4	ng	60117	1	26.37	366092	1001.0
Hexadecanoic acid...	34.11	996.2	ng	364324	1	26.37	366092	1001.0
unknown	36.93	248.9	ng	91022	1	26.37	366092	1001.0
Hexadecanoic acid...	38.16	267.4	ng	97792	1	26.37	366092	1001.0
Octadecanoic acid...	40.98	326.0	ng	119213	1	26.37	366092	1001.0
Octadec-9-enoic acid	45.61	3847.9	ng	1407290	1	26.37	366092	1001.0
unknown	46.12	506.4	ng	185220	1	26.37	366092	1001.0
unknown	47.55	302.1	ng	110493	1	26.37	366092	1001.0

SAMPLE_NO GMP LB 5006
LAB_ID W5618 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 25 Sep 2001 11:24 pm
Data File: H:\E\DATA\SQE032\E1259.D
Name: W5619
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	22.38	1763.3	ng	1074100	1	26.37	609748	1001.0
Cyclohexasiloxane...	22.42	3347.2	ng	2038890	1	26.37	609748	1001.0
unknown	26.89	2396.6	ng	1459870	1	26.37	609748	1001.0
9-Hexadecenoic ac...	33.81	3396.9	ng	2069170	1	26.37	609748	1001.0
Hexadecanoic acid...	34.12	8871.9	ng	5404190	1	26.37	609748	1001.0
9,12-Octadecadien...	36.86	1601.9	ng	975757	1	26.37	609748	1001.0
9-Octadecenoic ac...	36.94	6461.8	ng	3936160	1	26.37	609748	1001.0
Octadecanoic acid...	37.28	1747.2	ng	1064260	1	26.37	609748	1001.0
Squalene	47.55	4279.5	ng	2606830	1	26.37	609748	1001.0
9-Hexadecenoic ac...	63.29	1972.4	ng	1201480	1	26.37	609748	1001.0

SAMPLE_NO GMP LB 5006
LAB_ID W5619 01
LABORATORY BATD
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 12:46 am
Data File: H:\E\DATA\SQE032\E1260.D
Name: W5620
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	431.6	ng	270640	1	26.37	627652	1001.0
unknown	23.41	628.8	ng	394262	1	26.37	627652	1001.0
unknown	26.88	1108.0	ng	694760	1	26.37	627652	1001.0
Methyl tetradecan...	30.62	531.7	ng	333362	1	26.37	627652	1001.0
9-Hexadecenoic ac...	33.80	1556.6	ng	976029	1	26.37	627652	1001.0
Hexadecanoic acid...	34.11	4291.8	ng	2691060	1	26.37	627652	1001.0
9-Octadecenoic ac...	36.93	2884.6	ng	1808690	1	26.37	627652	1001.0
10-Octadecenoic a...	37.01	583.7	ng	365995	1	26.37	627652	1001.0
Octadecanoic acid...	37.27	691.9	ng	433836	1	26.37	627652	1001.0
2,6,10,14,18-Pent...	47.55	630.4	ng	395279	1	26.37	627652	1001.0

SAMPLE_NO GMP LB 5007
LAB_ID W5620 01
LABORATORY BATD
SOG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 2:09 am
Data File: H:\E\DATA\SQE032\E1261.D
Name: W5621
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal	22.37	1213.9	ng	673035	1	26.36	554986	1001.0
unknown	22.49	1523.3	ng	844561	1	26.36	554986	1001.0
unknown hydrocarbon	26.88	2957.4	ng	1639670	1	26.36	554986	1001.0
Methyl tetradecan...	30.62	1692.5	ng	938373	1	26.36	554986	1001.0
9-Hexadecenoic ac...	33.81	3403.2	ng	1886860	1	26.36	554986	1001.0
Hexadecanoic acid...	34.12	10157.6	ng	5631710	1	26.36	554986	1001.0
9,12-Octadecadien...	36.86	1040.1	ng	576639	1	26.36	554986	1001.0
9-Octadecenoic ac...	36.93	6004.3	ng	3328950	1	26.36	554986	1001.0
Octadecanoic acid...	37.27	1771.4	ng	982111	1	26.36	554986	1001.0
2,6,10,14,18,22-T...	47.55	1568.3	ng	869501	1	26.36	554986	1001.0

SAMPLE_NO GMP LB 5007
LAB_ID W5621 01
LABORATORY BATO
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 3:31 am
Data File: H:\E\DATA\SQE032\E1262.D
Name: W5622
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
2,4-Decadienal, (...	22.37	332.3	ng	287421	1	26.37	865775	1001.0
Cyclohexasiloxane...	22.42	333.7	ng	288628	1	26.37	865775	1001.0
unknown	22.49	266.0	ng	230076	1	26.37	865775	1001.0
unknown	23.41	379.4	ng	328168	1	26.37	865775	1001.0
unknown	24.24	287.2	ng	248418	1	26.37	865775	1001.0
unknown	26.88	995.6	ng	861071	1	26.37	865775	1001.0
9-Hexadecenoic ac...	33.80	370.6	ng	320489	1	26.37	865775	1001.0
Hexadecanoic acid...	34.11	1066.2	ng	922170	1	26.37	865775	1001.0
9-Octadecenoic ac...	36.93	561.6	ng	485717	1	26.37	865775	1001.0
Docosa-2,6,10,14,...	47.55	545.1	ng	471494	1	26.37	865775	1001.0

SAMPLE_NO GMP LB 5008
LAB_ID W5622 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 4:53 am
Data File: H:\E\DATA\SQE032\E1263.D
Name: W5623
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.37	2707.3	ng	1276160	1	26.36	471844	1001.0
unknown	22.49	1706.8	ng	804533	1	26.36	471844	1001.0
unknown	26.89	5833.4	ng	2749720	1	26.36	471844	1001.0
unknown	27.02	1383.2	ng	651991	1	26.36	471844	1001.0
9-Octadecenoic ac...	33.80	2743.6	ng	1293270	1	26.36	471844	1001.0
Pentadecanoic aci...	34.11	6409.8	ng	3021430	1	26.36	471844	1001.0
Hexadecanal	35.69	2077.8	ng	979405	1	26.36	471844	1001.0
9-Octadecenoic ac...	36.93	4680.7	ng	2206370	1	26.36	471844	1001.0
2,6,10,14,18,22-T...	47.55	1775.8	ng	837072	1	26.36	471844	1001.0
Cholest-5-en-3-ol...	49.83	1346.6	ng	634751	1	26.36	471844	1001.0

SAMPLE_NO GMP LB 5008
LAB_ID W5623 01
LABORATORY BATD
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 6:15 am
Data File: H:\E\DATA\SQE032\E1264.D
Name: W5624
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.37	132.1	ng	95197	1	26.36	721549	1001.0
Cyclohexasiloxane...	22.42	600.6	ng	432945	1	26.36	721549	1001.0
unknown	23.41	129.8	ng	93561	1	26.36	721549	1001.0
unknown	24.23	120.8	ng	87088	1	26.36	721549	1001.0
column bleed	26.18	108.5	ng	78204	1	26.36	721549	1001.0
unknown	26.88	945.5	ng	681555	1	26.36	721549	1001.0
unknown	27.02	276.3	ng	199155	1	26.36	721549	1001.0
Hexadecanoic acid...	34.10	541.2	ng	390131	1	26.36	721549	1001.0
unknown	47.53	196.0	ng	141309	1	26.36	721549	1001.0

SAMPLE_NO GMP LB 5009
LAB_ID W5624 01
LABORATORY BATO
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 7:35 am
Data File: H:\E\DATA\SQE032\E1265.D
Name: W5625
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	20.07	596.3	ng	373786	1	26.36	627437	1001.0
unknown	26.89	3263.2	ng	2045420	1	26.36	627437	1001.0
unknown	27.02	1768.0	ng	1108200	1	26.36	627437	1001.0
unknown	27.80	1039.6	ng	651636	1	26.36	627437	1001.0
Hexadecanoic acid...	34.11	2392.8	ng	1499830	1	26.36	627437	1001.0
Hexadecanal	35.69	620.5	ng	388925	1	26.36	627437	1001.0
9-Octadecenoic ac...	36.93	603.5	ng	378281	1	26.36	627437	1001.0
o,p'-DDE	38.61	1322.2	ng	828793	1	26.36	627437	1001.0
Docosa-2,6,10,14,...	47.55	1120.9	ng	702595	1	26.36	627437	1001.0
Cholest-5-en-3-ol...	49.83	916.9	ng	574690	1	26.36	627437	1001.0

SAMPLE_NO GMP LB 5009
LAB_ID W5625 01
LABORATORY BATD
SDG 01377 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 8:54 am
Data File: H:\E\DATA\SQE032\E1266.D
Name: W5626
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.42	367.3	ng	203119	1	26.36	553593	1001.0
Pentadecanoic aci...	34.10	249.4	ng	137916	1	26.36	553593	1001.0
unknown	47.53	129.3	ng	71535	1	26.36	553593	1001.0
unknown	49.83	172.4	ng	95371	1	26.36	553593	1001.0

SAMPLE_NO GMP LB 5010
LAB_ID W5626 01
LABORATORY BATD
SDG 01377 FRACTION F

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 26 Sep 2001 10:12 am
Data File: H:\E\DATA\SQE032\E1267.D
Name: W5627
Misc: SOP 5-157
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	22.49	1158.3	ng	434077	1	26.36	375127	1001.0
unknown	26.88	3228.2	ng	1209790	1	26.36	375127	1001.0
unknown	27.02	1481.6	ng	555239	1	26.36	375127	1001.0
9-Eicosene, (E)-	30.04	843.7	ng	316164	1	26.36	375127	1001.0
Heptadecane	30.17	1393.0	ng	522041	1	26.36	375127	1001.0
unknown	33.80	1572.0	ng	589118	1	26.36	375127	1001.0
Hexadecanoic acid...	34.10	3905.5	ng	1463590	1	26.36	375127	1001.0
9-Octadecenoic ac...	36.92	1622.2	ng	607913	1	26.36	375127	1001.0
Docosa-2,6,10,14,...	47.54	1049.5	ng	393289	1	26.36	375127	1001.0
Cholest-5-en-3-ol...	49.83	2414.1	ng	904697	1	26.36	375127	1001.0

SAMPLE_NO GMP LB 5010
LAB_ID W5627 01
LABORATORY BATO
SDG 01377 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Oct 2001 3:23 pm
Data File: H:\A\DATA\SQA189\A7002.D
Name: ZK94PB
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.44	536.6	ng	167264	1	25.31	312045	1001.0
2,5-Cyclohexadien...	28.70	397.4	ng	123879	1	25.31	312045	1001.0
Phenol, 2,4-bis(1...	40.67	551.1	ng	171784	1	25.31	312045	1001.0
Phenol, 2,4-bis(1...	40.87	514.4	ng	160340	1	25.31	312045	1001.0

SAMPLE_NO NA
LAB_ID ZK94PB
LABORATORY BATO
SDG 01378 FRACTION W

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 5:07 am
Data File: H:\A\DATA\SQA189\A7012.D
Name: W5633
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	21.02	28412.6	ng	11741600	1	25.31	413666	1001.0
Cyclohexasiloxane...	21.44	783.4	ng	323750	1	25.31	413666	1001.0
Pentadecanoic aci...	33.07	4401.5	ng	1818920	1	25.31	413666	1001.0
9,12-Octadecadien...	35.80	346.6	ng	143221	1	25.31	413666	1001.0
10-Octadecenoic a...	35.87	973.9	ng	402462	1	25.31	413666	1001.0
Octadecanoic acid...	36.22	894.8	ng	369762	1	25.31	413666	1001.0
5,8,11,14-Eicosat...	38.27	411.0	ng	169852	1	25.31	413666	1001.0
4,7,10,13,16,19-D...	40.93	371.3	ng	153458	1	25.31	413666	1001.0
Cholestadiene	47.94	841.0	ng	347545	1	25.31	413666	1001.0
Cholesterol	53.26	311773.0	ng	128841000	1	25.31	413666	1001.0

SAMPLE_NO RAB LB 5001
LAB_ID W5633 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 4:20 pm
Data File: H:\A\DATA\SQA189\A7020.D
Name: W5634
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
9-Hexadecenoic ac...	32.76	5399.7	ng	2219450	1	25.31	411441	1001.0
Hexadecanoic acid...	33.08	11814.5	ng	4856120	1	25.31	411441	1001.0
E-11-Hexadecenoic...	33.86	8917.4	ng	3665310	1	25.31	411441	1001.0
8,11-Octadecadien...	35.80	4429.9	ng	1820830	1	25.31	411441	1001.0
9-Octadecenoic ac...	35.88	9832.3	ng	4041350	1	25.31	411441	1001.0
Octadecanoic acid...	36.22	4820.7	ng	1981460	1	25.31	411441	1001.0
Ethyl Oleate	36.87	9155.7	ng	3763260	1	25.31	411441	1001.0
5,8,11,14-Eicosat...	38.27	4790.8	ng	1969180	1	25.31	411441	1001.0
5,8,11,14-Eicosat...	39.15	7581.8	ng	3116340	1	25.31	411441	1001.0
Cholesterol	53.25	319355.0	ng	131264000	1	25.31	411441	1001.0

SAMPLE_NO RAB LB 5001
LAB_ID W5634 01
LABORATORY BATD
SDG 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 6:28 am
Data File: H:\A\DATA\SQA189\A7013.D
Name: W5635
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	20.99	12288.0	ng	3740370	1	25.31	304697	1001.0
Cyclohexasiloxane...	21.43	1809.6	ng	550835	1	25.31	304697	1001.0
Cycloheptasiloxan...	25.17	670.5	ng	204095	1	25.31	304697	1001.0
unknown	28.50	300.4	ng	91424	1	25.31	304697	1001.0
Heptadecane	29.15	265.0	ng	80663	1	25.31	304697	1001.0
Hexadecanoic acid...	33.06	857.6	ng	261042	1	25.31	304697	1001.0
Hexadecanoic acid...	37.10	390.6	ng	118901	1	25.31	304697	1001.0
Octadecanoic acid...	39.91	395.4	ng	120358	1	25.31	304697	1001.0
unknown	42.13	279.0	ng	84934	1	25.31	304697	1001.0
Cholesterol	53.05	129848.0	ng	39524900	1	25.31	304697	1001.0

SAMPLE_NO RAB LB 5002
LAB_ID W5635 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 5:47 pm
Data File: H:\A\DATA\SQA189\A7021.D
Name: W5636
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.44	1907.6	ng	6365100	1	25.32	3340100	1001.0
Hexadecanoic acid...	33.08	2102.0	ng	7013780	1	25.32	3340100	1001.0
Ethyl 9-hexadecen...	33.90	5352.6	ng	17860300	1	25.32	3340100	1001.0
Z-11-Pentadecenol	35.40	1660.8	ng	5541700	1	25.32	3340100	1001.0
11-Octadecenoic a...	35.88	1687.8	ng	5631650	1	25.32	3340100	1001.0
Ethyl Oleate	36.90	3412.9	ng	11388000	1	25.32	3340100	1001.0
Ethyl Oleate	38.27	1620.7	ng	5407990	1	25.32	3340100	1001.0
5,8,11,14-Eicosat...	39.17	3722.0	ng	12419500	1	25.32	3340100	1001.0
Squalene	45.99	1716.2	ng	5726650	1	25.32	3340100	1001.0
Cholesterol	53.20	33831.1	ng	112887000	1	25.32	3340100	1001.0

SAMPLE_NO RAB LB 5002
LAB_ID W5636 01
LABORATORY BATD
SDG 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 22 Oct 2001 8:54 pm
Data File: H:\A\DATA\SQA189\A7006.D
Name: W5642
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	20.98	516.6	ng	152444	1	25.31	295386	1001.0
Cyclohexasiloxane...	21.43	410.0	ng	120984	1	25.31	295386	1001.0
unknown	25.85	220.9	ng	65187	1	25.31	295386	1001.0
Tetradecanal	31.27	269.0	ng	79388	1	25.31	295386	1001.0
Pentadecanoic aci...	33.07	1279.5	ng	377577	1	25.31	295386	1001.0
9-Octadecenoic ac...	35.87	131.9	ng	38918	1	25.31	295386	1001.0
Octadecanoic acid...	36.22	403.6	ng	119111	1	25.31	295386	1001.0
unknown	45.64	408.8	ng	120631	1	25.31	295386	1001.0
unknown	47.94	992.9	ng	293008	1	25.31	295386	1001.0
Cholesterol	52.95	45423.6	ng	13404100	1	25.31	295386	1001.0

SAMPLE_NO RAB LB 5003
LAB_ID W5642 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 1:00 am
Data File: H:\A\DATA\SQA189\A7009.D
Name: W5643
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	25.87	4060.0	ng	1718610	1	25.32	423725	1001.0
Heptadecane	29.15	810.5	ng	343109	1	25.32	423725	1001.0
Tetradecanal	31.28	3818.5	ng	1616370	1	25.32	423725	1001.0
Hexadecanal	32.38	1058.6	ng	448089	1	25.32	423725	1001.0
Hexadecanoic acid...	33.07	1225.8	ng	518893	1	25.32	423725	1001.0
9-Octadecenal, (Z)-	34.29	1170.6	ng	495502	1	25.32	423725	1001.0
Hexadecanal	34.64	1706.0	ng	722159	1	25.32	423725	1001.0
9-Octadecenoic ac...	35.87	836.2	ng	353979	1	25.32	423725	1001.0
Cholestadiene	47.94	1330.8	ng	563323	1	25.32	423725	1001.0
Cholesterol	53.33	412594.0	ng	174652000	1	25.32	423725	1001.0

SAMPLE_NO RAB LB 5003
LAB_ID W5643 01
LABORATORY BATD
SDG 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 7:48 am
Data File: H:\A\DATA\SQA189\A7014.D
Name: W5644
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	21.01	24645.7	ng	9175940	1	25.32	372687	1001.0
Heptadecane	29.15	780.3	ng	290514	1	25.32	372687	1001.0
Cyclotetradecane	32.39	1261.2	ng	469549	1	25.32	372687	1001.0
11-Hexadecenoic a...	32.76	1529.3	ng	569385	1	25.32	372687	1001.0
Hexadecanoic acid...	33.07	13434.6	ng	5001910	1	25.32	372687	1001.0
9,12-Octadecadien...	35.79	1202.0	ng	447516	1	25.32	372687	1001.0
9-Octadecenoic ac...	35.87	2178.9	ng	811256	1	25.32	372687	1001.0
Octadecanoic acid...	36.22	3408.4	ng	1269000	1	25.32	372687	1001.0
Cholestadiene	47.94	804.9	ng	299672	1	25.32	372687	1001.0
Cholesterol	53.34	545184.0	ng	202980000	1	25.32	372687	1001.0

SAMPLE_NO RAB LB 5004
LAB_ID W5644 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 7:14 pm
Data File: H:\A\DATA\SQA189\A7022.D
Name: W5645
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	29.16	9243.6	ng	3055140	1	25.32	330844	1001.0
Tetradecanal	31.27	3183.2	ng	1052110	1	25.32	330844	1001.0
9-Hexadecenoic ac...	32.76	3081.6	ng	1018520	1	25.32	330844	1001.0
Hexadecanoic acid...	33.08	6424.8	ng	2123500	1	25.32	330844	1001.0
E-11-Hexadecenoic...	33.87	7434.3	ng	2457140	1	25.32	330844	1001.0
1-Octadecene	35.66	3817.7	ng	1261810	1	25.32	330844	1001.0
9-Octadecenoic ac...	35.88	6211.6	ng	2053020	1	25.32	330844	1001.0
Ethyl Oleate	36.87	13379.1	ng	4421960	1	25.32	330844	1001.0
Cholestan-3-ol, (...	51.98	128186.0	ng	42367300	1	25.32	330844	1001.0
Cholesterol	53.23	313901.0	ng	103749000	1	25.32	330844	1001.0

SAMPLE_NO RAB LB 5004
LAB_ID W5645 01
LABORATORY BATO
SDG 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 9:09 am
Data File: H:\A\DATA\SQA189\A7015.D
Name: W5648
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	20.99	7904.0	ng	2637850	1	25.31	334069	1001.0
Cyclohexasiloxane...	21.43	535.7	ng	178795	1	25.31	334069	1001.0
unknown	24.99	1200.6	ng	400696	1	25.31	334069	1001.0
Hexadecanoic acid...	33.06	592.1	ng	197594	1	25.31	334069	1001.0
Octadecanoic acid...	36.22	133.9	ng	44699	1	25.31	334069	1001.0
2,6,10,14,18,22-T...	45.97	1162.7	ng	388027	1	25.31	334069	1001.0
Cholesterol	53.13	227125.0	ng	75799800	1	25.31	334069	1001.0

SAMPLE_NO MAP LB 4001
LAB_ID W5648 01
LABORATORY BATO
SDG 01378 FRACTION F

Sample was re-extracted in SDG #01-672.
DTDahl 6/4/02

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 8:42 pm
Data File: H:\A\DATA\SQA189\A7023.D
Name: W5649
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	20.98	1271.6	ng	700170	1	25.32	551180	1001.0
Cyclohexasiloxane...	21.43	4424.8	ng	2436440	1	25.32	551180	1001.0
unknown	24.99	1175.6	ng	647290	1	25.32	551180	1001.0
Cycloheptasiloxan...	25.17	1860.8	ng	1024590	1	25.32	551180	1001.0
1-Heptadecanol	32.39	1601.1	ng	881629	1	25.32	551180	1001.0
Hexadecanoic acid...	33.07	1625.4	ng	894976	1	25.32	551180	1001.0
Hexadecanoic acid...	37.11	1154.5	ng	635717	1	25.32	551180	1001.0
Octadecanoic acid...	39.91	1169.5	ng	643941	1	25.32	551180	1001.0
unknown	42.14	1114.3	ng	613540	1	25.32	551180	1001.0
Cholesterol	53.27	248329.0	ng	136737000	1	25.32	551180	1001.0

SAMPLE_NO MAP LB 4001
LAB_ID W5649 01
LABORATORY BATD
SD6 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 10:32 am
Data File: H:\A\DATA\SQA189\A7016.D
Name: W5650
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	20.99	13293.1	ng	4034190	1	25.31	303783	1001.0
Cyclohexasiloxane...	21.43	737.4	ng	223773	1	25.31	303783	1001.0
Methyl tetradecan...	29.59	470.2	ng	142695	1	25.31	303783	1001.0
Hexadecanoic acid...	33.07	7146.4	ng	2168780	1	25.31	303783	1001.0
9,12-Octadecadien...	35.80	305.4	ng	92666	1	25.31	303783	1001.0
9-Octadecenoic ac...	35.86	909.9	ng	276138	1	25.31	303783	1001.0
Octadecanoic acid...	36.22	1627.6	ng	493939	1	25.31	303783	1001.0
unknown	45.65	322.0	ng	97725	1	25.31	303783	1001.0
Cholestadiene	47.94	899.7	ng	273041	1	25.31	303783	1001.0
Cholesterol	53.13	206096.0	ng	62546000	1	25.31	303783	1001.0

SAMPLE_NO MAP LB 4002
LAB_ID W5650 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 10:14 pm
Data File: H:\A\DATA\SQA189\A7024.D
Name: W5651
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.52	3582.8	ng	1808420	1	25.32	505252	1001.0
unknown	21.72	5097.9	ng	2573170	1	25.32	505252	1001.0
unknown	25.90	12321.7	ng	6219330	1	25.32	505252	1001.0
Tetradecanal	31.28	4342.3	ng	2191760	1	25.32	505252	1001.0
Pentadecanoic aci...	33.08	3731.1	ng	1883260	1	25.32	505252	1001.0
E-11-Hexadecenoic...	33.87	4968.2	ng	2507680	1	25.32	505252	1001.0
Hexadecanoic acid...	34.17	3123.8	ng	1576710	1	25.32	505252	1001.0
11-Octadecenoic a...	35.88	3086.1	ng	1557690	1	25.32	505252	1001.0
Cholesterol	53.20	192043.0	ng	96933300	1	25.32	505252	1001.0
Cholestan-3-ol, 5...	57.97	8305.8	ng	4192350	1	25.32	505252	1001.0

SAMPLE_NO MAP LB 4002
LAB_ID W5651 01
LABORATORY BATD
SDG 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 11:56 am
Data File: H:\A\DATA\SQA189\A7017.D
Name: W5652
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.44	4566.5	ng	1674190	1	25.31	366994	1001.0
Cycloheptasiloxan...	25.17	2031.3	ng	744749	1	25.31	366994	1001.0
unknown	28.50	1221.6	ng	447876	1	25.31	366994	1001.0
Hexadecanoic acid...	37.10	878.7	ng	322160	1	25.31	366994	1001.0
unknown	40.31	874.9	ng	320773	1	25.31	366994	1001.0
unknown	42.13	1067.8	ng	391485	1	25.31	366994	1001.0
column bleed	43.92	1091.4	ng	400149	1	25.31	366994	1001.0
column bleed	45.93	1150.1	ng	421645	1	25.31	366994	1001.0
unknown	48.36	883.4	ng	323894	1	25.31	366994	1001.0
Cholesterol	53.12	154611.0	ng	56684600	1	25.31	366994	1001.0

SAMPLE_NO MAP LB 4003
LAB_ID W5652 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 1:21 pm
Data File: H:\A\DATA\SQA189\A7018.D
Name: W5652DUP
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.44	2655.7	ng	896154	1	25.31	337783	1001.0
Cycloheptasiloxan...	25.17	981.7	ng	331265	1	25.31	337783	1001.0
unknown	28.50	582.7	ng	196628	1	25.31	337783	1001.0
Hexadecanoic acid...	33.06	572.6	ng	193218	1	25.31	337783	1001.0
Hexadecanoic acid...	37.10	507.0	ng	171078	1	25.31	337783	1001.0
Octadecanoic acid...	39.91	512.2	ng	172834	1	25.31	337783	1001.0
column bleed	43.92	476.3	ng	160708	1	25.31	337783	1001.0
Eseroline, 7-brom...	45.93	731.8	ng	246946	1	25.31	337783	1001.0
Cholesta-3,5-diene	47.94	718.4	ng	242431	1	25.31	337783	1001.0
Cholesterol	53.14	191370.0	ng	64576900	1	25.31	337783	1001.0

SAMPLE_NO MAP LB 4003
LAB_ID W5652DUP 01
LABORATORY BATD
SDG 01378 FRACTION F

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Oct 2001 11:51 pm
Data File: H:\A\DATA\SQA189\A7025.D
Name: W5653
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.44	2124.2	ng	15544300	1	25.32	7325010	1001.0
Cycloheptasiloxan...	25.18	1001.0	ng	7325010	1	25.32	7325010	1001.0
unknown	28.51	535.7	ng	3920090	1	25.32	7325010	1001.0
E-11-Hexadecenoic...	33.88	634.7	ng	4644580	1	25.32	7325010	1001.0
column bleed	42.14	518.0	ng	3790920	1	25.32	7325010	1001.0
column bleed	43.92	576.1	ng	4215750	1	25.32	7325010	1001.0
column bleed	45.93	672.9	ng	4923810	1	25.32	7325010	1001.0
column bleed	48.36	542.0	ng	3965810	1	25.32	7325010	1001.0
column bleed	51.56	467.0	ng	3417150	1	25.32	7325010	1001.0
Cholesterol	53.04	5470.3	ng	40029900	1	25.32	7325010	1001.0

SAMPLE_NO MAP LB 4003
LAB_ID W5653 01
LABORATORY BATD
SDG 01378 FRACTION 0

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 24 Oct 2001 1:25 am
Data File: H:\A\DATA\SQA189\A7026.D
Name: W5653DUP
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.45	2083.2	ng	16805100	1	25.32	8075100	1001.0
Cycloheptasiloxan...	25.18	1001.0	ng	8075100	1	25.32	8075100	1001.0
unknown	28.51	538.8	ng	4346680	1	25.32	8075100	1001.0
Ethyl 9-hexadecen...	33.88	538.7	ng	4345610	1	25.32	8075100	1001.0
Octadecanoic acid...	39.92	591.2	ng	4769560	1	25.32	8075100	1001.0
column bleed	42.14	519.5	ng	4190800	1	25.32	8075100	1001.0
column bleed	43.92	594.2	ng	4793280	1	25.32	8075100	1001.0
column bleed	45.94	682.5	ng	5506070	1	25.32	8075100	1001.0
column bleed	48.37	586.3	ng	4729800	1	25.32	8075100	1001.0
Cholesterol	53.23	14720.1	ng	118748000	1	25.32	8075100	1001.0

SAMPLE_NO MAP LB 4003
LAB_ID W5653DUP 01
LABORATORY BATD
SDG 01378 FRACTION 0

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 2 Nov 2001 11:26 am
Data File: H:\A\DATA\SQA192\A7112.D
Name: ZL03PB
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclotetrasiloxan...	13.20	4633.5	ng	1371960	1	25.38	296391	1001.0
Cyclopentasiloxan...	17.28	1390.2	ng	411630	1	25.38	296391	1001.0
Cyclohexasiloxane...	21.41	217.8	ng	64478	1	25.38	296391	1001.0
Phenol, 2,4-bis(1...	25.66	189.2	ng	56032	1	25.38	296391	1001.0
2,5-Cyclohexadien...	28.75	1612.8	ng	477546	1	25.38	296391	1001.0
9-Octadecene, (E)-	37.48	236.8	ng	70122	1	25.38	296391	1001.0
Phenol, 2,4-bis(1...	40.75	1275.5	ng	377682	1	25.38	296391	1001.0
Phenol, 2,4-bis(1...	40.95	1188.0	ng	351773	1	25.38	296391	1001.0
unknown	50.50	3999.0	ng	1184090	1	25.38	296391	1001.0
unknown	50.87	3045.2	ng	901672	1	25.38	296391	1001.0

SAMPLE_NO NA
LAB_ID ZL03PB
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 2 Nov 2001 9:53 pm
Data File: H:\A\DATA\SQA192\A7118.D
Name: W5589
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Heptadecene	29.13	4399.0	ng	10977200	1	25.43	2497890	1001.0
9-Hexadecenoic ac...	32.89	8619.3	ng	21508400	1	25.43	2497890	1001.0
Hexadecanoic acid...	33.19	7123.7	ng	17776300	1	25.43	2497890	1001.0
Ethyl 9-hexadecen...	33.98	4440.0	ng	11079400	1	25.43	2497890	1001.0
9,12-Octadecadien...	35.92	2081.1	ng	5193170	1	25.43	2497890	1001.0
9-Octadecenoic ac...	36.02	9875.4	ng	24643000	1	25.43	2497890	1001.0
9-Octadecenoic ac...	36.08	2754.5	ng	6873660	1	25.43	2497890	1001.0
Octadecanoic acid...	36.34	2128.9	ng	5312490	1	25.43	2497890	1001.0
5,8,11,14,17-Eico...	38.50	1990.4	ng	4966880	1	25.43	2497890	1001.0
Squalene	46.17	8092.4	ng	20193700	1	25.43	2497890	1001.0

SAMPLE_NO GMP WS 5001
LAB_ID W5589 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 2 Nov 2001 7:18 pm
Data File: H:\A\DATA\SQA192\A7116.D
Name: W5590
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Heptadecene	29.14	14754.8	ng	20778400	1	25.43	1409660	1001.0
3,7,11,15-Tetrame...	32.49	4711.8	ng	6635360	1	25.43	1409660	1001.0
9-Hexadecenoic ac...	32.90	21685.3	ng	30538300	1	25.43	1409660	1001.0
Hexadecanoic acid...	33.20	16241.0	ng	22871300	1	25.43	1409660	1001.0
Ethyl 9-hexadecen...	33.98	13549.2	ng	19080600	1	25.43	1409660	1001.0
9-Octadecenoic ac...	36.02	21342.0	ng	30054800	1	25.43	1409660	1001.0
11-Octadecenoic a...	36.09	7699.9	ng	10843300	1	25.43	1409660	1001.0
5,8,11,14,17-Eico...	39.38	5141.8	ng	7240890	1	25.43	1409660	1001.0
4,7,10,13,16,19-D...	41.06	4770.9	ng	6718670	1	25.43	1409660	1001.0
Squalene	46.17	14558.4	ng	20501800	1	25.43	1409660	1001.0
Squalene	46.17	14558.4	ng	20501800	1	25.43	1409660	1001.0

SAMPLE_NO GMP WS 5002
LAB_ID W5590 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 12:29 am
Data File: H:\A\DATA\SQA192\A7120.D
Name: W5591
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Heptadecene	29.13	5264.0	ng	13328000	1	25.43	2534450	1001.0
unknown	32.50	2753.9	ng	6972740	1	25.43	2534450	1001.0
9-Hexadecenoic ac...	32.89	7576.2	ng	19182300	1	25.43	2534450	1001.0
Hexadecanoic acid...	33.19	5509.6	ng	13949800	1	25.43	2534450	1001.0
Ethyl 9-hexadecen...	34.00	13331.1	ng	33753200	1	25.43	2534450	1001.0
11-Octadecenoic a...	36.02	9311.0	ng	23574700	1	25.43	2534450	1001.0
9,12-Octadecadien...	36.92	3281.6	ng	8308740	1	25.43	2534450	1001.0
5,8,11,14-Eicosat...	39.28	3814.3	ng	9657340	1	25.43	2534450	1001.0
5,8,11,14,17-Eico...	39.39	5041.8	ng	12765400	1	25.43	2534450	1001.0
Squalene	46.17	8231.1	ng	20840400	1	25.43	2534450	1001.0

SAMPLE_NO GMP WS 5003
LAB_ID W5591 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 1:47 am
Data File: H:\A\DATA\SQA192\A7121.D
Name: W5592
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
1-Nonadecene	29.13	5683.3	ng	13567300	1	25.44	2389620	1001.0
9-Hexadecenoic ac...	32.89	5232.1	ng	12490200	1	25.44	2389620	1001.0
Hexadecanoic acid...	33.19	4045.6	ng	9657830	1	25.44	2389620	1001.0
Ethyl 9-hexadecen...	33.99	5636.3	ng	13455100	1	25.44	2389620	1001.0
9-Octadecenoic ac...	36.01	5567.2	ng	13290200	1	25.44	2389620	1001.0
10-Octadecenoic a...	36.08	1430.5	ng	3414990	1	25.44	2389620	1001.0
5,8,11,14-Eicosat...	39.28	1596.8	ng	3811990	1	25.44	2389620	1001.0
5,8,11,14,17-Eico...	39.39	2032.2	ng	4851230	1	25.44	2389620	1001.0
Squalene	46.18	5323.9	ng	12709300	1	25.44	2389620	1001.0
Vitamin e	53.13	1562.8	ng	3730860	1	25.44	2389620	1001.0

SAMPLE_NO GMP WS 5004
LAB_ID W5592 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 3:05 am
Data File: H:\A\DATA\SQA192\A7122.D
Name: W5593
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Heptadecene	29.13	6401.7	ng	11320200	1	25.44	1770090	1001.0
9-Hexadecenoic ac...	32.89	9651.5	ng	17067100	1	25.44	1770090	1001.0
Hexadecanoic acid...	33.20	8030.3	ng	14200200	1	25.44	1770090	1001.0
Ethyl 9-hexadecen...	34.04	31690.1	ng	56038500	1	25.44	1770090	1001.0
11-Octadecenoic a...	36.01	9692.9	ng	17140100	1	25.44	1770090	1001.0
unknown	36.79	3051.2	ng	5395460	1	25.44	1770090	1001.0
Linoleic acid eth...	36.94	7618.5	ng	13471900	1	25.44	1770090	1001.0
5,8,11,14-Eicosat...	39.30	6969.2	ng	12323800	1	25.44	1770090	1001.0
5,8,11,14,17-Eico...	39.41	9855.1	ng	17427000	1	25.44	1770090	1001.0
Squalene	46.18	9017.8	ng	15946500	1	25.44	1770090	1001.0

SAMPLE_NO GMP WS 5005
LAB_ID W5593 01
LABORATORY BATD
SOG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 4:22 am
Data File: H:\A\DATA\SQA192\A7123.D
Name: W5594
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Nonadecene	29.12	3920.4	ng	6445950	1	25.43	1645850	1001.0
Cyclopenta[g]-2-b...	32.37	2314.8	ng	3806080	1	25.43	1645850	1001.0
9-Hexadecenoic ac...	32.89	10191.9	ng	16757500	1	25.43	1645850	1001.0
Hexadecanoic acid...	33.19	8208.7	ng	13496700	1	25.43	1645850	1001.0
Ethyl 9-hexadecen...	33.99	10067.8	ng	16553500	1	25.43	1645850	1001.0
9-Octadecenoic ac...	36.01	9910.2	ng	16294300	1	25.43	1645850	1001.0
11-Octadecenoic a...	36.08	3012.7	ng	4953550	1	25.43	1645850	1001.0
5,8,11,14-Eicosat...	39.28	2765.1	ng	4546460	1	25.43	1645850	1001.0
5,8,11,14,17-Eico...	39.39	3495.2	ng	5746800	1	25.43	1645850	1001.0
Squalene	46.18	8698.4	ng	14301900	1	25.43	1645850	1001.0

SAMPLE_NO GMP WS 5006
LAB_ID W5594 01
LABORATORY BATD
SOG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 5:40 am
Data File: H:\A\DATA\SQA192\A7124.D
Name: W5595
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Heptadecene	29.15	28942.3	ng	28962400	1	25.44	1001690	1001.0
3,7,11,15-Tetrame...	32.50	7060.3	ng	7065220	1	25.44	1001690	1001.0
9-Hexadecenoic ac...	32.91	30086.6	ng	30107500	1	25.44	1001690	1001.0
Hexadecanoic acid...	33.21	24860.8	ng	24878100	1	25.44	1001690	1001.0
Ethyl 9-hexadecen...	33.98	8349.7	ng	8355500	1	25.44	1001690	1001.0
8,11-Octadecadien...	35.92	6708.6	ng	6713200	1	25.44	1001690	1001.0
9-Octadecenoic ac...	36.04	34388.8	ng	34412600	1	25.44	1001690	1001.0
Octadecanoic acid...	36.35	7633.2	ng	7638450	1	25.44	1001690	1001.0
5,8,11,14,17-Eico...	38.52	7624.4	ng	7629640	1	25.44	1001690	1001.0
Squalene	46.19	25405.8	ng	25423400	1	25.44	1001690	1001.0

SAMPLE_NO GMP WS 5007
LAB_ID W5595 01
LABORATORY BATD
SOG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 6:58 am
Data File: H:\A\DATA\SQA192\A7125.D
Name: W5595DUP
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Nonadecene	29.17	27283.6	ng	35677600	1	25.45	1308970	1001.0
Heptadecane	29.27	5425.8	ng	7095090	1	25.45	1308970	1001.0
3,7,11,15-Tetrame...	32.52	5804.8	ng	7590690	1	25.45	1308970	1001.0
9-Hexadecenoic ac...	32.92	21643.6	ng	28302400	1	25.45	1308970	1001.0
Hexadecanoic acid...	33.21	16279.8	ng	21288400	1	25.45	1308970	1001.0
E-11-Hexadecenoic...	33.99	7002.2	ng	9156480	1	25.45	1308970	1001.0
8-Octadecenoic ac...	36.05	25738.4	ng	33657100	1	25.45	1308970	1001.0
9-Octadecenoic ac...	36.11	7335.7	ng	9592590	1	25.45	1308970	1001.0
Methyl eicosa-5,8...	38.53	5643.0	ng	7379060	1	25.45	1308970	1001.0
Squalene	46.21	21447.0	ng	28045300	1	25.45	1308970	1001.0

SAMPLE_NO GMP WS 5007
LAB_ID W5595DUP 01
LABORATORY BATO
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 8:15 am
Data File: H:\A\DATA\SQA192\A7126.D
Name: W5596
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
9-Octadecyne	28.79	4166.7	ng	7502010	1	25.47	1802260	1001.0
1-Nonadecene	29.18	19388.6	ng	34908300	1	25.47	1802260	1001.0
Cyclopenta[g]-2-b...	32.40	3792.1	ng	6827560	1	25.47	1802260	1001.0
unknown	32.53	5507.9	ng	9916800	1	25.47	1802260	1001.0
9-Hexadecenoic ac...	32.92	10325.9	ng	18591200	1	25.47	1802260	1001.0
Hexadecanoic acid...	33.22	8020.7	ng	14440900	1	25.47	1802260	1001.0
unknown	34.74	9382.1	ng	16892000	1	25.47	1802260	1001.0
9-Octadecenoic ac...	36.05	13181.4	ng	23732500	1	25.47	1802260	1001.0
Squalene	46.23	16399.1	ng	29525900	1	25.47	1802260	1001.0
Vitamin e	53.23	4974.5	ng	8956330	1	25.47	1802260	1001.0

SAMPLE_NO GMP WS 5008
LAB_ID W5596 01
LABORATORY BATO
SOG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 9:33 am
Data File: H:\A\DATA\SQA192\A7127.D
Name: W5597
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Nonadecene	29.16	25219.9	ng	11895100	1	25.49	472129	1001.0
Cyclopenta[g]-2-b...	32.42	6150.3	ng	2900830	1	25.49	472129	1001.0
unknown	32.54	8427.9	ng	3975100	1	25.49	472129	1001.0
9-Hexadecenoic ac...	32.91	18303.6	ng	8633040	1	25.49	472129	1001.0
Hexadecanoic acid...	33.22	16607.4	ng	7832980	1	25.49	472129	1001.0
9-Hexadecenoic ac...	34.01	10926.4	ng	5153530	1	25.49	472129	1001.0
unknown	34.73	8581.9	ng	4047730	1	25.49	472129	1001.0
9-Octadecenoic ac...	36.04	18755.8	ng	8846320	1	25.49	472129	1001.0
Squalene	46.22	15812.1	ng	7457920	1	25.49	472129	1001.0
Vitamin e	53.27	13308.0	ng	6276790	1	25.49	472129	1001.0

SAMPLE_NO GMP WS 5009
LAB_ID W5597 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 12:08 pm
Data File: H:\A\DATA\SQA192\A7129.D
Name: W5598
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1-Heptadecene	29.20	10402.5	ng	33205500	1	25.48	3195240	1001.0
9-Hexadecenoic ac...	32.94	9367.2	ng	29900500	1	25.48	3195240	1001.0
Hexadecanoic acid...	33.24	6942.5	ng	22160800	1	25.48	3195240	1001.0
Ethyl 9-hexadecen...	34.03	4956.1	ng	15820300	1	25.48	3195240	1001.0
unknown	34.74	3285.4	ng	10487300	1	25.48	3195240	1001.0
9,12-Octadecadien...	35.96	2555.6	ng	8157650	1	25.48	3195240	1001.0
9-Octadecenoic ac...	36.07	10136.4	ng	32355800	1	25.48	3195240	1001.0
9-Octadecenoic ac...	36.14	3163.3	ng	10097400	1	25.48	3195240	1001.0
Squalene	46.25	9281.8	ng	29628100	1	25.48	3195240	1001.0
Vitamin e	53.27	3257.2	ng	10397100	1	25.48	3195240	1001.0

SAMPLE_NO GMP WS 5010
LAB_ID W5598 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 1:25 pm
Data File: H:\A\DATA\SQA192\A7130.D
Name: W5637
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclotetrasiloxan...	13.22	2869.5	ng	1422920	1	25.49	496368	1001.0
9-Hexadecenoic ac...	32.90	3649.6	ng	1809720	1	25.49	496368	1001.0
Hexadecanoic acid...	33.22	7870.3	ng	3902640	1	25.49	496368	1001.0
Ethyl 9-hexadecen...	34.00	3956.9	ng	1962130	1	25.49	496368	1001.0
Hexadecanoic acid...	34.30	1684.1	ng	835110	1	25.49	496368	1001.0
9-Octadecenoic ac...	36.03	3777.7	ng	1873250	1	25.49	496368	1001.0
Ethyl Oleate	37.02	3985.9	ng	1976490	1	25.49	496368	1001.0
5,8,11,14-Eicosat...	38.43	1937.1	ng	960529	1	25.49	496368	1001.0
5,8,11,14-Eicosat...	39.31	3076.8	ng	1525720	1	25.49	496368	1001.0
Squalene	46.22	1601.6	ng	794207	1	25.49	496368	1001.0

SAMPLE_NO RAB BB 5001
LAB_ID W5637 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 2:43 pm
Data File: H:\A\DATA\SQA192\A7131.D
Name: W5638
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Cyclotetrasiloxan...	13.22	8254.8	ng	4054150	1	25.49	491618	1001.0
Cyclopentasiloxan...	17.31	9746.1	ng	4786560	1	25.49	491618	1001.0
Cyclohexasiloxane...	21.45	7130.4	ng	3501910	1	25.49	491618	1001.0
Cycloheptasiloxan...	25.19	4002.0	ng	1965510	1	25.49	491618	1001.0
unknown	28.53	2190.1	ng	1075630	1	25.49	491618	1001.0
Hexadecanoic acid...	33.21	2949.7	ng	1448660	1	25.49	491618	1001.0
unknown	38.40	1748.4	ng	858698	1	25.49	491618	1001.0
unknown	42.16	1759.7	ng	864212	1	25.49	491618	1001.0
unknown	43.94	1908.4	ng	937265	1	25.49	491618	1001.0
unknown	45.96	1807.8	ng	887862	1	25.49	491618	1001.0

SAMPLE_NO RAB BB 5002
LAB_ID W5638 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 4:01 pm
Data File: H:\A\DATA\SQA192\A7132.D
Name: W5654
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclotetrasiloxan...	13.22	6387.8	ng	2411230	1	25.47	377852	1001.0
Cyclopentasiloxan...	17.30	2272.7	ng	857895	1	25.47	377852	1001.0
unknown	25.98	777.1	ng	293356	1	25.47	377852	1001.0
2,5-Cyclohexadien...	28.83	948.9	ng	358191	1	25.47	377852	1001.0
unknown	28.88	681.3	ng	257180	1	25.47	377852	1001.0
Heptadecane	29.26	970.6	ng	366373	1	25.47	377852	1001.0
Methyl tetradecan...	29.72	819.2	ng	309216	1	25.47	377852	1001.0
9-Hexadecenoic ac...	32.89	1246.2	ng	470404	1	25.47	377852	1001.0
Hexadecanoic acid...	33.20	2406.3	ng	908298	1	25.47	377852	1001.0
Cholesterol	53.60	128248.0	ng	48410200	1	25.47	377852	1001.0

SAMPLE_NO RAB BB 5003
LAB_ID W5654 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 5:18 pm
Data File: H:\A\DATA\SQA192\A7133.D
Name: W5656
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Methyl tetradecan...	29.72	2160.5	ng	5150510	1	25.47	2386280	1001.0
9-Hexadecenoic ac...	32.90	4115.1	ng	9809910	1	25.47	2386280	1001.0
Hexadecanoic acid...	33.22	7216.6	ng	17203600	1	25.47	2386280	1001.0
9,12-Octadecadien...	35.95	2073.6	ng	4943250	1	25.47	2386280	1001.0
9-Octadecenoic ac...	36.04	10520.1	ng	25078800	1	25.47	2386280	1001.0
11-Octadecenoic a...	36.11	2350.1	ng	5602290	1	25.47	2386280	1001.0
Octadecanoic acid...	36.36	1911.9	ng	4557710	1	25.47	2386280	1001.0
5,8,11,14,17-Eico...	38.54	1271.6	ng	3031290	1	25.47	2386280	1001.0
Squalene	46.21	4320.3	ng	10299200	1	25.47	2386280	1001.0
Cholesterol	53.77	66526.9	ng	158593000	1	25.47	2386280	1001.0

SAMPLE_NO DYP AE 4001
LAB_ID W5656 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 6:36 pm
Data File: H:\A\DATA\SQA192\A7134.D
Name: W5657
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclotetrasiloxan...	13.22	5698.4	ng	2527390	1	25.47	443971	1001.0
Cyclopentasiloxan...	17.30	5858.6	ng	2598470	1	25.47	443971	1001.0
9-Hexadecenoic ac...	32.89	10509.4	ng	4661200	1	25.47	443971	1001.0
Hexadecanoic acid...	33.21	23104.8	ng	10247600	1	25.47	443971	1001.0
8,11-Octadecadien...	35.94	7208.9	ng	3197360	1	25.47	443971	1001.0
9-Octadecenoic ac...	36.03	35629.9	ng	15802800	1	25.47	443971	1001.0
11-Octadecenoic a...	36.10	6886.1	ng	3054180	1	25.47	443971	1001.0
Octadecanoic acid...	36.36	6314.2	ng	2800520	1	25.47	443971	1001.0
Squalene	46.21	24897.4	ng	11042700	1	25.47	443971	1001.0
Cholesterol	53.71	271823.0	ng	120561000	1	25.47	443971	1001.0

SAMPLE_NO DYP AE 4002
LAB_ID W5657 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA192FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 3 Nov 2001 7:54 pm
Data File: H:\A\DATA\SQA192\A7135.D
Name: W5658
Misc: SOP 5-157 B#01-379
Method: H:\A\DATA\SQA192FX.M (RTE Integrator)
Title: FL15-20 Calibration Curve
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Dodecanoic acid, ...	25.85	9592.8	ng	3442580	1	25.47	359230	1001.0
Heptadecane	29.26	5395.4	ng	1936250	1	25.47	359230	1001.0
Methyl tetradecan...	29.71	6677.2	ng	2396250	1	25.47	359230	1001.0
9-Hexadecenoic ac...	32.89	10039.0	ng	3602700	1	25.47	359230	1001.0
Hexadecanoic acid...	33.20	19153.5	ng	6873650	1	25.47	359230	1001.0
9,12-Octadecadien...	35.94	6117.5	ng	2195400	1	25.47	359230	1001.0
9-Octadecenoic ac...	36.03	30355.3	ng	10893700	1	25.47	359230	1001.0
Octadecanoic acid...	36.36	5563.2	ng	1996470	1	25.47	359230	1001.0
Squalene	46.20	15073.1	ng	5409290	1	25.47	359230	1001.0
Cholesterol	53.55	148411.0	ng	53260500	1	25.47	359230	1001.0

SAMPLE_NO DYP AE 4003
LAB_ID W5658 01
LABORATORY BATD
SDG 01379 FRACTION W

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 3:32 am
Data File: H:\A\DATA\SQA212\A7579.D
Name: ZR02PB
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclopentasiloxan...	16.80	2851.8	ng	4215930	1	24.77	739922	500.5
column bleed	20.94	487.1	ng	720086	1	24.77	739922	500.5
column bleed	24.67	121.0	ng	178914	1	24.77	739922	500.5
column bleed	27.99	50.2	ng	74205	1	24.77	739922	500.5
unknown	28.17	330.7	ng	488951	1	24.77	739922	500.5

SAMPLE_NO NA
LAB_ID ZR02PB
LABORATORY BATD
SDG 01672 FRACTION W

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 4:56 am
Data File: H:\A\DATA\SQA212\A7580.D
Name: ZR19PB2
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclopentasiloxan...	16.80	3197.5	ng	4886560	1	24.77	764884	500.5
Cyclohexasiloxane...	20.93	476.2	ng	727798	1	24.77	764884	500.5
column bleed	24.67	106.1	ng	162158	1	24.77	764884	500.5

SAMPLE_NO NA
LAB_ID ZR19PB2
LABORATORY BATO
SDG 01672 FRACTION W

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 6:18 am
Data File: H:\A\DATA\SQA212\A7581.D
Name: W5505-1
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclopentasiloxan...	16.81	629.6	ng	996593	1	24.77	792254	500.5
unknown	20.99	668.7	ng	1058550	1	24.77	792254	500.5
3-Buten-2-one, 4-...	21.92	751.2	ng	1189090	1	24.77	792254	500.5
unknown	25.34	1995.3	ng	3158390	1	24.77	792254	500.5
unknown	25.48	1667.0	ng	2638770	1	24.77	792254	500.5
Methyl tetradecan...	29.09	1288.5	ng	2039650	1	24.77	792254	500.5
Tetradecanal	30.76	527.8	ng	835434	1	24.77	792254	500.5
9-Hexadecenoic ac...	32.25	852.6	ng	1349600	1	24.77	792254	500.5
Hexadecanoic acid...	32.57	6630.4	ng	10495400	1	24.77	792254	500.5
Octadecanoic acid...	35.71	1392.3	ng	2203920	1	24.77	792254	500.5

SAMPLE_NO LPX LB 4003
LAB_ID W5505-1 01
LABORATORY BATO
SDG 01672 FRACTION F

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 7:38 am
Data File: H:\A\DATA\SQA212\A7582.D
Name: W5505DUP
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclopentasiloxan...	16.81	2031.9	ng	4599140	1	24.77	1132890	500.5
Indole	20.47	857.9	ng	1941910	1	24.77	1132890	500.5
Cyclohexasiloxane...	20.94	960.0	ng	2172900	1	24.77	1132890	500.5
unknown	20.99	1781.0	ng	4031340	1	24.77	1132890	500.5
unknown	21.19	1480.5	ng	3351120	1	24.77	1132890	500.5
unknown	25.36	3247.4	ng	7350490	1	24.77	1132890	500.5
Methyl tetradecan...	29.09	1303.5	ng	2950520	1	24.77	1132890	500.5
9-Hexadecenoic ac...	32.25	1397.2	ng	3162490	1	24.77	1132890	500.5
Hexadecanoic acid...	32.58	7549.5	ng	17088300	1	24.77	1132890	500.5
Octadecanoic acid...	35.72	1720.7	ng	3894700	1	24.77	1132890	500.5

SAMPLE_NO LPX LB 4003
LAB_ID W5505DUP 01
LABORATORY BATD
SDG 01672 FRACTION F

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 8:55 am
Data File: H:\A\DATA\SQA212\A7583.D
Name: W5617-1
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
3-Nonen-2-one	16.57	1395.3	ng	2930780	1	24.77	1051300	500.5
Cyclopentasiloxan...	16.81	1728.0	ng	3629590	1	24.77	1051300	500.5
Cyclohexasiloxane...	20.94	752.0	ng	1579680	1	24.77	1051300	500.5
unknown	20.99	672.4	ng	1412430	1	24.77	1051300	500.5
3-Buten-2-one, 4-...	21.93	6278.7	ng	13188300	1	24.77	1051300	500.5
unknown	25.35	2865.3	ng	6018480	1	24.77	1051300	500.5
Methyl tetradecan...	29.09	1691.9	ng	3553800	1	24.77	1051300	500.5
9-Hexadecenoic ac...	32.25	2674.9	ng	5618540	1	24.77	1051300	500.5
Hexadecanoic acid...	32.58	8668.9	ng	18209000	1	24.77	1051300	500.5
Octadecanoic acid...	35.71	1597.3	ng	3355170	1	24.77	1051300	500.5

SAMPLE_NO GMP LB 5005
LAB_ID W5617-1 01
LABORATORY BATD
SDG 01672 FRACTION 0

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 10:11 am
Data File: H:\A\DATA\SQA212\A7584.D
Name: W5617DUP
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
9-Hexadecenoic ac...	32.29	2919.6	ng	30747100	1	24.77	5270950	500.5
Hexadecanoic acid...	32.64	8273.9	ng	87135000	1	24.77	5270950	500.5
9,12-Octadecadien...	35.32	1468.6	ng	15466500	1	24.77	5270950	500.5
10-Octadecenoic a...	35.51	2191.5	ng	23079200	1	24.77	5270950	500.5
Octadecanoic acid...	35.76	2917.7	ng	30727800	1	24.77	5270950	500.5
5,8,11,14-Eicosat...	37.79	1414.1	ng	14892800	1	24.77	5270950	500.5
unknown	40.34	1535.3	ng	16168900	1	24.77	5270950	500.5
unknown	40.47	3839.9	ng	40439400	1	24.77	5270950	500.5
Squalene	45.35	1688.4	ng	17781500	1	24.77	5270950	500.5
9-Hexadecenoic ac...	57.89	2491.6	ng	26239800	1	24.77	5270950	500.5
9-Hexadecenoic ac...	57.89	2491.6	ng	26239800	1	24.77	5270950	500.5

SAMPLE_NO GMP LB 5005
LAB_ID W5617DUP 01
LABORATORY BATO
SDG 01672 FRACTION 0

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 11:30 am
Data File: H:\A\DATA\SQA212\A7585.D
Name: W5507-1
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclopentasiloxan...	16.81	1619.2	ng	3463310	1	24.79	1070530	500.5
Indole	20.51	223.8	ng	478664	1	24.79	1070530	500.5
Cyclohexasiloxane...	20.94	352.2	ng	753367	1	24.79	1070530	500.5
column bleed	24.67	110.9	ng	237132	1	24.79	1070530	500.5
unknown	25.35	179.1	ng	383114	1	24.79	1070530	500.5
Hexadecanoic acid...	32.57	635.1	ng	1358440	1	24.79	1070530	500.5
7-Octadecenoic ac...	35.37	182.0	ng	389198	1	24.79	1070530	500.5
Octadecanoic acid...	35.73	126.6	ng	270822	1	24.79	1070530	500.5
2,6,10,14,18,22-T...	45.34	150.6	ng	322010	1	24.79	1070530	500.5
Cholesta-3,5-diene	47.15	195.9	ng	418998	1	24.79	1070530	500.5

SAMPLE_NO LPX LB 4004
LAB_ID W5507-1 01
LABORATORY BATD
SDG 01672 FRACTION F

SQA212FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 15 Jan 2002 12:49 pm
Data File: H:\A\DATA\SQA212\A7586.D
Name: W5648-1
Misc:
Method: H:\A\DATA\SQA212FX.M (RTE Integrator)
Title: Centredale Full Scan
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclopentasiloxan...	16.82	1325.3	ng	2271330	1	24.79	857740	500.5
2-Phenylpropenal	17.15	519.9	ng	890934	1	24.79	857740	500.5
Indole	20.58	27500.8	ng	47129900	1	24.79	857740	500.5
Cyclohexasiloxane...	20.95	173.8	ng	297870	1	24.79	857740	500.5
unknown	25.35	233.4	ng	399988	1	24.79	857740	500.5
2,5-Cyclohexadien...	28.18	323.9	ng	555004	1	24.79	857740	500.5
16-Heptadecenal	30.77	170.3	ng	291841	1	24.79	857740	500.5
Hexadecanoic acid...	32.57	783.9	ng	1343360	1	24.79	857740	500.5
6-Octadecenoic ac...	35.37	154.2	ng	264323	1	24.79	857740	500.5
Octadecanoic acid...	35.73	187.4	ng	321130	1	24.79	857740	500.5

SAMPLE_NO MAP LB 4001
LAB_ID W5648-1 01
LABORATORY BATD
SDG 01672 FRACTION F

Section 7
DCM Extractable Lipid Content Results

SAMPLE_NO	LAB_ID	LABORATORY	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	CASE	SDG	PARAMETER	CAS_NO	CLASS	METHOD	LAB_RESULT	UNITS	LAB_QUAL	IDL	MDL
APC-AE-4007-0000-01	W5415DUP-R	BATD	DUPLICATE	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	13.37	%WET			0.01
LPX-AE-4001-0000-01	W5493-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	17.84	%WET			0.01
APC-AE-4007-0000-01	W5415-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	12.85	%WET			0.01
APC-AE-4001-0000-01	W5409-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	7.33	%WET			0.01
APC-AE-4002-0000-01	W5410-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	15.79	%WET			0.01
APC-AE-4003-0000-01	W5411-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	10.66	%WET			0.01
APC-AE-4004-0000-01	W5412-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	14.27	%WET			0.01
APC-AE-4005-0000-01	W5413-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	17.71	%WET			0.01
APC-AE-4006-0000-01	W5414-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	13.41	%WET			0.01
APC-AE-4008-0000-01	W5416-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	17.16	%WET			0.01
APC-AE-4009-0000-01	W5417-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	10.95	%WET			0.01
APC-AE-4010-0000-01	W5418-R	BATD	NORMAL	06/20/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	10.83	%WET			0.01
LPX-AE-4002-0000-01	W5494-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	17.15	%WET			0.01
LPX-AE-4003-0000-01	W5495-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	19.84	%WET			0.01
LPX-AE-4004-0000-01	W5496-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	16.26	%WET			0.01
LPX-AE-4005-0000-01	W5497-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	15.91	%WET			0.01
LPX-AE-4006-0000-01	W5499-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	16.71	%WET			0.01
LPX-AE-4007-0000-01	W5500-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	21.20	%WET			0.01
LPX-AE-4008-0000-01	W5485-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	18.50	%WET			0.01
LPX-AE-4009-0000-01	W5486-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	22.10	%WET			0.01
LPX-AE-4010-0000-01	W5487-R	BATD	NORMAL	06/21/01	08/08/01	08/09/01		01-373	Lipid Content		Wet	BATD_SOP_5_190	21.67	%WET			0.01
APC-WS-4008-0000-01	W5475DUP-R	BATD	DUPLICATE	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	NA	%WET			0.01
APC-WS-4008-0000-01	W5475-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.36	%WET			0.01
APC-WS-4001-0000-01	W5420-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.42	%WET			0.01
APC-WS-4002-0000-01	W5421-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	6.75	%WET			0.01
APC-WS-4003-0000-01	W5422-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.24	%WET			0.01
APC-WS-4004-0000-01	W5423-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.20	%WET			0.01
APC-WS-4005-0000-01	W5424-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.91	%WET			0.01
APC-WS-4006-0000-01	W5473-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	8.72	%WET			0.01
APC-WS-4007-0000-01	W5474-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	6.00	%WET			0.01
APC-WS-4009-0000-01	W5477-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	6.82	%WET			0.01
APC-WS-4010-0000-01	W5478-R	BATD	NORMAL	06/20/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.75	%WET			0.01
LPX-WS-4001-0000-01	W5479-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.71	%WET			0.01
LPX-WS-4002-0000-01	W5480-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.57	%WET			0.01
LPX-WS-4003-0000-01	W5481-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.36	%WET			0.01
LPX-WS-4004-0000-01	W5482-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	7.09	%WET			0.01
LPX-WS-4005-0000-01	W5483-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	12.06	%WET			0.01
LPX-WS-4006-0000-01	W5488-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	7.63	%WET			0.01
LPX-WS-4007-0000-01	W5489-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	10.05	%WET			0.01
LPX-WS-4008-0000-01	W5490-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	7.79	%WET			0.01
LPX-WS-4009-0000-01	W5491-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	6.77	%WET			0.01
LPX-WS-4010-0000-01	W5492-R	BATD	NORMAL	06/21/01	08/09/01	08/14/01		01-374	Lipid Content		Wet	BATD_SOP_5_190	5.84	%WET			0.01
LPX-LB-4001-0000-01	W5501	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	1.14	%WET			0.01
LPX-LB-4001-0000-01	W5502	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	4.62	%WET			0.01
LPX-LB-4002-0000-01	W5503	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.99	%WET			0.01
LPX-LB-4002-0000-01	W5504	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	4.50	%WET			0.01
LPX-LB-4003-0000-01	W5505	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.59	%WET			0.01
LPX-LB-4003-0000-01	W5506	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	3.14	%WET			0.01
LPX-LB-4004-0000-01	W5507	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.45	%WET			0.01
LPX-LB-4004-0000-01	W5507DUP	BATD	DUPLICATE	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.60	%WET			0.01
LPX-LB-4004-0000-01	W5508-R	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	3.09	%WET			0.01
LPX-LB-4004-0000-01	W5508DUP-R	BATD	DUPLICATE	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	1.84	%WET			0.01
LPX-LB-4005-0000-01	W5511	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.18	%WET			0.01
LPX-LB-4005-0000-01	W5512	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	1.05	%WET			0.01
LPX-LB-4006-0000-01	W5513	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.52	%WET			0.01
LPX-LB-4006-0000-01	W5514	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	2.48	%WET			0.01

SAMPLE_NO	LAB_ID	CRDL_CRQL	DIL_FACTOR	PCT_MOIST	COMMENTS	SAMPLE_SIZE	SAMPLE_SIZE_UNITS	FINAL_RESULT	FINAL_QUAL	VALID_COMMENT	FRACTION
APC-AE-4007-0000-01	W5415DUP-R		1.000		DCM Extractable Lipid	30.15	G_WET	13.37			W
LPX-AE-4001-0000-01	W5493-R		1.000		DCM Extractable Lipid	30.43	G_WET	17.84			W
APC-AE-4007-0000-01	W5415-R		1.000		DCM Extractable Lipid	30.06	G_WET	12.85			W
APC-AE-4001-0000-01	W5409-R		1.000		DCM Extractable Lipid	29.47	G_WET	7.33			W
APC-AE-4002-0000-01	W5410-R		1.000		DCM Extractable Lipid	30.26	G_WET	15.79			W
APC-AE-4003-0000-01	W5411-R		1.000		DCM Extractable Lipid	30.57	G_WET	10.66			W
APC-AE-4004-0000-01	W5412-R		1.000		DCM Extractable Lipid	30.40	G_WET	14.27			W
APC-AE-4005-0000-01	W5413-R		1.000		DCM Extractable Lipid	30.08	G_WET	17.71			W
APC-AE-4006-0000-01	W5414-R		1.000		DCM Extractable Lipid	30.94	G_WET	13.41			W
APC-AE-4008-0000-01	W5416-R		1.000		DCM Extractable Lipid	29.81	G_WET	17.16			W
APC-AE-4009-0000-01	W5417-R		1.000		DCM Extractable Lipid	30.67	G_WET	10.95			W
APC-AE-4010-0000-01	W5418-R		1.000		DCM Extractable Lipid	30.28	G_WET	10.83			W
LPX-AE-4002-0000-01	W5494-R		1.000		DCM Extractable Lipid	30.03	G_WET	17.15			W
LPX-AE-4003-0000-01	W5495-R		1.000		DCM Extractable Lipid	30.85	G_WET	19.84			W
LPX-AE-4004-0000-01	W5496-R		1.000		DCM Extractable Lipid	30.84	G_WET	16.26			W
LPX-AE-4005-0000-01	W5497-R		1.000		DCM Extractable Lipid	30.26	G_WET	15.91			W
LPX-AE-4006-0000-01	W5499-R		1.000		DCM Extractable Lipid	30.40	G_WET	16.71			W
LPX-AE-4007-0000-01	W5500-R		1.000		DCM Extractable Lipid	30.18	G_WET	21.20			W
LPX-AE-4008-0000-01	W5485-R		1.000		DCM Extractable Lipid	29.84	G_WET	18.50			W
LPX-AE-4009-0000-01	W5486-R		1.000		DCM Extractable Lipid	30.37	G_WET	22.10			W
LPX-AE-4010-0000-01	W5487-R		1.000		DCM Extractable Lipid	30.47	G_WET	21.67			W
APC-WS-4008-0000-01	W5475DUP-R		1.000		Lipid content inadvertentally not measured.	27.03	G_WET	NA			W
APC-WS-4008-0000-01	W5475-R		1.000		DCM Extractable Lipid	30.01	G_WET	5.36			W
APC-WS-4001-0000-01	W5420-R		1.000		DCM Extractable Lipid	30.14	G_WET	5.42			W
APC-WS-4002-0000-01	W5421-R		1.000		DCM Extractable Lipid	30.41	G_WET	6.75			W
APC-WS-4003-0000-01	W5422-R		1.000		DCM Extractable Lipid	30.24	G_WET	5.24			W
APC-WS-4004-0000-01	W5423-R		1.000		DCM Extractable Lipid	30.16	G_WET	5.20			W
APC-WS-4005-0000-01	W5424-R		1.000		DCM Extractable Lipid	30.67	G_WET	5.91			W
APC-WS-4006-0000-01	W5473-R		1.000		DCM Extractable Lipid	30.77	G_WET	8.72			W
APC-WS-4007-0000-01	W5474-R		1.000		DCM Extractable Lipid	30.43	G_WET	6.00			W
APC-WS-4009-0000-01	W5477-R		1.000		DCM Extractable Lipid	30.30	G_WET	6.82			W
APC-WS-4010-0000-01	W5478-R		1.000		DCM Extractable Lipid	30.29	G_WET	5.75			W
LPX-WS-4001-0000-01	W5479-R		1.000		DCM Extractable Lipid	30.48	G_WET	5.71			W
LPX-WS-4002-0000-01	W5480-R		1.000		DCM Extractable Lipid	30.57	G_WET	5.57			W
LPX-WS-4003-0000-01	W5481-R		1.000		DCM Extractable Lipid	30.14	G_WET	5.36			W
LPX-WS-4004-0000-01	W5482-R		1.000		DCM Extractable Lipid	30.44	G_WET	7.09			W
LPX-WS-4005-0000-01	W5483-R		1.000		DCM Extractable Lipid	30.09	G_WET	12.06			W
LPX-WS-4006-0000-01	W5488-R		1.000		DCM Extractable Lipid	30.43	G_WET	7.63			W
LPX-WS-4007-0000-01	W5489-R		1.000		DCM Extractable Lipid	30.18	G_WET	10.05			W
LPX-WS-4008-0000-01	W5490-R		1.000		DCM Extractable Lipid	30.15	G_WET	7.79			W
LPX-WS-4009-0000-01	W5491-R		1.000		DCM Extractable Lipid	30.04	G_WET	6.77			W
LPX-WS-4010-0000-01	W5492-R		1.000		DCM Extractable Lipid	30.70	G_WET	5.84			W
LPX-LB-4001-0000-01	W5501		1.000		DCM Extractable Lipid	15.52	G_WET	1.14			F
LPX-LB-4001-0000-01	W5502		1.000		DCM Extractable Lipid	29.80	G_WET	4.62			O
LPX-LB-4002-0000-01	W5503		1.000		DCM Extractable Lipid	30.00	G_WET	0.99			F
LPX-LB-4002-0000-01	W5504		1.000		DCM Extractable Lipid	29.46	G_WET	4.50			O
LPX-LB-4003-0000-01	W5505		1.000		DCM Extractable Lipid	21.26	G_WET	0.59			F
LPX-LB-4003-0000-01	W5506		1.000		DCM Extractable Lipid	28.31	G_WET	3.14			O
LPX-LB-4004-0000-01	W5507		1.000		DCM Extractable Lipid	15.44	G_WET	0.45			F
LPX-LB-4004-0000-01	W5507DUP		1.000		DCM Extractable Lipid	15.04	G_WET	0.60			F
LPX-LB-4004-0000-01	W5508-R		1.000		DCM Extractable Lipid	18.04	G_WET	3.09			O
LPX-LB-4004-0000-01	W5508DUP-R		1.000		DCM Extractable Lipid	23.62	G_WET	1.84			O
LPX-LB-4005-0000-01	W5511		1.000		DCM Extractable Lipid	29.87	G_WET	0.18			F
LPX-LB-4005-0000-01	W5512		1.000		DCM Extractable Lipid	30.21	G_WET	1.05			O
LPX-LB-4006-0000-01	W5513		1.000		DCM Extractable Lipid	29.78	G_WET	0.52			F
LPX-LB-4006-0000-01	W5514		1.000		DCM Extractable Lipid	29.73	G_WET	2.48			O

SAMPLE_NO	LAB_ID	LABORATORY	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	CASE	SDG	PARAMETER	CAS_NO	CLASS	METHOD	LAB_RESULT	UNITS	LAB_QUAL	IDL	MDL
LPX-LB-4007-0000-01	W5515	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	1.01	%WET			0.01
LPX-LB-4007-0000-01	W5516	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	4.15	%WET			0.01
LPX-LB-4008-0000-01	W5517	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.35	%WET			0.01
LPX-LB-4008-0000-01	W5518	BATD	NORMAL	06/21/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	1.63	%WET			0.01
LPX-LB-4009-0000-01	W5629	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.73	%WET			0.01
LPX-LB-4009-0000-01	W5630	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	5.21	%WET			0.01
LPX-LB-4010-0000-01	W5631	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	0.53	%WET			0.01
LPX-LB-4010-0000-01	W5632	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-375	Lipid Content		Wet	BATD_SOP_5_190	2.52	%WET			0.01
GMP-AE-5001-0000-01	ZF19DUP-D	BATD	DUPLICATE	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	4.56	%WET			0.01
GMP-AE-5010-0000-01	W5628-D	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	19.79	%WET			0.01
GMP-AE-5001-0000-01	W5599-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	4.34	%WET			0.01
GMP-AE-5002-0000-01	W5600-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	13.37	%WET			0.01
GMP-AE-5003-0000-01	W5601-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	13.24	%WET			0.01
GMP-AE-5004-0000-01	W5602-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	15.62	%WET			0.01
GMP-AE-5005-0000-01	W5603-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	16.96	%WET			0.01
GMP-AE-5006-0000-01	W5604-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	18.71	%WET			0.01
GMP-AE-5007-0000-01	W5605-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	16.85	%WET			0.01
GMP-AE-5008-0000-01	W5606-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	12.07	%WET			0.01
GMP-AE-5009-0000-01	W5607-D	BATD	NORMAL	06/22/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	13.80	%WET			0.01
RAB-AE-5001-0000-01	W5639-D	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	12.97	%WET			0.01
RAB-AE-5002-0000-01	W5640-D	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	8.21	%WET			0.01
RAB-AE-5003-0000-01	W5641-D	BATD	NORMAL	06/26/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	8.81	%WET			0.01
RAB-AE-5004-0000-01	W5646-D	BATD	NORMAL	06/27/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	11.94	%WET			0.01
RAB-AE-5005-0000-01	W5647-D	BATD	NORMAL	06/27/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	8.63	%WET			0.01
RAB-AE-5006-0000-01	W5655-D	BATD	NORMAL	07/02/01	08/15/01	08/17/01		01-376	Lipid Content		Wet	BATD_SOP_5_190	19.43	%WET			0.01
GMP-LB-5001-0000-01	W5608	BATD	NORMAL	06/22/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.93	%WET			0.01
GMP-LB-5001-0000-01	W5609	BATD	NORMAL	06/22/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	2.13	%WET			0.01
GMP-LB-5002-0000-01	W5610	BATD	NORMAL	06/22/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.39	%WET			0.01
GMP-LB-5002-0000-01	W5611	BATD	NORMAL	06/22/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	1.73	%WET			0.01
GMP-LB-5003-0000-01	W5612	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.63	%WET			0.01
GMP-LB-5003-0000-01	W5613	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	3.60	%WET			0.01
GMP-LB-5004-0000-01	W5614	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.39	%WET			0.01
GMP-LB-5004-0000-01	W5615	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	2.41	%WET			0.01
GMP-LB-5005-0000-01	W5616	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.73	%WET			0.01
GMP-LB-5005-0000-01	W5616-DUP	BATD	DUPLICATE	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.67	%WET			0.01
GMP-LB-5005-0000-01	W5617	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	4.96	%WET			0.01
GMP-LB-5005-0000-01	W5617DUP	BATD	DUPLICATE	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	5.35	%WET			0.01
GMP-LB-5006-0000-01	W5618	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.45	%WET			0.01
GMP-LB-5006-0000-01	W5619	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	3.64	%WET			0.01
GMP-LB-5007-0000-01	W5620	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.89	%WET			0.01
GMP-LB-5007-0000-01	W5621	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	2.55	%WET			0.01
GMP-LB-5008-0000-01	W5622	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.89	%WET			0.01
GMP-LB-5008-0000-01	W5623	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	3.71	%WET			0.01
GMP-LB-5009-0000-01	W5624	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.71	%WET			0.01
GMP-LB-5009-0000-01	W5625	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	1.63	%WET			0.01
GMP-LB-5010-0000-01	W5626	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	0.93	%WET			0.01
GMP-LB-5010-0000-01	W5627	BATD	NORMAL	06/25/01	08/27/01	08/29/01		01-377	Lipid Content		Wet	BATD_SOP_5_190	3.14	%WET			0.01
RAB-LB-5001-0000-01	W5633	BATD	NORMAL	06/26/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.90	%WET			0.01
RAB-LB-5001-0000-01	W5634	BATD	NORMAL	06/26/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	2.59	%WET			0.01
RAB-LB-5002-0000-01	W5635	BATD	NORMAL	06/26/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.74	%WET			0.01
RAB-LB-5002-0000-01	W5636	BATD	NORMAL	06/26/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	4.12	%WET			0.01
RAB-LB-5003-0000-01	W5642	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.84	%WET			0.01
RAB-LB-5003-0000-01	W5643	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	2.05	%WET			0.01
RAB-LB-5004-0000-01	W5644	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.57	%WET			0.01
RAB-LB-5004-0000-01	W5645	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	2.14	%WET			0.01
MAP-LB-4001-0000-01	W5648	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.46	%WET			0.01

SAMPLE_NO	LAB_ID	CRDL_CRQL	DIL_FACTOR	PCT_MOIST	COMMENTS	SAMPLE_SIZE	SAMPLE_SIZE_UNITS	FINAL_RESULT	FINAL_QUAL	VALID_COMMENT	FRACTION
LPX-LB-4007-0000-01	W5515		1.000		DCM Extractable Lipid	21.07	G_WET	1.01			F
LPX-LB-4007-0000-01	W5516		1.000		DCM Extractable Lipid	30.49	G_WET	4.15			O
LPX-LB-4008-0000-01	W5517		1.000		DCM Extractable Lipid	27.50	G_WET	0.35			F
LPX-LB-4008-0000-01	W5518		1.000		DCM Extractable Lipid	25.44	G_WET	1.63			O
LPX-LB-4009-0000-01	W5629		1.000		DCM Extractable Lipid	20.55	G_WET	0.73			F
LPX-LB-4009-0000-01	W5630		1.000		DCM Extractable Lipid	20.91	G_WET	5.21			O
LPX-LB-4010-0000-01	W5631		1.000		DCM Extractable Lipid	29.47	G_WET	0.53			F
LPX-LB-4010-0000-01	W5632		1.000		DCM Extractable Lipid	21.69	G_WET	2.52			O
GMP-AE-5001-0000-01	ZF19DUP-D		1.000		DCM Extractable Lipid	15.13	G_WET	4.56			W
GMP-AE-5010-0000-01	W5628-D		1.000		DCM Extractable Lipid	15.05	G_WET	19.79			W
GMP-AE-5001-0000-01	W5599-D		1.000		DCM Extractable Lipid	15.07	G_WET	4.34			W
GMP-AE-5002-0000-01	W5600-D		1.000		DCM Extractable Lipid	15.19	G_WET	13.37			W
GMP-AE-5003-0000-01	W5601-D		1.000		DCM Extractable Lipid	15.25	G_WET	13.24			W
GMP-AE-5004-0000-01	W5602-D		1.000		DCM Extractable Lipid	15.02	G_WET	15.62			W
GMP-AE-5005-0000-01	W5603-D		1.000		DCM Extractable Lipid	15.12	G_WET	16.96			W
GMP-AE-5006-0000-01	W5604-D		1.000		DCM Extractable Lipid	15.17	G_WET	18.71			W
GMP-AE-5007-0000-01	W5605-D		1.000		DCM Extractable Lipid	15.22	G_WET	16.85			W
GMP-AE-5008-0000-01	W5606-D		1.000		DCM Extractable Lipid	15.26	G_WET	12.07			W
GMP-AE-5009-0000-01	W5607-D		1.000		DCM Extractable Lipid	15.26	G_WET	13.80			W
RAB-AE-5001-0000-01	W5639-D		1.000		DCM Extractable Lipid	15.06	G_WET	12.97			W
RAB-AE-5002-0000-01	W5640-D		1.000		DCM Extractable Lipid	15.09	G_WET	8.21			W
RAB-AE-5003-0000-01	W5641-D		1.000		DCM Extractable Lipid	15.25	G_WET	8.81			W
RAB-AE-5004-0000-01	W5646-D		1.000		DCM Extractable Lipid	15.35	G_WET	11.94			W
RAB-AE-5005-0000-01	W5647-D		1.000		DCM Extractable Lipid	15.19	G_WET	8.63			W
RAB-AE-5006-0000-01	W5655-D		1.000		DCM Extractable Lipid	15.07	G_WET	19.43			W
GMP-LB-5001-0000-01	W5608		1.000		DCM Extractable Lipid	10.04	G_WET	0.93			F
GMP-LB-5001-0000-01	W5609		1.000		DCM Extractable Lipid	30.41	G_WET	2.13			O
GMP-LB-5002-0000-01	W5610		1.000		DCM Extractable Lipid	30.41	G_WET	0.39			F
GMP-LB-5002-0000-01	W5611		1.000		DCM Extractable Lipid	30.13	G_WET	1.73			O
GMP-LB-5003-0000-01	W5612		1.000		DCM Extractable Lipid	30.08	G_WET	0.63			F
GMP-LB-5003-0000-01	W5613		1.000		DCM Extractable Lipid	30.05	G_WET	3.60			O
GMP-LB-5004-0000-01	W5614		1.000		DCM Extractable Lipid	30.07	G_WET	0.39			F
GMP-LB-5004-0000-01	W5615		1.000		DCM Extractable Lipid	30.21	G_WET	2.41			O
GMP-LB-5005-0000-01	W5616		1.000		DCM Extractable Lipid	30.16	G_WET	0.73			F
GMP-LB-5005-0000-01	W5616-DUP		1.000		DCM Extractable Lipid	30.05	G_WET	0.67			F
GMP-LB-5005-0000-01	W5617		1.000		DCM Extractable Lipid	30.22	G_WET	4.96			O
GMP-LB-5005-0000-01	W5617DUP		1.000		DCM Extractable Lipid	30.07	G_WET	5.35			O
GMP-LB-5006-0000-01	W5618		1.000		DCM Extractable Lipid	20.62	G_WET	0.45			F
GMP-LB-5006-0000-01	W5619		1.000		DCM Extractable Lipid	30.45	G_WET	3.64			O
GMP-LB-5007-0000-01	W5620		1.000		DCM Extractable Lipid	30.01	G_WET	0.89			F
GMP-LB-5007-0000-01	W5621		1.000		DCM Extractable Lipid	30.26	G_WET	2.55			O
GMP-LB-5008-0000-01	W5622		1.000		DCM Extractable Lipid	30.04	G_WET	0.89			F
GMP-LB-5008-0000-01	W5623		1.000		DCM Extractable Lipid	30.21	G_WET	3.71			O
GMP-LB-5009-0000-01	W5624		1.000		DCM Extractable Lipid	10.55	G_WET	0.71			F
GMP-LB-5009-0000-01	W5625		1.000		DCM Extractable Lipid	30.55	G_WET	1.63			O
GMP-LB-5010-0000-01	W5626		1.000		DCM Extractable Lipid	10.31	G_WET	0.93			F
GMP-LB-5010-0000-01	W5627		1.000		DCM Extractable Lipid	30.57	G_WET	3.14			O
RAB-LB-5001-0000-01	W5633		1.000		DCM Extractable Lipid	10.36	G_WET	0.90			F
RAB-LB-5001-0000-01	W5634		1.000		DCM Extractable Lipid	29.28	G_WET	2.59			O
RAB-LB-5002-0000-01	W5635		1.000		DCM Extractable Lipid	12.55	G_WET	0.74			F
RAB-LB-5002-0000-01	W5636		1.000		DCM Extractable Lipid	23.71	G_WET	4.12			O
RAB-LB-5003-0000-01	W5642		1.000		DCM Extractable Lipid	10.69	G_WET	0.84			F
RAB-LB-5003-0000-01	W5643		1.000		DCM Extractable Lipid	16.21	G_WET	2.05			O
RAB-LB-5004-0000-01	W5644		1.000		DCM Extractable Lipid	30.05	G_WET	0.57			F
RAB-LB-5004-0000-01	W5645		1.000		DCM Extractable Lipid	29.90	G_WET	2.14			O
MAP-LB-4001-0000-01	W5648		1.000		DCM Extractable Lipid	29.46	G_WET	0.46			F

SAMPLE_NO	LAB_ID	LABORATORY	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	CASE	SDG	PARAMETER	CAS_NO	CLASS	METHOD	LAB_RESULT	UNITS	LAB_QUAL	IDL	MDL
MAP-LB-4001-0000-01	W5649	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	1.39	%WET			0.01
MAP-LB-4002-0000-01	W5650	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.41	%WET			0.01
MAP-LB-4002-0000-01	W5651	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	1.94	%WET			0.01
MAP-LB-4003-0000-01	W5652	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	0.78	%WET			0.01
MAP-LB-4003-0000-01	W5652DUP	BATD	DUPLICATE	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	1.40	%WET			0.01
MAP-LB-4003-0000-01	W5653	BATD	NORMAL	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	3.27	%WET			0.01
MAP-LB-4003-0000-01	W5653DUP	BATD	DUPLICATE	06/27/01	10/05/01	10/08/01		01-378	Lipid Content		Wet	BATD_SOP_5_190	3.09	%WET			0.01
GMP-WS-5007-0000-01	W5595DUP	BATD	DUPLICATE	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	13.46	%WET			0.01
GMP-WS-5002-0000-01	W5590	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	12.44	%WET			0.01
GMP-WS-5007-0000-01	W5595	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	13.79	%WET			0.01
GMP-WS-5001-0000-01	W5589	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	4.35	%WET			0.01
GMP-WS-5003-0000-01	W5591	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	13.13	%WET			0.01
GMP-WS-5004-0000-01	W5592	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	8.93	%WET			0.01
GMP-WS-5005-0000-01	W5593	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	8.69	%WET			0.01
GMP-WS-5006-0000-01	W5594	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	8.66	%WET			0.01
GMP-WS-5008-0000-01	W5596	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	14.88	%WET			0.01
GMP-WS-5009-0000-01	W5597	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	6.49	%WET			0.01
GMP-WS-5010-0000-01	W5598	BATD	NORMAL	06/22/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	12.28	%WET			0.01
RAB-BB-5001-0000-01	W5637	BATD	NORMAL	06/26/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	3.59	%WET			0.01
RAB-BB-5002-0000-01	W5638	BATD	NORMAL	06/26/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	1.61	%WET			0.01
RAB-BB-5003-0000-01	W5654	BATD	NORMAL	07/02/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	2.72	%WET			0.01
DYP-AE-4001-0000-01	W5656	BATD	NORMAL	07/02/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	11.63	%WET			0.01
DYP-AE-4002-0000-01	W5657	BATD	NORMAL	07/02/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	11.35	%WET			0.01
DYP-AE-4003-0000-01	W5658	BATD	NORMAL	07/02/01	10/11/01	10/15/01		01-379	Lipid Content		Wet	BATD_SOP_5_190	13.52	%WET			0.01

SAMPLE_NO	LAB_ID	CRDL_CRQL	DIL_FACTOR	PCT_MOIST	COMMENTS	SAMPLE_SIZE	SAMPLE_SIZE_UNITS	FINAL_RESULT	FINAL_QUAL	VALID_COMMENT	FRACTION
MAP-LB-4001-0000-01	W5649		1.000		DCM Extractable Lipid	30.63	G_WET	1.39			O
MAP-LB-4002-0000-01	W5650		1.000		DCM Extractable Lipid	29.51	G_WET	0.41			F
MAP-LB-4002-0000-01	W5651		1.000		DCM Extractable Lipid	30.01	G_WET	1.94			O
MAP-LB-4003-0000-01	W5652		1.000		DCM Extractable Lipid	10.42	G_WET	0.78			F
MAP-LB-4003-0000-01	W5652DUP		1.000		DCM Extractable Lipid	10.32	G_WET	1.40			F
MAP-LB-4003-0000-01	W5653		1.000		DCM Extractable Lipid	20.21	G_WET	3.27			O
MAP-LB-4003-0000-01	W5653DUP		1.000		DCM Extractable Lipid	20.10	G_WET	3.09			O
GMP-WS-5007-0000-01	W5595DUP		1.000		DCM Extractable Lipid	10.12	G_WET	13.46			W
GMP-WS-5002-0000-01	W5590		1.000		DCM Extractable Lipid	9.96	G_WET	12.44			W
GMP-WS-5007-0000-01	W5595		1.000		DCM Extractable Lipid	9.90	G_WET	13.79			W
GMP-WS-5001-0000-01	W5589		1.000		DCM Extractable Lipid	10.08	G_WET	4.35			W
GMP-WS-5003-0000-01	W5591		1.000		DCM Extractable Lipid	10.12	G_WET	13.13			W
GMP-WS-5004-0000-01	W5592		1.000		DCM Extractable Lipid	10.11	G_WET	8.93			W
GMP-WS-5005-0000-01	W5593		1.000		DCM Extractable Lipid	9.98	G_WET	8.69			W
GMP-WS-5006-0000-01	W5594		1.000		DCM Extractable Lipid	10.18	G_WET	8.66			W
GMP-WS-5008-0000-01	W5596		1.000		DCM Extractable Lipid	10.08	G_WET	14.88			W
GMP-WS-5009-0000-01	W5597		1.000		DCM Extractable Lipid	10.03	G_WET	6.49			W
GMP-WS-5010-0000-01	W5598		1.000		DCM Extractable Lipid	9.94	G_WET	12.28			W
RAB-BB-5001-0000-01	W5637		1.000		DCM Extractable Lipid	9.43	G_WET	3.59			W
RAB-BB-5002-0000-01	W5638		1.000		DCM Extractable Lipid	9.86	G_WET	1.61			W
RAB-BB-5003-0000-01	W5654		1.000		DCM Extractable Lipid	10.02	G_WET	2.72			W
DYP-AE-4001-0000-01	W5656		1.000		DCM Extractable Lipid	10.14	G_WET	11.63			W
DYP-AE-4002-0000-01	W5657		1.000		DCM Extractable Lipid	10.10	G_WET	11.35			W
DYP-AE-4003-0000-01	W5658		1.000		DCM Extractable Lipid	10.03	G_WET	13.52			W

Section 8
Third Party Validation Report

Validator findings reported here may include results from non-fish samples (e.g., tree swallow). Only validator findings specific to fish samples are applicable to this data report.

Steve Stodola
US EPA Approval Signature

June 25, 2002
Date

May 10, 2002
B-02-05-Y-2
Revised: June 17, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, MA 01863

Re: TO No. 010, Task No. 2, TDF No. 0601
Case No. Whole Body Fish B1OF2, SDG No. 48985-35 PCB
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

209 PCB Congeners: 7/Tissue/APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01, LPX-WS-4009-0000-01

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the 209 PCB congeners analytical data for seven whole body fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1668A, December 1999, as outlined in the Centredale Manor Tasks 19-22 QAPP (5/23/01). The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1668A, December 1999, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team PCB Congener Data Validation ESAT-01-0008 Draft (8/31/01). The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks

- Matrix Spike/Matrix Spike Duplicate
- * Laboratory Control Sample
- Laboratory and Field Duplicates
- Internal/Clean-up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
- * Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

The following information was used to generate the Data Validation Memorandum attachments:

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

Overall Evaluation of Data and Potential Usability Issues

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). Five out of five congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for all congeners in all samples were estimated (J, UJ) due to the possibility of biased low results.

The method blank had low level contamination. However, the concentration in the method blanks was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to submit MS/MSD and duplicate precision spreadsheets with the concentrations and RPDs reported.

Item 1 was requested via the TOPO on April 17, 2002. Item 1 was received via the TOPO on April 29, 2002. All items were adequately addressed.

PE Samples/Accuracy Check

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). Five out of five congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-35-25 FISH SRM) results which did not meet the criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D from consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	PCB-77	55	J	UJ
CIL EDF 2526	PCB-105	54	J	UJ
CIL EDF 2526	PCB-118	34	J	UJ
CIL EDF 2526	PCB-126	64	J	UJ
CIL EDF 2526	PCB-169	58	J	UJ

Since all of the congeners had low recoveries, and had large %Ds, the results for all PCB congeners in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Calibration Verification (VER) results which did not meet Method 1668A recovery criterion listed below and the resulting sample qualifications:

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
09/28/01 (Ending)	$^{13}C_{12}$-PCB-114	153	25-150	J	UJ	APC-WS-4007-0000-01, APC-WS-4008-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01
09/28/01 (Ending)	$^{13}C_{12}$-PCB-126	157	25-150	J	UJ	APC-WS-4007-0000-01, APC-WS-4008-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01
11/11/01 (Beginning)	$^{13}C_{12}$-PCB-81	171	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Beginning)	$^{13}C_{12}$-PCB-77	176	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Beginning)	$^{13}C_{12}$-PCB-114	154	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Beginning)	$^{13}C_{12}$-PCB-105	155	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Beginning)	$^{13}C_{12}$-PCB-126	172	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Ending)	$^{13}C_{12}$-PCB-81	159	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Ending)	$^{13}C_{12}$-PCB-77	167	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Ending)	$^{13}C_{12}$-PCB-105	153	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01
11/11/01 (Ending)	$^{13}C_{12}$-PCB-126	163	25-150	J	UJ	APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4009-0000-01

The data associated with recoveries of noncompliant calibration verifications are qualified due to the high variability. The quantitation of the associated analytes in the samples could be biased.

Chromatographic Resolution

Many PCB congeners coeluted on the SPB-Octyl gas chromatography column used for this project. This situation was documented in Centredale Manor Tasks 19-22 QAPP (5/23/01). The laboratory reported the coeluting concentrations as totals. These totals are reported on the Data Summary Tables in this report and are not affected by the coelution of the congeners. Three of the "toxic congeners" with TEF values coeluted: PCB-123, PCB-156, and PCB-157.

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-12, PCB-13	PCB-12/PCB-13
PCB-18, PCB-30	PCB-18/PCB-30
PCB-20, PCB-21, PCB-28, PCB-33	PCB-20/PCB-21/PCB-28/PCB-33
PCB-24, PCB-27	PCB-24/PCB-27
PCB-26, PCB-29	PCB-26/PCB-29
PCB-40, PCB-41, PCB-71	PCB-40/PCB-41/PCB-71
PCB-43, PCB-52, PCB-73	PCB-43/PCB-52/PCB-73
PCB-44, PCB-47, PCB-65	PCB-44/PCB-47/PCB-65
PCB-45, PCB-51	PCB-45/PCB-51
PCB-49, PCB-69	PCB-49/PCB-69
PCB-50, PCB-53	PCB-50/PCB-53
PCB-59, PCB-62, PCB-75	PCB-59/PCB-62/PCB-75
PCB-61, PCB-70, PCB-74, PCB-76	PCB-61/PCB-70/PCB-74/PCB-76
PCB-83, PCB-99	PCB-83, PCB-99
PCB-85, PCB-116, PCB-117	PCB-85/PCB-116/PCB-117
PCB-86, PCB-87, PCB-97, PCB-109, PCB-119, PCB-125	PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125
PCB-90, PCB-101, PCB-113	PCB-90/PCB-101/PCB-113
PCB-88, PCB-91	PCB-88/PCB-91
PCB-93, PCB-95, PCB-98, PCB-100, PCB-102	PCB-93/PCB-95/PCB-98/PCB-100/PCB-102
PCB-108, PCB-124	PCB-108/PCB-124
PCB-110, PCB-115	PCB-110/PCB-115
PCB-106, PCB-107, PCB-123	PCB-106/PCB-107/2'344'5-PentaCB (#123)
PCB-128, PCB-166	PCB-128/PCB-166
PCB-129, PCB-138, PCB-160, PCB-163	PCB-129/PCB-138/PCB-160/PCB-163
PCB-134, PCB-143	PCB-134/PCB-143
PCB-135, PCB-151, PCB-154	PCB-135/PCB-151/PCB-154

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-137, PCB-164	PCB-137/PCB-164
PCB-146, PCB-161	PCB-146/PCB-161
PCB-147, PCB-149	PCB-147/PCB-149
PCB-153, PCB-168	PCB-153/PCB-168
PCB-156, PCB-157	233'44'5-HexaCB(#156)/233'44'5'-HexaCB(#157)
PCB-171, PCB-173	PCB-171/PCB-173
PCB-180, PCB-193	PCB-180/PCB-193
PCB-198, PCB-199	PCB-198/PCB-199

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following table lists the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
PCB-1	Method Blank (9/28/01)	6.7	34	APC-WS-4008-0000-01, GMP-WS-5001-0000-01
PCB-3	Method Blank (9/28/01)	6.6	33	APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01
PCB-46	Method Blank (9/28/01)	40	200	GMP-WS-5001-0000-01

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team PCB Congener data Validation ESAT-01-0008 Draft (8/31/01) criteria. Blank action levels are calculated as five times the highest concentration of the contaminant determined in any blank. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: APC-WS-4009-0000-01MS/APC-WS-4009-0000-01MSD.

The table below summarizes the MS/MSD results which did not meet the recovery criteria of 50-150% and/or Relative Percent Difference (RPD) ≤ 30% as specified in the Centredale Manor Tasks 19-22 QAPP (5/23/01).

APC-WS-4009-0000-01					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
PCB-81	155	164	6*	J	A

* RPD was acceptable.

No further action was required for PCB-81 since this congener was non-detected in sample APC-WS-4009-0000-01.

Laboratory and Field Duplicates

One laboratory duplicate pair was evaluated for this SDG (LPX-WS-4009-0000-01/LPX-WS-4009-0000-01Dup).

The table below summarizes the laboratory duplicate results which did not meet the duplicate criterion of Relative Percent Difference (RPD) < 30% as specified by Centredale Manor Tasks 19-22 QAPP (5/23/01).

Congener	LPX-WS-4009-0000-01	LPX-WS-4009-0000-01Dup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-3	61	22	93	J	UJ	All
PCB-4	530	737	33	J	UJ	All
PCB-5	22	10	75	J	UJ	All
PCB-6	322	485	40	J	UJ	All
PCB-7	44	75	51	J	UJ	All
PCB-8	1160	1740	40	J	UJ	All
PCB-9	104	194	60	J	UJ	All
PCB-16	1180	1720	37	J	UJ	All
PCB-17	1760	3030	53	J	UJ	All

Congener	LPX-WS-4009-0000-01	LPX-WS-4009-0000-01Dup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-18/PCB-30	2370	4000	51	J	UJ	All
PCB-19	434	629	36	J	UJ	All
PCB-20/PCB-21/PCB-28/PCB-33	12100	21400	55	J	UJ	All
PCB-22	2330	3420	38	J	UJ	All
PCB-24/PCB-27	367	559	42	J	UJ	All
PCB-25	136	225	49	J	UJ	All
PCB-26/PCB-29	695	1180	52	J	UJ	All
PCB-31	4000	7020	55	J	UJ	All
PCB-32	1080	1800	50	J	UJ	All
PCB-40/PCB-41/PCB-71	6340	9340	38	J	UJ	All
PCB-42	5700	8380	38	J	UJ	All
PCB-43/PCB-52/PCB-73	13000	21700	50	J	UJ	All
PCB-44/PCB-47/PCB-65	7070	12200	53	J	UJ	All
PCB-45/PCB-51	1950	2820	37	J	UJ	All
PCB-48	2110	3340	45	J	UJ	All
PCB-49/PCB-69	14800	25000	51	J	UJ	All
PCB-50/53	1590	2370	40	J	UJ	All
PCB-59/PCB-62/PCB-75	15000	22400	39	J	UJ	All
PCB-60	3190	4680	38	J	UJ	All
PCB-63	893	1520	52	J	UJ	All
PCB-64	10000	15600	43	J	UJ	All

Congener	LPX-WS-4009-0000-01	LPX-WS-4009-0000-01Dup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-66	27600	41500	40	J	UJ	All
PCB-61/PCB-70/PCB-74/PCB-76	32100	52700	48	J	UJ	All
PCB-77	648	964	39	J	UJ	All
PCB-83/PCB-99	51100	77700	41	J	UJ	All
PCB-85/PCB-116/PCB-117	6870	10100	38	J	UJ	All
PCB-90/PCB-101/PCB-113	70200	106000	41	J	UJ	All
PCB-88/PCB-91	9200	13000	34	J	UJ	All
PCB-92	10000	15200	41	J	UJ	All
PCB-105	15800	22200	34	J	UJ	All
PCB-108/PCB-124	2390	3540	39	J	UJ	All
PCB-118	74100	102000	32	J	UJ	All
PCB-106/PCB-107/PCB-123	37100	12200	100	J	UJ	All
PCB-126	100	162	48	J	UJ	All
PCB-129/PCB-138/PCB-160/PCB-163	96500	138000	36	J	UJ	All
PCB-130	5570	8070	37	J	UJ	All
PCB-135/PCB-151/PCB-154	10000	15600	43	J	UJ	All
PCB-137/PCB-164	9780	13800	34	J	UJ	All
PCB-141	7920	11700	39	J	UJ	All
PCB-144	1530	2400	44	J	UJ	All
PCB-146/PCB-161	9580	15400	46	J	UJ	All

Congener	LPX-WS-4009-0000-01	LPX-WS-4009-0000-01Dup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-147/PCB-149	44400	62300	34	J	UJ	All
PCB-153/PCB-168	62600	99100	45	J	UJ	All
PCB-156/PCB-157	7760	11800	41	J	UJ	All
PCB-158	8740	13200	40	J	UJ	All
PCB-167	3260	4790	38	J	UJ	All
PCB-172	1500	2160	36	J	UJ	All
PCB-175	220	327	39	J	UJ	All
PCB-176	1790	650	93	J	UJ	All
PCB-177	11800	4960	82	J	UJ	All
PCB-178	2890	1700	52	J	UJ	All
PCB-182	99	200	68	J	UJ	All
PCB-185	1110	655	52	J	UJ	All
PCB-190	3910	2700	36	J	UJ	All
PCB-191	617	447	32	J	UJ	All
PCB-194	4490	3190	34	J	UJ	All
PCB-195	1940	891	74	J	UJ	All
PCB-196	2720	1860	38	J	UJ	All
PCB-198/PCB-199	16600	11400	37	J	UJ	All
PCB-200	670	240	94	J	UJ	All
PCB-201	981	720	31	J	UJ	All
PCB-205	226	160	34	J	UJ	All
PCB-209	9680	6800	35	J	UJ	All

Professional judgment was used to estimate (J, UJ) results for all PCB congeners in all samples since greater than 50% of all PCB congeners had laboratory duplicate precision outside criterion.

Internal/Clean-up Standards

- Internal Standards

The following table summarizes the internal standard recoveries that did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) acceptance criterion of 25-150%:

Standard	% Recovery	Action		Affected Sample
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-155	19	J	UJ	APC-WS-4007-0000-01
$^{13}C_{12}$-PCB-209	20	J	UJ	APC-WS-4007-0000-01
$^{13}C_{12}$-PCB-155	18	J	UJ	APC-WS-4008-0000-01
$^{13}C_{12}$-PCB-206	23	J	UJ	APC-WS-4008-0000-01
$^{13}C_{12}$-PCB-208	23	J	UJ	APC-WS-4008-0000-01
$^{13}C_{12}$-PCB-209	14	J	UJ	APC-WS-4008-0000-01
$^{13}C_{12}$-PCB-54	14	J	UJ	APC-WS-4009-0000-01
$^{13}C_{12}$-PCB-155	14	J	UJ	LPX-WS-4007-0000-01
$^{13}C_{12}$-PCB-208	21	J	UJ	LPX-WS-4007-0000-01
$^{13}C_{12}$-PCB-209	17	J	UJ	LPX-WS-4007-0000-01
$^{13}C_{12}$-PCB-209	22	J	UJ	LPX-WS-4008-0000-01

The corresponding non-labeled congener results are estimated as shown in the table due to internal standard percent recoveries outside method acceptance criterion.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. The validated data accounts for blank contamination. The TE calculations include the reported EMPC values. The fish TEF

values for the PCBs are published in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number 12, December 1998, Table 2, page 780.

System Performance

No trends noted.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

FOR

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

EPA-NE - Data Validation Worksheet
Overall Evaluation of Data - Data Validation Memorandum - Table II

PCB ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: 1,2,3,4,5	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). Five out of five congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for all congeners in all samples were estimated (J, UJ) due to the possibility of biased low results. The method blank had low level contamination. However, the concentration in the method blanks was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.
** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 6/17/02

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B1OF2/SDG No. 48985-35 PCB

Sample Nos.	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01
Compound							
PCB-1	J[1,2]	J[1,2,3]	J[1,2]	J[1,2,3]	J[1,2]	J[1,2]	J[1,2]
PCB-3	J[1,2,3]	J[1,2,3]	J[1,2,3]	J[1,2,3]	J[1,2,3]	J[1,2,3]	J[1,2]
PCB-4	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-5	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-6	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-7	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-8	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-9	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-10	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-12/PCB-13	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-16	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-17	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-18/PCB-30	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-19	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-20/PCB-21/PCB-28/PCB-33	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-22	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-24/PCB-27	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-25	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B1OF2/SDG No. 48985-35 PCB

Sample Nos.	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01
Compound							
PCB-26/PCB-29	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-31	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-32	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-40/PCB-41/PCB-71	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-42	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-43/PCB-52/PCB-73	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-44/PCB-47/PCB-65	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-45/PCB-51	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-46	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,3,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-48	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-49/PCB-69	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-50/PCB-53	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-56	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-59/PCB-62/PCB-75	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-60	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-63	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-64	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-66	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-61/PCB-70/PCB-74/PCB-76	J[1,2]	J[1,2]	J[1,2,4,5]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B1OF2/SDG No. 48985-35 PCB

Sample Nos.	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01
Compound							
33'44'-TetraCB (#77)	J[1,2]	J[1,2]	J[1,2,4]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
344'5-TetraCB (#81)	J[1,2]	J[1,2]	J[1,2,4]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-82	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-83/PCB-99	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-84	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-85/PCB-116/PCB-117	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-89	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-90/PCB-101/PCB-113	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-88/PCB-91	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-92	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
233'44'-PentaCB (#105)	J[1,2]	J[1,2]	J[1,2,4]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,4]
PCB-108/PCB-124	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-110/PCB-115	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
2344'5-PentaCB (#114)	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
23'44'5-PentaCB (#118)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B1OF2/SDG No. 48985-35 PCB

Sample Nos.	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01
Compound							
PCB-106/PCB-107/2'344'5-PentaCB (#123)	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
33'44'5-PentaCB (#126)	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-128/PCB-166	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-129/PCB-138/PCB-160/PCB-163	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-130	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-131	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-132	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-134/PCB-143	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-135/PCB-151/PCB-154	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-136	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-137/PCB-164	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-141	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-144	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-146/PCB-161	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-147/PCB-149	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-153/PCB-168	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
233'44'5-HexaCB (#156)/233'44'5'-HexaCB (#157)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B1OF2/SDG No. 48985-35 PCB

Sample Nos.	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01
Compound							
PCB-158	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
23'44'55'-HexaCB (#167)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
33'44'55'-HexaCB (#169)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-170	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-171/PCB-173	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-172	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-174	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-175	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-176	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-177	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-178	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-180/PCB-193	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-182	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-183	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-184	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-185	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-187	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
233'44'55'-HeptaCB (#189)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-190	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B1OF2/SDG No. 48985-35 PCB

Sample Nos.	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01
Compound							
PCB-191	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-194	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-195	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-196	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-197	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-198/PCB-199	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-200	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-201	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-203	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-205	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-206	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-207	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2]	J[1,2]
PCB-209	J[1,2,5]	J[1,2,5]	J[1,2]	J[1,2]	J[1,2,5]	J[1,2,5]	J[1,2]

Table I
Recommendation Summary Table for PCB Congeners

A	-	Accept all results.
J[1]	-	PE %D outside criterion; J detects, UJ non-detects.
J[2]	-	Laboratory duplicate precision outside criterion; J detects, UJ non-detects.
J[3]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
J[4]	-	VER recoveries outside criterion; J detects, UJ non-detects.
J[5]	-	Internal standard recoveries outside criterion; J detects, UJ non-detects.

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B1OF2
LABORATORY: BATTELLE

SDG No. 46965-36 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-WS-4007-0000-01		APC-WS-4008-0000-01		APC-WS-4009-0000-01		GMP-WS-6001-0000-01	
STATION LOCATION:		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		GREYSTONE MILL POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-1		95.19 J		UJ	31.94	69.19 J		UJ	16.23
PCB-3		UJ	20.93	UJ	15.14	UJ	14.60	UJ	10.66
PCB-4		218.08 J		205.92 J		305.34 J		103.12 J	
PCB-5		13.50 J		10.55 J		UJ	9.93	UJ	9.94
PCB-6		187.77 J		189.90 J		304.99 J		74.72 J	
PCB-7		31.20 J		22.59 J		80.60 J		15.48 J	
PCB-8		867.24 J		733.17 J		1264.53 J		205.37 J	
PCB-9		67.52 J		54.29 J		115.85 J		34.79 J	
PCB-10		14.51 J		13.27 J		29.99 J		9.48 J	
PCB-12/PCB-13		10.86 J		11.10 J		10.00 J		11.10 J	
PCB-16		719.56 J		910.54 J		519.34 J		292.02 J	
PCB-17		1024.59 J		1318.30 J		1166.51 J		449.08 J	
PCB-18/PCB-30		1330.64 J		1633.82 J		1689.14 J		685.02 J	
PCB-19		155.76 J		216.48 J		266.43 J		91.18 J	
PCB-20/PCB-21/PCB-28/PCB-33		8826.32 J		10982.32 J		8422.56 J		4129.98 J	
PCB-22		1644.63 J		1905.73 J		1585.12 J		877.33 J	
PCB-24/PCB-27		189.84 J		252.32 J		198.02 J		83.94 J	
PCB-25		169.71 J		138.21 J		138.92 J		95.49 J	
PCB-26/PCB-29		739.80 J		684.44 J		595.40 J		343.86 J	
PCB-31		3595.07 J		3284.15 J		3456.33 J		2270.52 J	
PCB-32		772.81 J		1075.13 J		800.48 J		254.18 J	
PCB-40/PCB-41/PCB-71		3003.03 J		4593.48 J		4777.89 J		1974.15 J	
PCB-42		1998.19 J		3178.54 J		3596.29 J		1382.68 J	
PCB-43/PCB-52/PCB-73		4503.67 J		6174.97 J		11114.85 J		4089.38 J	
PCB-44/PCB-47/PCB-65		7706.28 J		12527.06 J		5518.09 J		2013.12 J	
PCB-45/PCB-51		842.24 J		1332.70 J		1228.12 J		366.00 J	
PCB-46		258.85 J		415.25 J		377.67 J		UJ	126.15
PCB-48		1116.99 J		1440.76 J		2913.85 J		692.57 J	
PCB-49/PCB-69		6032.26 J		9657.22 J		11931.42 J		4453.14 J	
PCB-50/PCB-53		764.86 J		1346.84 J		875.32 J		367.20 J	
PCB-56		1951.51 J		3348.01 J		2885.60 J		2129.15 J	
PCB-59/PCB-62/PCB-75		657.47 J		1036.80 J		10416.63 J		4286.81 J	
PCB-60		1119.38 J		1747.26 J		2822.64 J		2050.01 J	
PCB-63		298.82 J		416.86 J		701.51 J		480.81 J	
PCB-64		3492.32 J		5467.51 J		6927.08 J		3146.15 J	
PCB-68		10358.84 J		13943.24 J		18247.41 J		8947.18 J	
PCB-61/PCB-70/PCB-74/PCB-76		12199.58 J		17479.48 J		22021.72 J		16488.68 J	
3,3',4,4'-TetraCB (#77)	0.0001	100.84 J		181.53 J		337.26 J		403.88 J	
3,4,4',5-TetraCB (#81)	0.0005	649.80 J		UJ	99.14	UJ	99.34	261.19 J	
PCB-82		2653.21 J		4368.74 J		4839.80 J		1984.49 J	
PCB-83/PCB-99		18785.58 J		22841.99 J		35209.96 J		13738.62 J	
PCB-84		3643.93 J		6186.86 J		6318.92 J		2682.68 J	
PCB-86/PCB-116/PCB-117		7878.65 J		5588.08 J		4976.85 J		1873.98 J	
PCB-88/PCB-107/PCB-97/PCB-109/PCB-119/PCB-125		22226.10 J		31764.36 J		37118.96 J		13580.82 J	
PCB-89		149.95 J		271.97 J		UJ	99.34	103.64 J	
PCB-90/PCB-101/PCB-113		24656.43 J		35647.28 J		46021.89 J		19298.12 J	
PCB-95/PCB-91		3740.88 J		7992.62 J		5237.76 J		2063.08 J	
PCB-92		3466.81 J		7315.08 J		8247.51 J		3017.32 J	
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		15317.26 J		40632.48 J		25992.75 J		8668.25 J	
2,3,3',4,4'-PentaCB (#105)	<0.000005	9990.39 J		19651.09 J		12309.64 J		6295.81 J	
PCB-108/PCB-124		1124.82 J		1344.22 J		1543.62 J		847.66 J	

...e Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centralia Mixer - N. Providence, RI
CASE NO. Whole Body Fish E1CF2
LABORATORY: BATTELLE

SDG No. 48985-35 PCB

SAMPLE NUMBER	Toxicity Equivalency Factors (1)	APC-WB-4037-0000-01		APC-WB-4038-0000-01		APC-WB-4039-0000-01		GMA-WB-5801-0000-01	
STATION LOCATION		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		GREYSTONE MILL POND	
MATRIX		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-110/PCB-115		4343.64 J		76293.50 J		30948.98 J		11749.50 J	
2,3,4,4',5-PentaCB (#114)	< 0.000005	632.39 J		741.87 J		1051.69 J		611.74 J	
2,3',4,4',5-PentaCB (#118)	< 0.000005	41572.09 J		43094.82 J		61623.99 J		21625.15 J	
PCB-106/PCB-107/2',3,4,4',5-PentaCB (#123)	< 0.000005	4172.00 J		4364.85 J		5352.69 J		2569.65 J	
3,3',4,4',5-PentaCB (#126)	0.005	30.85 J		124.82 J		53.81 J		33.58 J	
PCB-128/PCB-166		12654.76 J		12878.08 J		10132.95 J		4121.40 J	
PCB-129/PCB-138/PCB-160/PCB-163		95573.72 J		108145.52 J		85175.43 J		29010.64 J	
PCB-130		3095.83 J		6126.76 J		3546.67 J		1736.19 J	
PCB-131		678.03 J		950.16 J		UJ	92.34	202.92 J	
PCB-132		13905.20 J		23409.28 J		13735.34 J		4773.51 J	
PCB-134/PCB-143		935.32 J		3435.74 J		1258.63 J		680.45 J	
PCB-135/PCB-151/PCB-154		4872.46 J		22981.35 J		5873.87 J		3935.22 J	
PCB-136		1805.10 J		8880.17 J		2028.72 J		758.54 J	
PCB-137/PCB-164		7545.14 J		11488.00 J		7265.64 J		2657.45 J	
PCB-141		4582.58 J		6506.18 J		6896.41 J		2852.23 J	
PCB-144		1205.37 J		1223.65 J		1122.95 J		513.74 J	
PCB-145/PCB-161		6510.60 J		7632.78 J		7269.70 J		3428.90 J	
PCB-147/PCB-149		44317.64 J		107777.42 J		31589.90 J		11654.42 J	
PCB-153/PCB-168		58581.06 J		34810.60 J		48884.84 J		22635.04 J	
2,3,3',4,4',5-HexaCB (#156)/2,3,3',4,4',5'-HexaCB (#157)	< 0.000005	6695.22 J		5174.28 J		6817.74 J		2514.84 J	
PCB-158		6403.45 J		5339.49 J		6298.61 J		2804.58 J	
2,3',4,4',5,5'-HexaCB (#167)	< 0.000005	3428.47 J		2651.80 J		2282.97 J		943.38 J	
3,3',4,4',5,5'-HexaCB (#169)	< 0.000005	78.25 J		65.01 J		UJ	98.34	372.29 J	
PCB-170		8682.25 J		8253.04 J		6247.52 J		3567.22 J	
PCB-171/PCB-173		2680.25 J		2854.82 J		1770.72 J		968.38 J	
PCB-172		1332.46 J		1142.13 J		1287.71 J		570.26 J	
PCB-174		3750.47 J		7810.81 J		2789.52 J		3178.23 J	
PCB-175		173.85 J		166.77 J		178.42 J		202.69 J	
PCB-176		480.84 J		604.83 J		343.83 J		247.21 J	
PCB-177		3021.89 J		6316.97 J		2456.17 J		2247.49 J	
PCB-178		1268.87 J		1840.79 J		1035.35 J		1528.27 J	
PCB-179/PCB-193		11820.32 J		10097.54 J		11168.14 J		8452.14 J	
PCB-182		UJ	100.50	UJ	196.25	UJ	188.67	UJ	100.70
PCB-183		2557.13 J		2192.25 J		2576.13 J		2028.71 J	
PCB-184		15.26 J		14.65 J		14.83 J		35.98 J	
PCB-185		416.54 J		496.40 J		393.80 J		342.04 J	
PCB-187		15881.82 J		23158.62 J		8867.28 J		5634.27 J	
2,3,3',4,4',5,5'-HexaCB (#189)	< 0.000005	222.07 J		209.53 J		186.94 J		165.05 J	
PCB-190		2122.02 J		1518.25 J		1524.30 J		1968.47 J	
PCB-191		238.20 J		201.44 J		221.77 J		141.34 J	
PCB-194		2080.66 J		1734.37 J		1472.00 J		2581.58 J	
PCB-195		757.40 J		727.11 J		428.84 J		517.88 J	
PCB-196		1070.65 J		934.67 J		802.48 J		3597.32 J	
PCB-197		UJ	198.53	58.49 J		73.47 J		235.19 J	
PCB-198/PCB-199		15837.94 J		14418.73 J		7653.28 J		22653.70 J	
PCB-200		152.15 J		251.76 J		125.75 J		344.56 J	
PCB-201		441.80 J		328.50 J		434.04 J		1585.46 J	
PCB-203		3486.42 J		2610.72 J		3228.69 J		12308.11 J	
PCB-205		124.02 J		124.72 J		58.98 J		257.18 J	
PCB-206		12021.06 J		9168.06 J		4852.79 J		27220.18 J	
PCB-207		878.06 J		491.41 J		828.45 J		2858.68 J	
PCB-208		5378.60 J		4374.16 J		3654.72 J		19279.02 J	
TOTAL PCB		322442.86 J		375013.79 J		301240.31 J		360048.45 J	
TOXIC EQUIVALENCY(1):		1.1 J		0.96 J		0.83 J		0.52 J	
PERCENT SOLIDS:		29.9		27.2		27.4		39.5	
PERCENT LIPIDS:		6.00		5.38		6.82		4.35	
DILUTION FACTOR:		1		1		1		1	
DATE SAMPLED:		05/20/01		05/20/01		05/20/01		06/22/01	
DATE OF RECEIPT:		05/21/01		05/21/01		05/21/01		06/26/01	
SAMPLE EXTRACTION DATE:		09/07/01		09/07/01		09/07/01		09/07/01	
ANALYSIS DATE:		09/28/01		09/28/01		11/11/01		11/11/01	
LABORATORY SAMPLE ID.:		48985-35-17		48985-35-18		48985-35-22		48985-35-19	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B1OF2
LABORATORY: BATTELLE

SDG No. 48985-36 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-WS-4007-0000-01		LPX-WS-4008-0000-01		LPX-WS-4009-0000-01	
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-1		160.58 J		73.12 J		96.04 J	
PCB-3		UJ	16.17	UJ	15.88	61.19 J	
PCB-4		658.12 J		562.91 J		529.67 J	
PCB-5		21.26 J		24.53 J		22.06 J	
PCB-6		316.50 J		284.97 J		321.79 J	
PCB-7		44.40 J		46.23 J		44.39 J	
PCB-8		1088.94 J		959.42 J		1162.79 J	
PCB-9		100.89 J		115.06 J		103.88 J	
PCB-10		48.09 J		UJ	9.95	65.47 J	
PCB-12/PCB-13		13.60 J		UJ	19.91	UJ	19.96
PCB-16		1773.08 J		1680.90 J		1183.70 J	
PCB-17		2358.40 J		2172.83 J		1769.36 J	
PCB-18/PCB-30		3317.65 J		3222.30 J		2372.12 J	
PCB-19		500.25 J		463.17 J		434.54 J	
PCB-20/PCB-21/PCB-28/PCB-33		20959.72 J		18611.48 J		12142.60 J	
PCB-22		2648.31 J		2003.50 J		2331.34 J	
PCB-24/PCB-27		536.62 J		479.62 J		357.04 J	
PCB-25		217.29 J		175.73 J		136.43 J	
PCB-26/PCB-29		1064.52 J		1031.86 J		694.86 J	
PCB-31		4491.68 J		4609.48 J		3999.27 J	
PCB-32		1936.56 J		1672.84 J		1053.91 J	
PCB-40/PCB-41/PCB-71		12367.14 J		9351.51 J		6340.68 J	
PCB-42		6184.26 J		6051.43 J		5704.87 J	
PCB-43/PCB-52/PCB-73		18552.92 J		18660.31 J		12951.65 J	
PCB-44/PCB-47/PCB-65		31064.92 J		26284.68 J		7055.21 J	
PCB-45/PCB-51		2704.16 J		2298.40 J		1946.52 J	
PCB-46		854.87 J		711.92 J		656.29 J	
PCB-48		3044.97 J		2561.97 J		2110.26 J	
PCB-49/PCB-69		23844.76 J		21703.98 J		14811.16 J	
PCB-50/PCB-53		2860.22 J		2328.60 J		1586.56 J	
PCB-58		6978.16 J		4999.60 J		5398.54 J	
PCB-59/PCB-62/PCB-75		2394.12 J		2140.02 J		15044.76 J	
PCB-60		4230.45 J		3167.60 J		3190.07 J	
PCB-63		1223.87 J		1162.62 J		992.89 J	
PCB-64		13134.71 J		10506.38 J		18040.63 J	
PCB-66		52905.14 J		42873.20 J		27667.63 J	
PCB-67/PCB-70/PCB-74/PCB-76		44100.44 J		37846.16 J		32145.28 J	
3,3',4,4'-TetraCB (#77)	0.0001	819.57 J		596.37 J		648.22 J	
3,4,4',5-TetraCB (#81)	0.0005	1606.06 J		UJ	99.63	UJ	99.76
PCB-82		12690.38 J		6780.20 J		8425.85 J	
PCB-83/PCB-99		52335.64 J		61763.65 J		51079.94 J	
PCB-84		18116.99 J		12079.74 J		12235.65 J	
PCB-86/PCB-116/PCB-117		25824.32 J		19891.05 J		6872.32 J	
PCB-87/PCB-97/PCB-108/PCB-119/PCB-125		86310.06 J		64322.28 J		55977.36 J	
PCB-89		712.52 J		479.39 J		467.16 J	
PCB-90/PCB-101/PCB-113		180328.49 J		87094.80 J		70209.54 J	
PCB-91/PCB-91		14955.88 J		11012.86 J		9199.70 J	
PCB-92		13127.33 J		11918.86 J		10916.59 J	
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		58543.35 J		42038.30 J		36373.40 J	
2,3,3',4,4'-PentaCB (#105)	<0.000005	27145.43 J		23523.30 J		16782.11 J	
PCB-106/PCB-124		3533.74 J		2219.02 J		2393.36 J	

Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B10F2 SDG No. 48985-35 PCB
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPXANB-4207-0000-01		LPXANB-4208-0000-01		LPXANB-4209-0000-01			
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND			
MATRIX:		TISSUE		TISSUE		TISSUE			
		ng/g	DL/EMPC*	ng/g	DL/EMPC*	ng/g	DL/EMPC*		
PCB-110/PCB-115		144535.26 J		98083.84 J		54120.27 J			
2,3,4,4',5-PentaCB (#114)	< 0.000005	2273.99 J		1328.61 J		1494.79 J			
2,3',4,4',5-PentaCB (#118)	< 0.000005	126825.54 J		123865.47 J		74203.79 J			
PCB-106/PCB-107/2,3,4,4',5-PentaCB (#123)	< 0.000005	12742.05 J		10681.38 J		37121.25 J			
3,3',4,4',5-PentaCB (#126)	0.005	282.35 J		237.47 J		99.62 J			
PCB-128/PCB-166		33165.70 J		27862.26 J		16110.26 J			
PCB-129/PCB-138/PCB-160/PCB-163		212004.84 J		134042.32 J		98473.76 J			
PCB-130		13223.48 J		9625.81 J		5871.21 J			
PCB-131		2312.80 J		2023.04 J		1657.45 J			
PCB-132		54411.69 J		35764.87 J		23074.29 J			
PCB-134/PCB-143		7108.48 J		3068.90 J		2378.65 J			
PCB-135/PCB-151/PCB-154		18375.80 J		19059.86 J		10857.65 J			
PCB-136		8704.08 J		6183.53 J		5498.42 J			
PCB-137/PCB-164		20449.34 J		17142.50 J		9778.82 J			
PCB-141		16476.17 J		13823.91 J		7915.12 J			
PCB-144		3100.58 J		3319.88 J		1828.76 J			
PCB-146/PCB-161		13195.40 J		15857.46 J		9678.14 J			
PCB-147/PCB-149		101430.19 J		81942.78 J		44365.80 J			
PCB-153/PCB-168		94372.70 J		100862.80 J		62951.80 J			
2,3,3',4,4',6-HexaCB (#156)/2,3,3',4,4',5'-HexaCB (#157)	< 0.000005	13486.78 J		12784.42 J		7783.98 J			
PCB-158		16378.27 J		16866.86 J		6737.36 J			
2,3',4,4',5,5'-HexaCB (#167)	< 0.000005	6100.57 J		6424.68 J		3262.65 J			
3,3',4,4',5,5'-HexaCB (#169)	< 0.000005	138.13 J		UJ	99.53	UJ	99.70		
PCB-170		27434.87 J		19096.21 J		9538.36 J			
PCB-171/PCB-173		7763.85 J		5932.68 J		2749.98 J			
PCB-172		3030.68 J		2712.78 J		1407.15 J			
PCB-174		12582.45 J		7639.10 J		3596.43 J			
PCB-175		498.87 J		493.15 J		219.56 J			
PCB-176		1729.14 J		1414.61 J		484.61 J			
PCB-177		11798.37 J		7489.05 J		3782.29 J			
PCB-178		2867.23 J		2888.04 J		1144.06 J			
PCB-179/PCB-193		27745.74 J		23579.02 J		14478.52 J			
PCB-182		68.77 J		UJ	198.06	UJ	159.88		
PCB-183		6421.37 J		6652.04 J		3450.23 J			
PCB-184		93.72 J		34.65 J		13.09 J			
PCB-185		1113.26 J		1022.95 J		428.31 J			
PCB-187		16517.82 J		17826.85 J		8518.40 J			
2,3,3',4,4',5,5'-HeptaCB (#189)	< 0.000005	484.12 J		478.05 J		253.69 J			
PCB-190		3910.34 J		3835.72 J		1823.87 J			
PCB-191		517.06 J		556.52 J		309.84 J			
PCB-194		4469.67 J		3707.52 J		2238.01 J			
PCB-195		1367.84 J		1483.33 J		664.37 J			
PCB-196		2717.53 J		2168.87 J		1328.52 J			
PCB-197		140.86 J		147.05 J		81.52 J			
PCB-198/PCB-199		16576.58 J		14875.92 J		8373.04 J			
PCB-200		670.54 J		424.20 J		196.85 J			
PCB-201		690.52 J		1075.84 J		489.70 J			
PCB-203		5601.37 J		5804.78 J		4165.82 J			
PCB-205		239.29 J		164.20 J		109.31 J			
PCB-206		15844.19 J		16563.53 J		9059.43 J			
PCB-207		1277.02 J		1321.67 J		525.81 J			
PCB-209		8978.13 J		6271.29 J		4777.57 J			
TOTAL PCB		1734241.82 J		1912805.24 J		1084711.13 J			
TOXIC EQUIVALENCY(1):		3.2 J		2.1 J		1.3 J			
PERCENT SOLIDS:		30.1		28.8		27.8			
PERCENT LIPIDS:		10.0		7.79		6.77			
DILUTION FACTOR:		1		1		1			
DATE SAMPLED:		06/21/01		06/21/01		06/21/01			
DATE OF RECEIPT:		06/22/01		06/22/01		06/22/01			
SAMPLE EXTRACTION DATE:		06/01/01		06/01/01		06/01/01			
ANALYSIS DATE:		06/26/01		06/26/01		11/11/01			
LABORATORY SAMPLE I.D.:		48985-35-15		48985-35-16		48985-35-20			

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
< = The expected upper limit of the TEF values for the congener in fish.

Steve Stodola
US EPA Approval Signature

June 26, 2002
Date

June 4, 2002
B-02-06-Y-2
Revised: June 17, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, MA 01863

Re: TO No. 010, Task No. 2, TDF No. 0604
Case No. Whole Body Fish B2OF2, SDG No. 48985-53 PCB
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

209 PCB Congeners: 8/Tissue/APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, GMP-AE-5001-0000-01, DYP-AE-5003-0000-01, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the 209 PCB congeners analytical data for eight whole body fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1668A, December 1999, as outlined in the Centredale Manor Tasks 19-22 QAPP (5/23/01). The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1668A, December 1999, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team PCB Congener Data Validation ESAT-01-0008 Draft (8/31/01). The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- Matrix Spike/Matrix Spike Duplicate

- Laboratory Control Sample
- Laboratory and Field Duplicates
- Internal/Clean-up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
- * Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

The following information was used to generate the Data Validation Memorandum attachments:

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

Overall Evaluation of Data and Potential Usability Issues

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). All congeners except for one were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners except for one had low recoveries, the results for all congeners in all samples were estimated (J, UJ) due to the possibility of biased low results.

The method blank had low level contamination. However, the concentration in the method blanks was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentration in the field samples was less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to submit MS/MSD spreadsheets which include the concentration of the spike compounds, MS and MSD recoveries, and relative percent difference (RPD). Also, on pp. 1467 and 1509 of the data package, it was noted by the analyst that "work up was only for spike analytes". The laboratory was requested to review all analytes in order to assess the precision (%RSD) of the non-spiked analytes.

2. The method blank (4888432A #2) analyzed 10/19/01 12:03 on p.1151, and method blank (4888440A) analyzed on 11/26/01 16:46 on p. 1983 have notations written on them that say that they are not completely worked up. Especially noted for blank 4888432A #2 is that absence of 13C-PCB-156. The laboratory was asked to completely review the blanks.

3. The laboratory was asked to correct the data summary report (Form 1) for APC-AE-4002-0000-01 since it was incorrectly reported for PCB131.

Items 1 thru 3 were requested via the TOPO on April 17, 2002. Items 1 thru 3 were received via the TOPO on May 5, 2002. All items were adequately addressed.

The validator hand corrected the Form I for sample GMP-AE-5001-0000-01, the analysis date was 11/26/01 not 10/19/01.

The validator added a "J" qualifier to PCB-169 in sample APC-AE-4003-0000-01. PCB-169's positive result was incorrectly reported as non-detected by the laboratory.

PE Samples/Accuracy Check

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). All congeners except for PCB-105 were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-53-24 FISH SRM) results which did not meet the criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D	Action	
			Positive Detects	NDs
Fish SRM (EDF-2526)	PCB-77	65	J	UJ
Fish SRM (EDF-2526)	PCB-118	39	J	UJ
Fish SRM (EDF-2526)	PCB-126	72	J	UJ
Fish SRM (EDF-2526)	PCB-169	69	J	UJ

Since a majority (four out of five) of the congeners for which certified values were available had low recoveries and had large %Ds, the results for all PCB congeners in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

June 4, 2002
B-02-06-Y-2
Revised: June 12, 2002

Initial and Continuing Calibrations

The following table summarizes the Calibration Verification (VER) results which did not meet Method 1668A recovery criterion and the resulting sample qualifications:

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
10/18/01 (Beginning)	$^{13}C_{12}$-PCB-81	171	50-150	J	UJ	LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, APC-AE-4002-0000-01
	$^{13}C_{12}$-PCB-77	178	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	173	50-150	J	UJ	
	$^{13}C_{12}$-PCB-118	172	50-150	J	UJ	
	$^{13}C_{12}$-PCB-188	34	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	186	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	189	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	208	50-150	J	UJ	
	$^{13}C_{12}$-PCB-202	47	50-150	J	UJ	
	$^{13}C_{12}$-PCB-156	152	50-150	J	UJ	
	$^{13}C_{12}$-PCB-157	152	50-150	J	UJ	
	$^{13}C_{12}$-PCB-169	181	50-150	J	UJ	
10/18/01 (Ending)	$^{13}C_{12}$-PCB-81	151	50-150	J	UJ	LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, APC-AE-4002-0000-01
	$^{13}C_{12}$-PCB-77	155	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	151	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	158	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	156	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	171	50-150	J	UJ	

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
10/19/01 (Beginning)	$^{13}C_{12}$-PCB-81	178	50-150	J	UJ	APC-AE-4003-0000-01, DYP-AE-5003-0000-01
	$^{13}C_{12}$-PCB-77	182	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	169	50-150	J	UJ	
	$^{13}C_{12}$-PCB-118	167	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	172	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	172	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	188	50-150	J	UJ	
11/26/01 (Beginning)	$^{13}C_{12}$-PCB-81	159	50-150	J	UJ	GMP-AE-5001-0000-01
	$^{13}C_{12}$-PCB-77	162	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	151	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	152	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	163	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	172	50-150	J	UJ	

The data associated with recoveries of noncompliant calibration verifications are qualified due to the high variability. The quantitation of the associated analytes in the samples could be biased.

Chromatographic Resolution

Many PCB congeners coeluted on the SPB-Octyl gas chromatography column used for this project. This situation was documented in Centredale Manor Tasks 19-22 QAPP (5/23/01). The laboratory reported the coeluting concentrations as totals. These totals are reported on the Data Summary Tables in this memorandum and are not affected by the coelution of the congeners. Three of the "toxic congeners" with TEF values coeluted: PCB-123, PCB-156, and PCB-157.

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-12, PCB-13	PCB-12/PCB-13
PCB-18, PCB-30	PCB-18/PCB-30
PCB-20, PCB-21, PCB-28, PCB-33	PCB-20/PCB-21/PCB-28/PCB-33
PCB-24, PCB-27	PCB-24/PCB-27
PCB-26, PCB-29	PCB-26/PCB-29
PCB-40, PCB-41, PCB-71	PCB-40/PCB-41/PCB-71

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-43, PCB-52, PCB-73	PCB-43/PCB-52/PCB-73
PCB-44, PCB-47, PCB-65	PCB-44/PCB-47/PCB-65
PCB-45, PCB-51	PCB-45/PCB-51
PCB-49, PCB-69	PCB-49/PCB-69
PCB-50, PCB-53	PCB-50/PCB-53
PCB-59, PCB-62, PCB-75	PCB-59/PCB-62/PCB-75
PCB-61, PCB-70, PCB-74, PCB-76	PCB-61/PCB-70/PCB-74/PCB-76
PCB-83, PCB-99	PCB-83/PCB-99
PCB-85, PCB-116, PCB-117	PCB-85/PCB-116/PCB-117
PCB-86, PCB-87, PCB-97, PCB-109, PCB-119, PCB-125	PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125
PCB-90, PCB-101, PCB-113	PCB-90/PCB-101/PCB-113
PCB-88, PCB-91	PCB-88/PCB-91
PCB-93, PCB-95, PCB-98, PCB-100, PCB-102	PCB-93/PCB-95/PCB-98/PCB-100/PCB-102
PCB-108, PCB-124	PCB-108/PCB-124
PCB-110, PCB-115	PCB-110/PCB-115
PCB-106, PCB-107, PCB-123	PCB-106/PCB-107/2'344'5-PentaCB(#123)
PCB-128, PCB-166	PCB-128/PCB-166
PCB-129, PCB-138, PCB-160, PCB-163	PCB-129/PCB-138/PCB-160/PCB-163
PCB-134, PCB-143	PCB-134/PCB-143
PCB-135, PCB-151, PCB-154	PCB-135/PCB-151/PCB-154
PCB-137, PCB-164	PCB-137/PCB-164
PCB-146, PCB-161	PCB-146/PCB-161
PCB-147, PCB-149	PCB-147/PCB-149
PCB-153, PCB-168	PCB-153/PCB-168
PCB-156, PCB-157	233'44'5-HexaCB(#156)/233'44'5'-HexaCB(#157)
PCB-171, PCB-173	PCB-171/PCB-173
PCB-180, PCB-193	PCB-180/PCB-193

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-198, PCB-199	PCB-198/PCB-199

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following tables list the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
PCB-1	Method Blank (10/18/01)	7.4	37	All samples
PCB-3	Method Blank (11/26/01)	8.8	44	All samples
PCB-4	Method Blank (10/19/01)	11	53	All samples except APC-AE-4002-0000-01
PCB-5	Method Blank (11/20/01)	33	160	All samples - Except APC-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01
PCB-6	Method Blank (10/18/01)	4.2	21	All samples - Except LPX-AE-4002-0000-01
PCB-7	Method Blank (10/18/01)	1.7	8.7	All samples - Except GMP-AE-5001-0000-01, LPX-AE-4002-0000-01
PCB-8	Method Blank (11/20/01)	31	150	All samples
PCB-9	Method Blank (10/18/01)	2.2	11	All samples - Except GMP-AE-5001-0000-01, LPX-AE-4002-0000-01
PCB-12/PCB-13	Method Blank (10/18/01)	3.8	19	All samples except LPX-AE-4002-0000-01
PCB-16	Method Blank (10/18/01)	14	71	All samples except LPX-AE-4001-0000-01
PCB-17	Method Blank (10/18/01)	12	62	All samples except LPX-AE-4001-0000-01, APC-AE-4002-0000-01
PCB-18/PCB-30	Method Blank (10/18/01)	25	130	APC-AE-4001-0000-01, GMP-AE-5001-0000-01, LPX-AE-4003-0000-01

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
PCB-20/PCB-21/PCB-28/PCB-33	Method Blank (10/18/01)	100	500	GMP-AE-5001-0000-01
PCB-22	Method Blank (10/18/01)	20	100	GMP-AE-5001-0000-01
PCB-24/PCB-27	Method Blank (10/18/01)	2.6	13	LPX-AE-4003-0000-01, APC-AE-4001-0000-01, GMP-AE-5001-0000-01
PCB-25	Method Blank (10/18/01)	4.0	20	LPX-AE-4003-0000-01, APC-AE-4001-0000-01, GMP-AE-5001-0000-01
PCB-26/PCB-29	Method Blank 10/18/01)	8.2	41	GMP-AE-5001-0000-01
PCB-31	Method Blank (10/18/01)	55	270	GMP-AE-5001-0000-01
PCB-32	Method Blank (10/18/01)	10	51	GMP-AE-5001-0000-01
PCB-40/PCB-41/PCB-71	Method Blank (11/20/01)	12	59	GMP-AE-5001-0000-01
PCB-42	Method Blank (11/26/01)	8.2	41	GMP-AE-5001-0000-01
PCB-45/PCB-51	Method Blank (10/18/01)	5.2	26	GMP-AE-5001-0000-01
PCB-46	Method Blank (10/18/01)	2.1	10	GMP-AE-5001-0000-01
PCB-48	Method Blank (10/18/01)	10	50	LPX-AE-4003-0000-01, APC-AE-4001-0000-01, APC-AE-4003-0000-01, GMP-AE-5001-0000-01
PCB-50/PCB-53	Method Blank (10/18/01)	5.5	28	GMP-AE-5001-0000-01
PCB-56	Method Blank (11/26/01)	16	82	GMP-AE-5001-0000-01, APC-AE-4001-0000-01, LPX-AE-4002-0000-01
PCB-59/PCB-62/PCB-75	Method Blank (11/26/02)	31	150	GMP-AE-5001-0000-01
PCB-61/PCB-70/PCB-74/ PCB-76	Method Blank (11/20/01)	73	360	GMP-AE-5001-0000-01
PCB-77	Method Blank (11/20/01)	3.5	18	GMP-AE-5001-0000-01

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
PCB-82	Method Blank (11/26/01)	14	70	GMP-AE-5001-0000-01
PCB-84	Method Blank (11/20/01)	25	130	GMP-AE-5001-0000-01
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102	Method Blank (11/20/01)	65	320	GMP-AE-5001-0000-01
PCB-108/PCB-124	Method Blank (10/18/01)	2.9	14	GMP-AE-5001-0000-01
PCB-169	Method Blank (11/20/01)	3.7	18	GMP-AE-5001-0000-01
PCB-176	Method Blank (10/19/01)	1.4	6.8	GMP-AE-5001-0000-01, LPX-AE-4003-0000-01
PCB-205	Method Blank (11/20/01)	8.0	40	GMP-AE-5001-0000-01

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team PCB Congener data Validation ESAT-01-0008 Draft (8/31/01) criterion. Blank action levels are calculated as five times the highest concentration of the contaminant determined in any blank. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: GMP-AE-5001-0000-01MS/GMP-AE-5001-0000-01MSD.

The table below summarizes the MS/MSD results which did not meet the recovery criterion of 50-125% (Tri-Deca PCBs) and 30-125% (Mono and Di PCBs) and/or Relative Percent Difference (RPD) ≤ 30% as specified in the Centredale Manor Tasks 19-22 QAPP (5/23/01).

GMP-AE-5001-0000-01					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
PCB-156/PCB-157	1	150	198	J	UJ
PCB-167	11	145	172	J	UJ
PCB-106/PCB-107/PCB-123	96*	127	28*	J	A

* Recoveries and/or RPDs were acceptable

Professional judgement was used to estimate (J, UJ) the values for PCB-156/PCB-157 and PCB-167 in sample GMP-AE-5001-0000-01, since precision was outside the required criterion. The PCB-106/PCB-107/PCB-123 positive result in sample GMP-AE-5001-0000-01 was estimated (J), since percent recovery was outside the required criterion.

Laboratory Control Sample

The laboratory extracted and analyzed one OPR/LCS with this group of samples. The following table summarizes the Ongoing Precision and Recovery (OPR) results which did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) recovery criterion and the resulting sample qualifications:

OPR Date	Compound	% Recovery	% Recovery Range	Action		Affected Samples
				Positive Detects	NDs	
10/18/01	PCB-118	127	50-125	J	UJ	All
10/18/01	PCB-106/PCB-107/PCB-123	131	50-125	J	UJ	All
10/18/01	PCB-4	126	50-125	J	UJ	All

The data associated with recoveries of a noncompliant OPR are estimated (J, UJ).

Laboratory and Field Duplicates

One laboratory duplicate pair was evaluated for this SDG (APC-AE-4001-000-01/APC-AE-4001-0000-01Dup).

The table below summarizes the laboratory duplicate results which did not meet the duplicate criterion of Relative Percent Difference (RPD) < 30% as specified by Centredale Manor Tasks 19-22 QAPP (5/23/01).

Congener	APC-AE-4001-0000-01	APC-AE-4001-0000-01Dup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-43/PCB-52/PCB-73	16746	24198	36	J	UJ	All
PCB-44/PCB-47/PCB-65	3212	4572	35	J	UJ	All
PCB-49/PCB-69	1213	2057	52	J	UJ	All
PCB-56	69	173	86	J	UJ	All
PCB-66	3489	9594	93	J	UJ	All
PCB-61/PCB-70/PCB-74/PCB-76	2007	3370	51	J	UJ	All
PCB-82	558	1790	105	J	UJ	All
PCB-84	1458	3635	85	J	UJ	All
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125	6678	15429	79	J	UJ	All
PCB-90/PCB-101/PCB-113	14931	30803	69	J	UJ	All
PCB-88/PCB-91	1275	3080	83	J	UJ	All
PCB-92	4932	9016	59	J	UJ	All
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102	4886	13535	94	J	UJ	All
PCB-110/PCB-115	31617	55096	54	J	UJ	All
PCB-106/PCB-107/PCB-123	730	1421	64	J	UJ	All
PCB-132	2371	5595	81	J	UJ	All

Congener	APC-AE-4001-0000-01	APC-AE-4001-0000-01Dup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-134/PCB-143	1314	1871	35	J	UJ	All
PCB-135/PCB-151/PCB-154	2135	3982	60	J	UJ	All
PCB-136	415	960	79	J	UJ	All
PCB-137/PCB-164	4976	6967	33	J	UJ	All
PCB-147/PCB-149	26534	43138	48	J	UJ	All
PCB-167	1798	2620	37	J	UJ	All
PCB-187	25839	17858	36	J	UJ	All

Professional judgment was used to estimate (J, UJ) results for the above referenced congeners in all samples since the laboratory duplicate precision was outside criterion.

Internal/Clean-up Standards

- Internal Standards

The following table summarizes the internal standard recovery that did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) acceptance criterion of 25-150%:

Standard	% Recovery	Action		Affected Samples
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-155	13	J	UJ	APC-AE-4002-0000-01
$^{13}C_{12}$-PCB-188	24	J	UJ	APC-AE-4002-0000-01
$^{13}C_{12}$-PCB-209	22	J	UJ	APC-AE-4002-0000-01
$^{13}C_{12}$-PCB-155	17	J	UJ	APC-AE-4003-0000-01
$^{13}C_{12}$-PCB-188	23	J	UJ	APC-AE-4003-0000-01
$^{13}C_{12}$-PCB-209	22	J	UJ	APC-AE-4003-0000-01
$^{13}C_{12}$-PCB-155	15	J	UJ	DYP-AE-5003-0000-01
$^{13}C_{12}$-PCB-188	19	J	UJ	DYP-AE-5003-0000-01
$^{13}C_{12}$-PCB-202	22	J	UJ	DYP-AE-5003-0000-01
$^{13}C_{12}$-PCB-208	19	J	UJ	DYP-AE-5003-0000-01
$^{13}C_{12}$-PCB-206	20	J	UJ	DYP-AE-5003-0000-01

Standard	% Recovery	Action		Affected Samples
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-209	16	J	UJ	DYP-AE-5003-0000-01
$^{13}C_{12}$-PCB-155	16	J	UJ	LPX-AE-4001-0000-01
$^{13}C_{12}$-PCB-3	20	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-4	20	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-19	24	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-81	24	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-77	24	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-126	24	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-155	17	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-188	18	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-202	20	J	UJ	LPX-AE-4002-0000-01
$^{13}C_{12}$-PCB-209	24	J	UJ	LPX-AE-4002-0000-01

The corresponding non-labeled congener results are estimated as shown in the table due to internal standard percent recoveries outside method acceptance criterion.

- Clean-up Standards

The following table summarizes the Clean-up standard with a recovery which did not meet the Centredale Manor Tasks 19-22 QAPP (5/23/01) acceptance criterion of 30-135%:

Clean-up Standard	% Recovery	Action		Affected Samples
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-178	25	J	UJ	LPX-AE-4002

Since low recoveries may indicate interference in the clean-up process, the sample was qualified as noted above for all congeners.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. The validated data accounts for blank contamination. The TE calculations include the reported EMPC values. The fish TEF values for the PCBs are published in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number 12, December 1998, Table 2, page 780.

System Performance

No trends noted.

Very truly yours,

LOCKHEED ENVIRONMENTAL

FOR

Paula L. DiMattei
Data Validator

FOR

Janine Bartels
Principal Scientist

FOR

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B2OF2/SDG No. 48985-53 PCB

Sample Nos.	APC-AE-4001	APC-AE-4002	APC-AE-4003	GMP-AE-5001	DYP-AE-5003	LPX-AE-4001	LPX-AE-4002	LPX-AE-4003
Compound								
PCB-1	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4,8]	J[1,4]
PCB-3	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4,7,8]	J[1,4]
PCB-4	J[1,4,9]	J[1,9]	J[1,4,9]	J[1,4,9]	J[1,4,9]	J[1,4,9]	J[1,4,7,8,9]	J[1,4,9]
PCB-5	J[1]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,7,8]	J[1]
PCB-6	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,7,8]	J[1,4]
PCB-7	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4]	J[1,4]	J[1,7,8]	J[1,4]
PCB-8	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4,7,8]	J[1,4]
PCB-9	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4]	J[1,4]	J[1,7,8]	J[1,4]
PCB-10	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-12/PCB-13	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,7,8]	J[1,4]
PCB-16	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4,7,8]	J[1,4]
PCB-17	J[1,4]	J[1]	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4,7,8]	J[1,4]
PCB-18/PCB-30	J[1,4]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1,4]
PCB-19	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-20/PCB-21/PCB-28/PCB-33	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-22	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-24/PCB-27	J[1,4]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1,4]
PCB-25	J[1,4]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1,4]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B2OF2/SDG No. 48985-53 PCB

Sample Nos.	APC-AE-4001	APC-AE-4002	APC-AE-4003	GMP-AE-5001	DYP-AE-5003	LPX-AE-4001	LPX-AE-4002	LPX-AE-4003
Compound								
PCB-26/PCB-29	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-31	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-32	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,7,8]	J[1]
PCB-40/PCB-41/PCB-71	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-42	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-43/PCB-52/PCB-73	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-44/PCB-47/PCB-65	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-45/PCB-51	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-46	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-48	J[1,4]	J[1,2]	J[1,2,4]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2,4]
PCB-49/PCB-69	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-50/PCB-53	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-56	J[1,4,6]	J[1,2,6]	J[1,2,6]	J[1,2,4,6]	J[1,2,6]	J[1,2,6]	J[1,2,4,6,7,8]	J[1,2,6]
PCB-59/PCB-62/PCB-75	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-60	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-63	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-64	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-66	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-61/PCB-70/PCB-74/PCB-76	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,4,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B2OF2/SDG No. 48985-53 PCB

Sample Nos.	APC-AE-4001	APC-AE-4002	APC-AE-4003	GMP-AE-5001	DYP-AE-5003	LPX-AE-4001	LPX-AE-4002	LPX-AE-4003
Compound								
33'44'-TetraCB (#77)	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
344'5-TetraCB (#81)	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-82	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,4,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-83/PCB-99	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-84	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,4,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-85/PCB-116/PCB-117	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-89	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-90/PCB-101/PCB-113	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-88/PCB-91	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-92	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,4,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
233'44'-PentaCB (#105)	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,8]	J[1,2]
PCB-108/PCB-124	J[1]	J[1,2]	J[1,2]	J[1,2,4]	J[1,2]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-110/PCB-115	J[1,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
2344'5-PentaCB (#114)	J[1]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2,8]	J[1,2]
23'44'5-PentaCB (#118)	J[1,9]	J[1,2,9]	J[1,2,9]	J[1,9]	J[1,2,9]	J[1,2,9]	J[1,2,8,9]	J[1,2,9]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B2OF2/SDG No. 48985-53 PCB

Sample Nos.	APC-AE-4001	APC-AE-4002	APC-AE-4003	GMP-AE-5001	DYP-AE-5003	LPX-AE-4001	LPX-AE-4002	LPX-AE-4003
Compound								
PCB-106/PCB-107/2'344'5-PentaCB (#123)	$J^{1,6,9}$	$J^{1,2,6,9}$	$J^{1,2,6,9}$	$J^{1,2,3,6,9}$	$J^{1,2,6,9}$	$J^{1,2,6,9}$	$J^{1,2,6,7,8,9}$	$J^{1,2,6,9}$
33'44'5-PentaCB (#126)	J^{1}	$J^{1,2}$	$J^{1,2}$	$J^{1,2}$	$J^{1,2}$	$J^{1,2}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-128/PCB-166	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-129/PCB-138/PCB-160/PCB-163	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-130	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-131	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-132	$J^{1,6}$	$J^{1,2,6,7}$	$J^{1,6,7}$	$J^{1,6}$	$J^{1,6,7}$	$J^{1,2,6,7}$	$J^{1,2,6,7,8}$	$J^{1,2,6}$
PCB-134/PCB-143	$J^{1,6}$	$J^{1,2,6,7}$	$J^{1,6,7}$	$J^{1,6}$	$J^{1,6,7}$	$J^{1,2,6,7}$	$J^{1,2,6,7,8}$	$J^{1,2,6}$
PCB-135/PCB-151/PCB-154	$J^{1,6}$	$J^{1,2,6,7}$	$J^{1,6,7}$	$J^{1,6}$	$J^{1,6,7}$	$J^{1,2,6,7}$	$J^{1,2,6,7,8}$	$J^{1,2,6}$
PCB-136	$J^{1,6}$	$J^{1,2,6,7}$	$J^{1,6,7}$	$J^{1,6}$	$J^{1,6,7}$	$J^{1,2,6,7}$	$J^{1,2,6,7,8}$	$J^{1,2,6}$
PCB-137/PCB-164	$J^{1,6}$	$J^{1,2,6,7}$	$J^{1,6,7}$	$J^{1,6}$	$J^{1,6,7}$	$J^{1,2,6,7}$	$J^{1,2,6,7,8}$	$J^{1,2,6}$
PCB-141	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-144	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-146/PCB-161	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
PCB-147/PCB-149	$J^{1,6}$	$J^{1,2,6,7}$	$J^{1,6,7}$	$J^{1,6}$	$J^{1,6,7}$	$J^{1,2,6,7}$	$J^{1,2,6,7,8}$	$J^{1,2,6}$
PCB-153/PCB-168	J^{1}	$J^{1,2,7}$	$J^{1,7}$	J^{1}	$J^{1,7}$	$J^{1,2,7}$	$J^{1,2,7,8}$	$J^{1,2}$
233'44'5-HexaCB (#156)/233'44'5'-HexaCB (#157)	J^{1}	$J^{1,2}$	J^{1}	$J^{1,3}$	J^{1}	$J^{1,2}$	$J^{1,2,8}$	$J^{1,2}$

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B2OF2/SDG No. 48985-53 PCB

Sample Nos.	APC-AE-4001	APC-AE-4002	APC-AE-4003	GMP-AE-5001	DYP-AE-5003	LPX-AE-4001	LPX-AE-4002	LPX-AE-4003
Compound								
PCB-158	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2,7]	J[1,2,7,8]	J[1,2]
23'44'55'-HexaCB (#167)	J[1,6]	J[1,6]	J[1,6]	J[1,5,6]	J[1,6]	J[1,6]	J[1,6,8]	J[1,6]
33'44'55'-HexaCB (#169)	J[1]	J[1,2]	J[1]	J[1,4]	J[1]	J[1,2]	J[1,2,8]	J[1,2]
PCB-170	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-171/PCB-173	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-172	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-174	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-175	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-176	J[1]	J[1,2,7]	J[1,7]	J[1,4]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2,4]
PCB-177	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-178	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-180/PCB-193	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-182	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-183	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-184	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-185	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-187	J[1,6]	J[1,2,6,7]	J[1,6,7]	J[1,6]	J[1,6,7]	J[1,2,6]	J[1,2,6,7,8]	J[1,2,6]
233'44'55'-HeptaCB (#189)	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,8]	J[1]
PCB-190	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]

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Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Whole Body Fish B2OF2/SDG No. 48985-53 PCB

Sample Nos.	APC-AE-4001	APC-AE-4002	APC-AE-4003	GMP-AE-5001	DYP-AE-5003	LPX-AE-4001	LPX-AE-4002	LPX-AE-4003
Compound								
PCB-191	J[1]	J[1,2,7]	J[1,7]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-194	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-195	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-196	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-197	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-198/PCB-199	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-200	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-201	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-203	J[1]	J[1,2]	J[1]	J[1]	J[1,7]	J[1,2]	J[1,2,7,8]	J[1,2]
PCB-205	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1,8]	J[1]
PCB-206	J[1]	J[1]	J[1]	J[1]	J[1,7]	J[1]	J[1,8]	J[1]
PCB-207	J[1]	J[1]	J[1]	J[1]	J[1,7]	J[1]	J[1,8]	J[1]
PCB-209	J[1]	J[1,7]	J[1,7]	J[1]	J[1,7]	J[1]	J[1,7,8]	J[1]

Table I
Recommendation Summary Table for PCB Congeners

A	-	Accept all results.
J[1]	-	PE %D outside criterion; J detects, UJ non-detects.
J[2]	-	VER recoveries outside criterion; J detects, UJ non-detects.
J[3]	-	MS/MSD high recoveries; J detects.
J[4]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
J[5]	-	RPDs outside criterion; J detects, UJ non-detects.
J[6]	-	Laboratory duplicate precision outside criterion; J detects, UJ non-detects.
J[7]	-	Internal standard recoveries outside criterion; J detects, UJ non-detects.
J[8]	-	Clean-up standard recoveries outside criterion; J detects, UJ non-detects.
J[9]	-	OPR high recoveries; J detects, UJ non-detects.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

PCB ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: J^{1-9}	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). All congeners except for one were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners except for one had low recoveries, the results for all congeners in all samples were estimated (J, UJ) due to the possibility of biased low results. The method blank had low level contamination. However, the concentration in the method blanks was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentration in the field samples was less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 6/14/02

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B20F2 SDG No. 48985-53 PCB
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GMP-AE-6001-0000-01		LPX-AE-4001-0000-01		LPX-AE-4002-0000-01		LPX-AE-4003-0000-01	
STATION LOCATION:		GREYSTONE MILL POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-1		UJ	4.57	UJ	13.29	UJ	20.66	UJ	8.71
PCB-3		UJ	4.81	UJ	13.75	UJ	15.85	UJ	13.22
PCB-4		UJ	6.74	UJ	44.90	UJ	39.82	UJ	22.83
PCB-5		UJ	11.94	UJ	4.12	UJ	9.95	UJ	9.94
PCB-6		UJ	2.30	UJ	19.12	21.99 J		UJ	11.39
PCB-7		UJ	9.91	UJ	8.89	UJ	9.95	UJ	4.09
PCB-8		UJ	11.16	UJ	83.93	UJ	81.57	UJ	55.79
PCB-9		UJ	9.91	UJ	9.16	UJ	9.95	UJ	4.09
PCB-10		UJ	9.91	2.10 J		UJ	9.95	UJ	9.94
PCB-12/PCB-13		UJ	2.40	UJ	16.48	28.46 J		UJ	14.86
PCB-16		UJ	7.09	77.63 J		UJ	65.02	UJ	41.38
PCB-17		UJ	7.13	71.62 J		UJ	56.96	UJ	38.81
PCB-18/PCB-30		UJ	16.50	265.80 J		183.52 J		UJ	84.24
PCB-19		UJ	19.81	30.37 J		23.10 J		11.96 J	
PCB-20/PCB-21/PCB-28/PCB-33		UJ	52.96	6142.60 J		3177.28 J		1721.40 J	
PCB-22		UJ	14.16	282.48 J		146.59 J		136.28 J	
PCB-24/PCB-27		UJ	1.56	29.04 J		17.94 J		UJ	9.10
PCB-26		UJ	1.88	38.66 J		21.42 J		UJ	19.93
PCB-25/PCB-29		UJ	6.88	463.24 J		316.14 J		154.56 J	
PCB-31		UJ	23.71	1862.99 J		1289.76 J		632.07 J	
PCB-32		UJ	5.20	174.30 J		85.03 J		64.00 J	
PCB-40/PCB-41/PCB-71		UJ	6.93	461.52 J		130.65 J		86.88 J	
PCB-42		UJ	34.61	2191.51 J		726.36 J		314.72 J	
PCB-43/PCB-52/PCB-73		556.58 J		94946.31 J		30457.11 J		21214.26 J	
PCB-44/PCB-47/PCB-65		233.46 J		22073.28 J		5126.68 J		3351.06 J	
PCB-45/PCB-51		UJ	3.16	248.34 J		85.44 J		65.58 J	
PCB-46		UJ	0.68	47.94 J		23.96 J		13.19 J	
PCB-48		UJ	3.58	141.27 J		105.34 J		UJ	20.50
PCB-49/PCB-69		166.82 J		4579.46 J		1525.74 J		1576.92 J	
PCB-50/PCB-53		UJ	3.38	414.86 J		119.00 J		129.70 J	
PCB-56		UJ	21.39	147.57 J		UJ	78.04	124.55 J	
PCB-59/PCB-62/PCB-75		UJ	124.11	8837.10 J		2579.88 J		2365.77 J	
PCB-60		56.13 J		1476.36 J		904.80 J		345.89 J	
PCB-63		11.19 J		583.72 J		311.82 J		110.40 J	
PCB-64		234.96 J		22651.94 J		6870.21 J		3522.02 J	
PCB-66		299.32 J		32636.26 J		8835.85 J		6617.65 J	
PCB-61/PCB-70/PCB-74/PCB-76		UJ	191.76	9002.20 J		4867.20 J		2319.44 J	
3,3',4,4'-TetraCB (#77)	0.0001	UJ	2.00	73.11 J		18.09 J		26.78 J	
3,4,4',5-TetraCB (#81)	0.0005	17.32 J		UJ	99.70	UJ	99.64	57.96 J	
PCB-82		UJ	41.55	6356.72 J		894.81 J		1420.68 J	
PCB-83/PCB-99		2098.30 J		148612.78 J		28737.34 J		27009.82 J	
PCB-84		UJ	68.41	12068.92 J		2691.40 J		2896.87 J	
PCB-85/PCB-116/PCB-117		816.90 J		43108.32 J		9276.43 J		7863.52 J	
PCB-86/PCB-87/PCB-97/PCB-108/PCB-119/PCB-125		828.42 J		62019.54 J		10457.54 J		13089.42 J	
PCB-89		UJ	99.07	23.25 J		UJ	99.64	8.21 J	
PCB-90/PCB-101/PCB-113		2635.68 J		125357.64 J		29068.42 J		31114.29 J	
PCB-88/PCB-91		163.84 J		10686.98 J		1784.50 J		2248.00 J	
PCB-92		441.91 J		60995.18 J		11506.59 J		7458.99 J	
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		UJ	208.16	46776.00 J		10128.80 J		10890.10 J	
2,3,3',4,4'-PentaCB (#105)	< 0.000005	1171.56 J		39259.78 J		14454.11 J		9747.00 J	
PCB-106/PCB-124		UJ	8.80	940.38 J		297.60 J		375.34 J	

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish 828F2
LABORATORY: BATTELLE

SDG No. 46985-53 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-AE-5001-0000-01		LPX-AE-4001-0000-01		LPX-AE-4002-0000-03		LPX-AE-4003-0000-04	
STATION LOCATION:		GREYSTONE MILL POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-118/PCB-118		2152.00 J		337142.40 J		81444.72 J		85333.49 J	
2,3,4,4',5-PentaCB (#114)	< 0.000085	46.86 J		2363.09 J		682.28 J		844.96 J	
2,3',4,4',5-PentaCB (#119)	< 0.000085	3882.78 J		207707.89 J		59960.89 J		45508.13 J	
PCB-108/PCB-107/2',3,4,4',5-PentaCB (#123)	< 0.000085	74.16 J		4382.51 J		1587.78 J		1368.47 J	
3,3',4,4',5-PentaCB (#126)	0.005	9.11 J		217.18 J		88.21 J		65.86 J	
PCB-128/PCB-166		1373.04 J		49669.04 J		18504.15 J		6809.80 J	
PCB-129/PCB-138/PCB-160/PCB-163		8116.00 J		46384.3.89 J		192008.62 J		89197.78 J	
PCB-130		461.79 J		20663.19 J		7587.84 J		3634.16 J	
PCB-131		13.32 J		474.55 J		187.37 J		105.23 J	
PCB-132		UJ	98.07	2864.88 J		7896.77 J		3872.30 J	
PCB-134/PCB-143		191.64 J		10667.82 J		2836.72 J		1302.52 J	
PCB-135/PCB-151/PCB-154		179.79 J		30268.82 J		8853.39 J		2987.07 J	
PCB-136		93.08 J		3684.34 J		847.33 J		482.49 J	
PCB-137/PCB-164		685.96 J		30638.36 J		10085.14 J		8418.84 J	
PCB-141		737.84 J		25535.05 J		11850.03 J		4724.61 J	
PCB-144		UJ	99.07	UJ	99.70	UJ	99.54	UJ	99.44
PCB-146/PCB-161		1992.94 J		37092.44 J		16846.80 J		6254.22 J	
PCB-147/PCB-149		2411.69 J		240187.42 J		41908.80 J		37594.22 J	
PCB-148/PCB-189		6835.22 J		224974.82 J		82237.02 J		48109.60 J	
2,3,3',4,4',5-HexaCB (#156)/2,3,3',4,4',5'-HexaCB (#157)	< 0.000005	530.64 J		20787.70 J		6716.72 J		4540.02 J	
PCB-158		908.40 J		22229.69 J		10985.04 J		8830.00 J	
2,3',4,4',5,5'-HexaCB (#167)	< 0.000005	258.80 J		8630.38 J		2980.21 J		2189.01 J	
3,3',4,4',5,5'-HexaCB (#169)	< 0.000005	UJ	16.74	238.18 J		132.84 J		74.43 J	
PCB-170		996.30 J		27821.00 J		7024.38 J		8244.40 J	
PCB-171/PCB-173		240.14 J		9413.14 J		1579.18 J		1454.65 J	
PCB-172		263.85 J		4372.30 J		1516.08 J		1609.34 J	
PCB-174		208.76 J		12422.97 J		1981.38 J		1992.17 J	
PCB-175		43.70 J		466.46 J		198.68 J		64.97 J	
PCB-176		UJ	5.26	264.40 J		35.28 J		UJ	4.92
PCB-177		492.38 J		17412.92 J		3678.04 J		2710.64 J	
PCB-179		634.24 J		6223.78 J		1271.89 J		1022.77 J	
PCB-180/PCB-193		2116.12 J		35810.98 J		13067.08 J		6951.36 J	
PCB-182		UJ	128.14	UJ	199.41	UJ	199.08	UJ	198.68
PCB-183		691.60 J		7147.89 J		2782.77 J		1591.87 J	
PCB-184		8.18 J		31.60 J		18.79 J		8.25 J	
PCB-185		9.84 J		470.38 J		121.34 J		84.58 J	
PCB-187		4602.08 J		70863.11 J		14441.21 J		14037.86 J	
2,3,3',4,4',5,5'-HeptaCB (#189)	< 0.000005	42.81 J		706.38 J		218.85 J		172.27 J	
PCB-190		285.05 J		7586.53 J		2843.99 J		1733.68 J	
PCB-191		38.07 J		688.20 J		272.89 J		168.57 J	
PCB-194		880.66 J		8788.15 J		2817.86 J		1534.93 J	
PCB-195		1.16.01 J		2619.42 J		707.31 J		519.45 J	
PCB-196		452.16 J		3349.61 J		1121.51 J		581.55 J	
PCB-197		35.36 J		169.09 J		78.80 J		90.78 J	
PCB-198/PCB-199		6060.69 J		47108.40 J		9641.14 J		9962.98 J	
PCB-200		8.34 J		274.68 J		37.41 J		31.65 J	
PCB-201		207.76 J		1003.44 J		348.71 J		187.27 J	
PCB-203		2139.78 J		19882.42 J		4978.66 J		3120.98 J	
PCB-205		UJ	34.81	394.30 J		147.13 J		84.58 J	
PCB-206		4366.34 J		23428.44 J		7007.65 J		8951.88 J	
PCB-207		345.93 J		1477.45 J		603.66 J		411.09 J	
PCB-208		2088.03 J		18528.43 J		3321.28 J		3134.61 J	
TOTAL PCB		86581.84 J		2838717.63 J		746734.86 J		559450.09 J	
TOXIC EQUIVALENCY(1):		0.064 J		2.5 J		0.87 J		0.68 J	
PERCENT SOLIDS:		22.0		34.2		37.1		31.8	
PERCENT LIPIDS:		4.3		17.84		17.15		19.84	
DILUTION FACTOR:		1		1		1		1	
DATE SAMPLED:		05/22/01		05/21/01		05/21/01		05/21/01	
DATE OF RECEIPT:		05/29/01		05/22/01		05/22/01		05/22/01	
SAMPLE EXTRACTION DATE:		08/06/01		08/07/01		08/07/01		08/07/01	
ANALYSIS DATE:		11/28/01		10/18/01		10/18/01		10/18/01	
LABORATORY SAMPLE I.D.:		46985-56-10		46985-53-14		46985-53-15		46985-53-16	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B20F2
LABORATORY: BATTELLE

SDG No. 48985-53 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-AE-4001-0000-01		APC-AE-4002-0000-01		APC-AE-4003-0000-01		DYP-AE-5003-0000-01	
STATION LOCATION:		ALLENDALE POND CHANNEL		ALLENDALE POND CHANNEL		ALLENDALE POND CHANNEL		DYERVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-1		UJ	16.61	UJ	15.01	UJ	11.90	UJ	13.81
PCB-3		UJ	11.60	UJ	14.49	UJ	13.82	UJ	18.38
PCB-4		UJ	33.73	54.77 J		UJ	36.85	UJ	34.77
PCB-5		UJ	9.99	UJ	2.22	UJ	2.14	UJ	4.63
PCB-6		UJ	14.02	UJ	16.22	UJ	16.26	UJ	20.67
PCB-7		UJ	3.62	UJ	4.85	UJ	6.20	UJ	6.66
PCB-8		UJ	71.11	UJ	73.67	UJ	87.04	UJ	98.67
PCB-9		UJ	5.02	UJ	6.92	UJ	6.95	UJ	7.27
PCB-10		2.30 J		2.06 J		1.75 J		2.89 J	
PCB-12/PCB-13		UJ	9.16	UJ	16.50	UJ	13.58	UJ	16.76
PCB-16		UJ	36.67	UJ	68.34	UJ	41.98	UJ	48.67
PCB-17		UJ	40.95	77.25 J		UJ	50.15	UJ	53.55
PCB-18/PCB-30		UJ	121.20	275.90 J		149.18 J		159.82 J	
PCB-19		18.08 J		36.84 J		26.64 J		27.76 J	
PCB-20/PCB-21/PCB-28/PCB-33		1075.40 J		4513.84 J		2063.96 J		3220.44 J	
PCB-22		129.09 J		325.07 J		273.49 J		271.77 J	
PCB-24/PCB-27		UJ	12.90	31.14 J		15.06 J		14.62 J	
PCB-26		UJ	13.46	37.66 J		28.09 J		27.93 J	
PCB-29/PCB-20		124.90 J		506.86 J		224.06 J		357.90 J	
PCB-31		539.72 J		1979.38 J		929.00 J		1405.67 J	
PCB-32		86.56 J		177.37 J		100.94 J		100.34 J	
PCB-40/PCB-41/PCB-71		79.20 J		288.26 J		167.79 J		143.19 J	
PCB-42		494.35 J		1489.31 J		1056.32 J		657.40 J	
PCB-43/PCB-52/PCB-73		16746.78 J		47286.33 J		38457.57 J		20271.30 J	
PCB-44/PCB-47/PCB-65		5212.43 J		11847.15 J		7550.07 J		4166.55 J	
PCB-45/PCB-51		73.16 J		292.94 J		138.24 J		186.32 J	
PCB-46		16.36 J		42.40 J		30.17 J		24.49 J	
PCB-48		UJ	28.20	94.97 J		UJ	40.84	51.71 J	
PCB-49/PCB-69		1213.38 J		3811.90 J		3205.60 J		2072.96 J	
PCB-50/PCB-53		75.08 J		341.24 J		163.20 J		159.34 J	
PCB-56		UJ	58.70	UJ	39.84	244.46 J		176.95 J	
PCB-59/PCB-62/PCB-75		2333.34 J		6948.04 J		4920.72 J		3661.86 J	
PCB-60		623.82 J		1362.68 J		785.04 J		1422.39 J	
PCB-63		104.30 J		360.08 J		237.76 J		283.15 J	
PCB-64		4064.94 J		14172.97 J		8055.29 J		5383.85 J	
PCB-66		3489.06 J		21722.41 J		13993.02 J		11891.85 J	
PCB-68/PCB-70/PCB-74/PCB-76		2006.72 J		8289.04 J		6149.62 J		5385.64 J	
3,3',4,4'-TetraCB (#77)	0.0001	23.16 J		52.43 J		80.10 J		28.19 J	
3,4,4',5-TetraCB (#81)	0.0005	UJ	89.95	UJ	99.69	UJ	99.93	UJ	99.93
PCB-82		558.38 J		3236.22 J		3232.69 J		2288.54 J	
PCB-83/PCB-99		21588.28 J		58860.34 J		52790.80 J		32585.55 J	
PCB-84		1458.10 J		9860.24 J		8133.17 J		4728.12 J	
PCB-85/PCB-116/PCB-117		8392.32 J		24558.48 J		19819.86 J		13632.54 J	
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125		6877.70 J		36212.22 J		30108.60 J		19344.36 J	
PCB-89		6.17 J		16.45 J		13.39 J		10.60 J	
PCB-90/PCB-101/PCB-113		14930.70 J		UJ	199.19	64034.10 J		20471.10 J	
PCB-98/PCB-95		1274.84 J		6889.32 J		6921.26 J		3149.48 J	
PCB-92		4931.87 J		29746.70 J		24095.31 J		7914.22 J	
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		4886.26 J		34159.30 J		34483.70 J		13229.36 J	
2,3,3',4,4'-PentaCB (#105)	<0.000035	8651.60 J		32931.43 J		16017.38 J		17766.72 J	
PCB-106/PCB-124		214.28 J		895.92 J		790.56 J		527.28 J	

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Sampler

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B20F2 SDG No. 48685-53 PCB
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-AE-4001-0000-01		APC-AE-4002-0000-01		APC-AE-4003-0000-01		DYR-AE-5003-0000-01	
STATION LOCATION:		ALLENDALE POND CHANNEL		ALLENDALE POND CHANNEL		ALLENDALE POND CHANNEL		DYERVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ug/kg	DL/EMPC*	ug/kg	DL/EMPC*	ug/kg	DL/EMPC*	ug/kg	DL/EMPC*
PCB-110/PCB-115		31918.62 J		58830.14 J		50287.80 J		68584.95 J	
2,3',4,4',5-PentaCB (#118)	< 0.000005	474.24 J		1339.81 J		1077.85 J		1084.74 J	
2,3',4',5-PentaCB (#112)	< 0.000005	39131.23 J		61835.62 J		77936.49 J		78122.61 J	
PCB-106/PCB-107/2',3,4,4',5-PentaCB (#123)	< 0.000005	728.86 J		5053.78 J		2934.00 J		3470.83 J	
3,3',4,4',5-PentaCB (#126)	0.085	158.35 J		158.62 J		261.95 J		97.47 J	
PCB-128/PCB-166		10732.76 J		48054.82 J		28332.78 J		20671.85 J	
PCB-129/PCB-138/PCB-163/PCB-164		61818.38 J		UJ	99.58	198632.88 J		118813.83 J	
PCB-130		4601.21 J		13578.08 J		11437.95 J		7591.87 J	
PCB-131		67.41 J		558.00 J		362.65 J		257.61 J	
PCB-132		2370.57 J		25311.92 J		18936.83 J		8352.73 J	
PCB-134/PCB-143		1313.85 J		4191.02 J		5967.24 J		2544.78 J	
PCB-135/PCB-151/PCB-154		2134.74 J		11708.67 J		15772.05 J		3783.80 J	
PCB-136		414.84 J		2864.70 J		2652.69 J		1272.91 J	
PCB-137/PCB-164		4876.42 J		16258.02 J		21358.24 J		8417.86 J	
PCB-141		4853.80 J		17318.78 J		14008.81 J		8478.87 J	
PCB-144		UJ	89.05	UJ	89.69	104.08 J		67.87 J	
PCB-146/PCB-161		5887.58 J		24231.70 J		24788.06 J		6868.82 J	
PCB-147/PCB-149		28834.18 J		95042.80 J		165613.29 J		31140.16 J	
PCB-153/PCB-168		49872.70 J		82044.80 J		83632.06 J		53864.84 J	
2,3,3',4,4',5-HexaCB (#156)/2,3,3',4,4',5'-HexaCB (#157)	< 0.000005	4285.50 J		14388.28 J		9053.00 J		5571.82 J	
PCB-158		6787.47 J		13143.28 J		12304.06 J		6782.58 J	
2,3',4,4',5,5'-HexaCB (#167)	< 0.000005	1787.66 J		4826.54 J		4258.98 J		4227.83 J	
3,3',4,4',5,5'-HexaCB (#169)	< 0.000005	UJ	99.56	136.80 J		UJ	214.75	133.85 J	
PCB-170		5169.60 J		20802.63 J		14154.58 J		17842.65 J	
PCB-171/PCB-173		1528.90 J		6187.18 J		4248.38 J		4292.14 J	
PCB-172		1194.57 J		3029.79 J		2398.34 J		2205.17 J	
PCB-174		1867.02 J		7129.00 J		8776.32 J		4409.32 J	
PCB-175		69.35 J		321.72 J		176.70 J		219.14 J	
PCB-176		37.42 J		357.57 J		151.38 J		123.22 J	
PCB-177		4017.81 J		11527.12 J		9683.68 J		7785.19 J	
PCB-178		1705.30 J		3470.60 J		3046.53 J		1789.75 J	
PCB-179/PCB-193		8565.16 J		29258.39 J		17712.69 J		20579.05 J	
PCB-180		UJ	198.90	UJ	199.19	UJ	196.95	UJ	199.88
PCB-183		2928.83 J		9270.28 J		3150.64 J		3850.82 J	
PCB-184		10.95 J		22.23 J		14.01 J		12.02 J	
PCB-185		77.88 J		389.38 J		282.02 J		214.44 J	
PCB-187		25438.73 J		45161.80 J		67828.82 J		16287.88 J	
2,3,3',4,4',5,5'-HeptaCB (#189)	< 0.000005	178.75 J		496.32 J		848.06 J		357.87 J	
PCB-190		2073.24 J		5425.16 J		3656.73 J		2873.82 J	
PCB-191		147.84 J		822.82 J		383.65 J		437.66 J	
PCB-194		1527.83 J		4657.22 J		2472.05 J		4203.06 J	
PCB-195		725.47 J		1978.57 J		1048.09 J		1425.16 J	
PCB-196		845.63 J		2877.43 J		1600.34 J		1822.31 J	
PCB-197		64.55 J		149.64 J		64.65 J		75.32 J	
PCB-198/PCB-199		12348.24 J		27882.48 J		27192.34 J		12314.90 J	
PCB-200		31.47 J		161.06 J		68.70 J		69.65 J	
PCB-201		242.37 J		827.30 J		398.84 J		488.19 J	
PCB-203		2813.88 J		7355.54 J		3852.37 J		4313.82 J	
PCB-205		160.35 J		263.00 J		135.48 J		163.28 J	
PCB-206		9882.08 J		14979.81 J		10385.48 J		8186.16 J	
PCB-207		384.22 J		1107.77 J		521.63 J		592.27 J	
PCB-208		2916.27 J		5265.79 J		6398.30 J		3487.35 J	
TOTAL PCB		478288.00 J		1091577.40 J		1302184.88 J		771680.00 J	
TOXIC EQUIVALENCY(1):		1.3 J		1.5 J		1.9 J		1.8 J	
PERCENT SOLIDS:		26.8		38.1		29.4		42.2	
PERCENT LIPIDS:		7.33		15.79		10.88		13.52	
DILUTION FACTOR:		1		1		1		1	
DATE SAMPLED:		05/20/01		05/20/01		05/20/01		07/02/01	
DATE OF RECEIPT:		05/21/01		05/21/01		05/21/01		07/03/01	
SAMPLE EXTRACTION DATE:		08/07/01		08/07/01		08/07/01		08/07/01	
ANALYSIS DATE:		11/20/01		10/18/01		10/19/01		10/19/01	
LABORATORY SAMPLE I.D.:		48685-53-17		48685-53-18		48685-53-19		48685-53-23	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 783.
< = The expected upper limit of the TEF values for the congener in fish

Steve Stodola
US EPA Approval Signature

Jun 26, 2002
Date

May 29, 2002
B-02-05-P-05
Revised: June 10, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, MA 01863

Re: TO No. 004, Task No. 2, TDF No. 0406
Case No. Offal/Fillet Fish B1OF2, SDG No. 48985-74 PCB
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

209 PCB Congeners: 6/Fish Tissue/LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4003-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O, GMP-LB-5003-0000-01-O

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the 209 PCB congeners analytical data for six offal/fillet fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1668A, December 1999, as outlined in the Centredale Manor Tasks 19-22 QAPP (5/23/01). The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1668A, December 1999, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team PCB Congener Data Validation ESAT-01-0008 Draft (8/31/01). The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks

*	•	Matrix Spike/Matrix Spike Duplicate
*	•	Laboratory Control Sample
	•	Laboratory and Field Duplicates
	•	Internal/Clean-up Standards
*	•	Sample Analysis and Identification
	•	Sample Quantitation
*	•	Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
	•	2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
*	•	Required Sample Reruns and Second Column Confirmation
	•	System Performance

* - All criteria were met for this parameter.

The following information was used to generate the Data Validation Memorandum attachments:

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

Overall Evaluation of Data and Potential Usability Issues

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories, Inc. (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). Five out of five congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for PCBs in all samples were estimated (J, UJ) due to the possibility of biased low results.

The method blank had low level contamination. However, the concentration in the method blank was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to submit MS/MSD spreadsheets which include the concentration of the spike compounds, MS and MSD recoveries, and relative percent difference (RPD).

Item 1 was requested via the TOPO on April 25, 2002. Item 1 was received via the TOPO on May 2, 2002 and was adequately addressed.

PE Samples/Accuracy Check

One Cambridge Isotope Laboratories, Inc. (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). Five out of five congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-74-25 Fish SRM) results which did not meet criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D	Action	
			Positive Detects	NDs
CIL EDF 2526	PCB-77	60	J	UJ
CIL EDF 2526	PCB-105	64	J	UJ
CIL EDF 2526	PCB-118	47	J	UJ
CIL EDF 2526	PCB-126	66	J	UJ
CIL EDF 2526	PCB-169	64	J	UJ

Since all of the congeners had low recoveries and %Ds above the criterion, the results for PCBs in all the samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Calibration Verification (VER) results which did not meet Method 1668A recovery criteria listed below and the resulting sample qualifications:

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
10/21/01 (Beginning)	$^{13}C_{12}$-PCB-81	164	50-150	J	UJ	LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O
	$^{13}C_{12}$-PCB-77	166	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	156	50-150	J	UJ	
	$^{13}C_{12}$-PCB-118	153	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	168	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	162	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	166	50-150	J	UJ	
10/21/01 (Ending)	$^{13}C_{12}$-PCB-81	168	50-150	J	UJ	LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O
	$^{13}C_{12}$-PCB-77	170	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	159	50-150	J	UJ	
	$^{13}C_{12}$-PCB-118	159	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	164	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	168	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	183	50-150	J	UJ	
10/22/01 (Beginning)	$^{13}C_{12}$-PCB-81	213	50-150	J	UJ	LPX-LB-4003-0000-01-O, GMP-LB-5003-0000-01-O
	$^{13}C_{12}$-PCB-77	219	50-150	J	UJ	
	$^{13}C_{12}$-PCB-123	168	50-150	J	UJ	
	$^{13}C_{12}$-PCB-118	181	50-150	J	UJ	
	$^{13}C_{12}$-PCB-114	185	50-150	J	UJ	
	$^{13}C_{12}$-PCB-105	182	50-150	J	UJ	
	$^{13}C_{12}$-PCB-126	209	50-150	J	UJ	
	$^{13}C_{12}$-PCB-169	163	50-150	J	UJ	

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
10/22/01 (Ending)	$^{13}C_{12}$-PCB-81	153	50-150	J	UJ	LPX-LB-4003-0000-01-O, GMP-LB-5003-0000-01-O
	$^{13}C_{12}$-PCB-77	154	50-150	J	UJ	

The data associated with recoveries of noncompliant calibration verifications are qualified due to the high variability. The quantitation of the associated analytes in the samples could be biased.

Chromatographic Resolution

Many of the PCB congeners coeluted on the SPB-Octyl gas chromatography column used for this project. This situation was documented in the Centredale Manor Tasks 19-22 QAPP (5/23/01). The laboratory reported the concentrations of the coeluting congeners as totals. These totals are reported on the Data Summary Tables in this memorandum and are not affected by the coelution of the congeners. Four of the "toxic congeners" with TEF values coeluted: PCB-114, PCB-123, PCB-156, and PCB-157.

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-12, PCB-13	PCB-12/PCB-13
PCB-18, PCB-30	PCB-18/PCB-30
PCB-20, PCB-21, PCB-28, PCB-33	PCB-20/PCB-21/PCB-28/PCB-33
PCB-24, PCB-27	PCB-24/PCB-27
PCB-26, PCB-29	PCB-26/PCB-29
PCB-40, PCB-41, PCB-71	PCB-40/PCB-41/PCB-71
PCB-43, PCB-52, PCB-73	PCB-43/PCB-52/PCB-73
PCB-44, PCB-47, PCB-65	PCB-44/PCB-47/PCB-65
PCB-45, PCB-51	PCB-45/PCB-51
PCB-49, PCB-69	PCB-49/PCB-69
PCB-50, PCB-53	PCB-50/PCB-53
PCB-59, PCB-62, PCB-75	PCB-59/PCB-62/PCB-75
PCB-61, PCB-70, PCB-74, PCB-76	PCB-61/PCB-70/PCB-74/PCB-76

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-82, PCB-111	PCB-82/PCB-111
PCB-83, PCB-99	PCB-83/PCB-99
PCB-85, PCB-116, PCB-117	PCB-85/PCB-116/PCB-117
PCB-86, PCB-87, PCB-97, PCB-109, PCB-119, PCB-125	PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125
PCB-89, PCB-121	PCB-89/PCB-121
PCB-90, PCB-101, PCB-113	PCB-90/PCB-101/PCB-113
PCB-88, PCB-91	PCB-88/PCB-91
PCB-93, PCB-95, PCB-98, PCB-100, PCB-102	PCB-93/PCB-95/PCB-98/PCB-100/PCB-102
PCB-108, PCB-124	PCB-108/PCB-124
PCB-110, PCB-115	PCB-110/PCB-115
PCB-114, PCB-122	2344'5-PentaCB (#114)/PCB-122
PCB-106, PCB-107, PCB-123	PCB-106/PCB-107/2'344'5-PentaCB (#123)
PCB-128, PCB-166	PCB-128/PCB-166
PCB-129, PCB-138, PCB-160, PCB-163	PCB-129/PCB-138/PCB-160/PCB-163
PCB-134, PCB-143	PCB-134/PCB-143
PCB-135, PCB-151, PCB-154	PCB-135/PCB-151/PCB-154
PCB-137, PCB-164	PCB-137/PCB-164
PCB-146, PCB-161	PCB-146/PCB-161
PCB-147, PCB-149	PCB-147/PCB-149
PCB-153, PCB-168	PCB-153/PCB-168
PCB-156, PCB-157	233'44'5HexaCB (#156)/233'44'5'HexaCB (#157)
PCB-171, PCB-173	PCB-171/PCB-173
PCB-180, PCB-193	PCB-180/PCB-193
PCB-198, PCB-199	PCB-198/PCB-199

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following table lists the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration (ng/Kg)	Action Level (ng/Kg)	Affected Samples
PCB-1	Method Blank (8/23/01)	8.5	42	All samples
PCB-3	Method Blank (8/23/01)	8.4	42	All samples
PCB-6	Method Blank (8/23/01)	4.6	23	GMP-LB-5003-0000-01-O
PCB-8	Method Blank (8/23/01)	28	140	GMP-LB-5003-0000-01-O

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team PCB Congener data Validation ESAT-01-0008 Draft (8/31/01) criteria. Blank action levels are calculated as five times the highest concentration of the contaminant determined in any blank. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Laboratory and Field Duplicates

One laboratory duplicate pair was evaluated for this SDG (LPX-LB-4001-000-01-O/LPX-LB-4001-0000-01-ODup).

The table below summarizes the laboratory duplicate results which did not meet the duplicate criterion of Relative Percent Difference (RPD) < 30% as specified by Centredale Manor Tasks 19-22 QAPP (5/23/01).

Congener	LPX-LB-4001-0000-01-O	LPX-LB-4001-0000-01-ODup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-45/ PCB-51	1350	1850	31	J	UJ	All
PCB-46	271	432	46	J	UJ	All

Congener	LPX-LB-4001-0000-01-O	LPX-LB-4001-0000-01-ODup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-134/ PCB-143	1860	2530	31	J	UJ	All
PCB-136	1650	2360	35	J	UJ	All

Professional judgment was used to estimate (J, UJ) results for the above referenced congeners in all samples since the laboratory duplicate precision was outside criterion.

Internal/Clean-up Standards

- Internal Standards

The following table summarizes the internal standard recoveries that did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) acceptance criteria of 25-150%:

Standard	% Recovery	Action		Affected Sample
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-155	10	J	UJ	GMP-LB-5003-0000-01-O
$^{13}C_{12}$-PCB-188	10	J	UJ	GMP-LB-5003-0000-01-O
$^{13}C_{12}$-PCB-202	21	J	UJ	GMP-LB-5003-0000-01-O
$^{13}C_{12}$-PCB-208	15	J	UJ	GMP-LB-5003-0000-01-O
$^{13}C_{12}$-PCB-206	18	J	UJ	GMP-LB-5003-0000-01-O
$^{13}C_{12}$-PCB-209	13	J	UJ	GMP-LB-5003-0000-01-O

The corresponding non-labeled congener results for sample GMP-LB-5003-0000-01-O are estimated as shown in the table due to internal standard percent recoveries outside the method acceptance criteria.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. The validated data accounts for blank contamination. The TE calculations include the reported EMPC values. The Fish TEF values for the PCBs are published in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number 12, December 1998, Table 2, page 780.

System Performance

No trends noted.

Very truly yours,

LOCKHEED ENVIRONMENTAL

for: Paula L. DiMattei
Data Validator

Robert Peary
Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet Fish B1OF2/SDG No. 48985-74 PCB

Sample Nos.	LPX-LB-4001	LPX-LB-4002	LPX-LB-4003	LPX-LB-4004	LPX-LB-4005	GMP-LB-5003
Compound						
PCB-1	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
PCB-3	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
PCB-4	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-5	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-6	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,3]
PCB-7	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-8	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,3]
PCB-9	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-10	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-12/PCB-13	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-16	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-17	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-18/PCB-30	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-19	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-20/PCB-21/PCB-28/PCB-33	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-22	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-24/PCB-27	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-25	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-26/PCB-29	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet Fish B1OF2/SDG No. 48985-74 PCB

Sample Nos.	LPX-LB-4001	LPX-LB-4002	LPX-LB-4003	LPX-LB-4004	LPX-LB-4005	GMP-LB-5003
Compound						
PCB-31	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-32	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-40/PCB-41/PCB-71	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-42	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-43/PCB-52/PCB-73	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-44/PCB-47/PCB-65	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-45/PCB-51	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-46	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]	J[1,2,4]
PCB-48	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-49/PCB-69	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-50/PCB-53	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-56	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-59/PCB-62/PCB-75	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-60	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-63	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-64	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-66	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-61/PCB-70/PCB-74/PCB-76	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
33'44'-TetraCB (#77)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
344'5-TetraCB (#81)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet Fish B1OF2/SDG No. 48985-74 PCB

Sample Nos.	LPX-LB-4001	LPX-LB-4002	LPX-LB-4003	LPX-LB-4004	LPX-LB-4005	GMP-LB-5003
Compound						
PCB-82/PCB-111	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-83/PCB-99	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-84	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-85/PCB-116/PCB-117	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-86/PCB-87/PCB-97/PCB-109/ PCB-119/PCB-125	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-89/PCB-121	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-90/PCB-101/PCB-113	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-88/PCB-91	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-92	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-93/PCB-95/PCB-98/PCB-100/ PCB-102	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
233'44'-PentaCB (#105)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-108/PCB-124	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-110/PCB-115	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
2344'5-PentaCB (#114)/PCB-122	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
23'44'5-PentaCB (#118)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-106/PCB-107/2'344'5-PentaCB (#123)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
33'44'5-PentaCB (#126)	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]	J[1,2]
PCB-128/PCB-166	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet Fish B1OF2/SDG No. 48985-74 PCB

Sample Nos.	LPX-LB-4001	LPX-LB-4002	LPX-LB-4003	LPX-LB-4004	LPX-LB-4005	GMP-LB-5003
Compound						
PCB-129/PCB-138/PCB-160/ PCB-163	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-130	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-131	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-132	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-134/PCB-143	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4,5]
PCB-135/PCB-151/PCB-154	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-136	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4,5]
PCB-137/PCB-164	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-141	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-144	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-146/PCB-161	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-147/PCB-149	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-153/PCB-168	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
233'44'5-HexaCB (#156)/ 233'44'5'-HexaCB (#157)	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-158	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
23'44'55'-HexaCB (#167)	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
33'44'55'-HexaCB (#169)	J[1]	J[1]	J[1,2]	J[1]	J[1]	J[1,2]
PCB-170	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-171/PCB-173	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet Fish B1OF2/SDG No. 48985-74 PCB

Sample Nos.	LPX-LB-4001	LPX-LB-4002	LPX-LB-4003	LPX-LB-4004	LPX-LB-4005	GMP-LB-5003
Compound						
PCB-172	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-174	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-175	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-176	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-177	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-178	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-180/PCB-193	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-182	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-183	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-184	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-185	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-187	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
233'44'55'-HeptaCB (#189)	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-190	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-191	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-194	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-195	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-196	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-197	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-198/PCB-199	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet Fish B1OF2/SDG No. 48985-74 PCB

Sample Nos.	LPX-LB-4001	LPX-LB-4002	LPX-LB-4003	LPX-LB-4004	LPX-LB-4005	GMP-LB-5003
Compound						
PCB-200	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-201	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-203	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-205	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
PCB-206	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-207	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
PCB-209	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]

Table I
Recommendation Summary Table for PCB Congeners

A	-	Accept all results.
J[1]	-	PE %D outside criterion; J detects, UJ non-detects.
J[2]	-	VER recoveries outside criterion; J detects, UJ non-detects.
J[3]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
J[4]	-	Laboratory duplicate precision outside criterion; J detects, UJ non-detects.
J[5]	-	Internal standard recoveries outside criterion; J detects, UJ non-detects.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

PCB ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: J[1,2,3,4,5]	Refer to qualification in R/S Key on Table I:	**	One Cambridge Isotope Laboratories, Inc. (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). Five out of five congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for PCBs in all samples were estimated (J, UJ) due to the possibility of biased low results. The method blank had low level contamination. However, the concentration in the method blank was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: R. Pleasy

Date: 6/10/02

Data Summary T-
Polychlorinated Biphenyls Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Offal/Filet Fish- B10F2
LABORATORY: BATTELLE

SDG No. 48965-74 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-LB-4001-0000-01-O		LPX-LB-4002-0000-01-O		LPX-LB-4003-0000-01-O		LPX-LB-4004-0000-01-O		LPX-LB-4005-0000-01-O		GMP-LB-5003-0000-01-O	
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		GREYSTONE MILL POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-1		UJ	36.03	UJ	33.27	UJ	23.17	UJ	12.61	UJ	14.97	UJ	9.06
PCB-3		UJ	14.47	UJ	15.62	UJ	13.98	UJ	8.14	UJ	10.24	UJ	8.40
PCB-4		264.43 J		241.10 J		172.78 J		60.70 J		56.98 J		18.09 J	
PCB-5		11.21 J		9.53 J		5.13 J		5.14 J		UJ	9.95	UJ	9.95
PCB-6		147.22 J		134.45 J		63.50 J		41.14 J		37.26 J		UJ	12.71
PCB-7		28.90 J		28.12 J		13.71 J		10.53 J		8.55 J		3.37 J	
PCB-8		573.55 J		630.63 J		278.66 J		164.21 J		153.95 J		UJ	47.60
PCB-9		57.91 J		48.13 J		21.41 J		15.10 J		14.55 J		3.86 J	
PCB-10		11.27 J		14.70 J		7.78 J		4.72 J		2.97 J		UJ	9.95
PCB-12/PCB-13		4.98 J		4.52 J		UJ	19.96	5.14 J		UJ	19.90	UJ	19.89
PCB-16		1045.24 J		1020.41 J		380.65 J		190.07 J		184.21 J		45.49 J	
PCB-17		1306.77 J		1354.38 J		472.35 J		264.69 J		249.61 J		49.43 J	
PCB-18/PCB-30		2705.86 J		2671.70 J		988.28 J		526.32 J		520.98 J		111.22 J	
PCB-19		264.15 J		240.61 J		92.43 J		57.57 J		54.16 J		12.25 J	
PCB-20/PCB-21/PCB-28/PCB-33		14191.76 J		14654.68 J		4623.68 J		3543.88 J		3550.20 J		595.32 J	
PCB-22		2092.14 J		2033.90 J		530.72 J		489.59 J		389.15 J		148.84 J	
PCB-24/PCB-27		277.56 J		274.16 J		101.26 J		51.18 J		53.44 J		11.74 J	
PCB-25		548.26 J		519.15 J		119.33 J		108.38 J		89.45 J		17.42 J	
PCB-26/PCB-29		1609.20 J		1592.30 J		408.78 J		335.68 J		317.38 J		51.76 J	
PCB-31		5947.03 J		5289.73 J		1333.80 J		1351.44 J		929.49 J		226.23 J	
PCB-32		1041.59 J		1085.73 J		367.83 J		206.93 J		181.08 J		40.19 J	
PCB-40/PCB-41/PCB-71		4606.17 J		5343.76 J		1630.51 J		1425.48 J		1481.28 J		273.78 J	
PCB-42		3286.68 J		3996.92 J		1214.68 J		1073.13 J		1045.60 J		126.70 J	
PCB-43/PCB-52/PCB-73		30615.98 J		33662.86 J		11463.06 J		10995.24 J		11085.39 J		1295.73 J	
PCB-44/PCB-47/PCB-65		5422.14 J		6313.98 J		2366.79 J		1870.69 J		2439.76 J		155.43 J	
PCB-45/PCB-51		1353.20 J		1530.30 J		470.50 J		335.74 J		318.90 J		54.66 J	
PCB-46		271.23 J		366.90 J		108.96 J		74.34 J		78.71 J		12.76 J	
PCB-48		1760.19 J		2022.68 J		853.74 J		479.45 J		566.11 J		66.79 J	
PCB-49/PCB-69		11957.28 J		13968.60 J		4590.32 J		4150.30 J		4345.02 J		378.66 J	
PCB-50/PCB-53		1247.94 J		1404.66 J		399.56 J		275.00 J		285.40 J		44.16 J	
PCB-56		3571.82 J		3464.80 J		1270.57 J		1087.91 J		645.55 J		289.77 J	
PCB-59/PCB-62/PCB-75		8856.99 J		10356.82 J		3615.16 J		2608.40 J		2778.29 J		450.11 J	
PCB-60		2381.58 J		2701.98 J		1355.49 J		786.04 J		1187.34 J		292.19 J	
PCB-63		919.03 J		1028.51 J		472.42 J		333.26 J		451.07 J		41.98 J	
PCB-64		5995.69 J		6856.74 J		2618.86 J		2016.94 J		1874.72 J		356.47 J	
PCB-66		27198.75 J		29977.13 J		13112.10 J		9549.59 J		15506.04 J		1272.82 J	
PCB-67/PCB-70/PCB-74/PCB-76		26275.12 J		28714.32 J		10812.12 J		8663.60 J		7938.64 J		1361.72 J	
3,3',4,4'-TetraCB (#77)	0.0001	656.53 J		489.35 J		240.71 J		164.37 J		108.09 J		37.28 J	
3,4,4',5-TetraCB (#81)	0.0005	UJ	99.84	UJ	99.69	UJ	99.79	UJ	99.99	UJ	99.48	UJ	99.47
PCB-82/PCB-111		4705.97 J		5727.16 J		2579.74 J		1578.00 J		1579.59 J		382.42 J	
PCB-83/PCB-99		46465.80 J		52866.12 J		26790.34 J		15019.10 J		34701.78 J		1857.69 J	
PCB-84		5630.44 J		7206.89 J		3500.30 J		1624.74 J		1552.77 J		555.33 J	
PCB-85/PCB-116/PCB-117		14978.94 J		17130.03 J		7899.63 J		4601.79 J		10428.15 J		855.02 J	
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125		40036.80 J		46125.96 J		22847.58 J		12751.62 J		21938.28 J		2566.52 J	
PCB-98/PCB-121		202.03 J		249.08 J		97.51 J		45.46 J		44.69 J		17.92 J	
PCB-90/PCB-101/PCB-113		84283.59 J		92946.13 J		47088.15 J		27361.44 J		59174.19 J		3176.11 J	
PCB-88/PCB-91		5455.56 J		6661.68 J		3184.38 J		1778.94 J		2526.24 J		341.46 J	
PCB-92		13282.36 J		14298.03 J		7874.16 J		4508.16 J		7093.91 J		657.01 J	
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		28856.50 J		31154.20 J		15305.33 J		8268.80 J		8493.60 J		1907.09 J	
2,3,3',4,4'-PentaCB (#105)	<0.000005	14851.83 J		17343.70 J		8466.36 J		4683.64 J		12337.06 J		1311.03 J	
PCB-106/PCB-124		2430.20 J		2544.68 J		1929.20 J		782.50 J		993.82 J		107.66 J	
PCB-110/PCB-115		60918.32 J		72941.80 J		31516.18 J		19535.54 J		26845.94 J		4422.29 J	
2,3,4,4',5-PentaCB (#114)/PCB-122	<0.000005	1519.75 J		1642.85 J		766.84 J		467.44 J		864.95 J		141.46 J	
2,3',4,4',5-PentaCB (#118)	<0.000005	73542.17 J		82572.86 J		45947.38 J		25363.84 J		67631.66 J		5059.95 J	
PCB-108/PCB-107/2',3,4,4',5-PentaCB (#123)	<0.000005	7843.41 J		9163.08 J		4301.71 J		2749.44 J		8129.45 J		461.37 J	
3,3',4,4',5-PentaCB (#126)	0.005	354.99 J		147.57 J		89.34 J		52.10 J		101.56 J		12.92 J	
PCB-128/PCB-166		13024.14 J		16270.94 J		7710.84 J		4026.80 J		12415.82 J		1169.19 J	
PCB-129/PCB-138/PCB-160/PCB-163		45070.82 J		55242.92 J		60750.12 J		15060.20 J		90605.00 J		6113.88 J	
PCB-130		4852.67 J		5688.44 J		2940.67 J		1439.87 J		3403.87 J		350.17 J	
PCB-131		549.35 J		UJ	99.69	378.61 J		144.79 J		399.71 J		38.53 J	
PCB-132		10259.28 J		12612.57 J		6329.92 J		3043.46 J		4447.20 J		990.89 J	
PCB-134/PCB-143		1856.46 J		1928.94 J		1046.10 J		466.62 J		617.36 J		151.12 J	
PCB-135/PCB-151/PCB-154		7880.58 J		9620.59 J		4456.15 J		2921.01 J		3982.47 J		617.10 J	
PCB-136		1651.92 J		2224.22 J		909.39 J		506.26 J		401.67 J		174.95 J	
PCB-137/PCB-164		7776.60 J		9532.96 J		4843.36 J		2531.28 J		8071.14 J		545.56 J	
PCB-141		8636.93 J		10604.42 J		5550.30 J		2924.69 J		8198.71 J		571.17 J	
PCB-144		1583.64 J		1848.26 J		959.98 J		497.31 J		1166.50 J		59.70 J	

Data Summary Table
Polychlorinated Biphenyls Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Otis/Fish Fish- B10F2 SDG No. 46985-74 PCB
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-LB-4001-0000-01-O		LPX-LB-4002-0000-01-O		LPX-LB-4003-0000-01-O		LPX-LB-4004-0000-01-O		LPX-LB-4005-0000-01-O		GMP-LB-5003-0000-01-O	
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		GREYSTONE MILL POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-146/PCB-161		9163.14 J		11035.36 J		5073.38 J		3467.14 J		9136.18 J		452.50 J	
PCB-147/PCB-149		31992.04 J		39281.94 J		20695.06 J		11447.86 J		23881.94 J		2469.92 J	
PCB-153/PCB-168		83469.30 J		78315.72 J		41553.54 J		22077.10 J		68024.08 J		2601.10 J	
2,3,3',4,4',5- HexaCB (#156)2,3,3',4,4',5'-HexaCB (#157)	<0.000005	8318.34 J		9896.22 J		5022.90 J		2768.94 J		8595.88 J		538.66 J	
PCB-158		7621.71 J		8239.77 J		4512.79 J		2305.72 J		7371.45 J		476.96 J	
2,3',4,4',5,5'-HexaCB (#167)	<0.000005	3407.09 J		4253.15 J		2182.74 J		1133.14 J		3812.38 J		227.85 J	
3,3',4,4',5,5'-HexaCB (#169)	0.00005	UJ	99.64	UJ	99.69	UJ	99.79	UJ	99.99	UJ	99.46	20.13 J	
PCB-170		7918.84 J		10341.89 J		5520.97 J		2834.94 J		9443.79 J		1757.16 J	
PCB-171/PCB-173		2209.10 J		2989.70 J		1861.26 J		782.74 J		2440.26 J		439.12 J	
PCB-172		1495.78 J		1960.33 J		1152.63 J		582.34 J		1580.46 J		341.45 J	
PCB-174		2497.74 J		3440.04 J		1588.72 J		845.41 J		1648.46 J		933.92 J	
PCB-175		209.10 J		290.35 J		133.80 J		64.37 J		204.79 J		38.14 J	
PCB-176		250.88 J		353.38 J		169.14 J		89.82 J		186.67 J		54.86 J	
PCB-177		2867.87 J		3492.20 J		2041.45 J		817.99 J		1470.70 J		611.90 J	
PCB-178		1028.70 J		1358.83 J		599.37 J		362.86 J		892.21 J		331.65 J	
PCB-180/PCB-193		14626.34 J		19684.24 J		11476.72 J		6782.90 J		17153.80 J		2779.48 J	
PCB-182		45.26 J		61.98 J		21.94 J		18.87 J		44.61 J		12.89 J	
PCB-183		2945.12 J		4115.65 J		2354.01 J		1107.30 J		3133.20 J		361.17 J	
PCB-184		14.95 J		19.11 J		10.64 J		6.81 J		12.53 J		UJ	196.94
PCB-185		381.82 J		513.27 J		223.29 J		139.75 J		261.74 J		74.96 J	
PCB-187		6940.16 J		9540.86 J		4415.09 J		4179.82 J		7070.63 J		2308.97 J	
2,3,3',4,4',5,5'-HeptaCB (#189)	<0.000005	242.20 J		322.10 J		180.24 J		111.44 J		296.84 J		43.28 J	
PCB-190		1784.22 J		2363.27 J		1218.24 J		700.46 J		1841.46 J		587.12 J	
PCB-191		262.36 J		370.17 J		232.72 J		100.98 J		316.18 J		51.86 J	
PCB-194		2367.41 J		3184.06 J		1491.47 J		850.01 J		2497.48 J		948.14 J	
PCB-195		666.49 J		911.23 J		447.17 J		271.13 J		734.53 J		249.51 J	
PCB-196		1342.02 J		1884.45 J		950.16 J		456.89 J		1280.87 J		542.20 J	
PCB-197		81.10 J		117.53 J		75.68 J		33.96 J		85.11 J		30.60 J	
PCB-198/PCB-199		7236.44 J		10007.78 J		5014.86 J		3050.62 J		5093.24 J		5861.10 J	
PCB-200		89.19 J		128.48 J		62.84 J		24.20 J		27.42 J		75.60 J	
PCB-201		428.24 J		644.32 J		358.06 J		143.83 J		338.82 J		191.43 J	
PCB-203		4079.09 J		6040.13 J		2958.16 J		1591.30 J		3326.45 J		1676.79 J	
PCB-205		120.98 J		189.38 J		93.81 J		48.92 J		124.96 J		57.06 J	
PCB-206		7612.04 J		11959.48 J		6068.97 J		3177.27 J		8638.08 J		6452.23 J	
PCB-207		783.97 J		1131.68 J		653.59 J		247.88 J		639.50 J		434.00 J	
PCB-208		3065.09 J		6810.68 J		2914.33 J		1334.50 J		3161.44 J		3589.19 J	
TOTAL PCB		872674.14 J		1022334.56 J		514548.72 J		290182.85 J		652904.90 J		89385.31 J	
TOXIC EQUIVALENCY(1):			2.3 J		1.4 J		0.79 J		0.45 J		1.0 J		0.11 J
PERCENT SOLIDS:			27.2		25.2		25.0		21.2		19.4		20.5
PERCENT LIPIDS:			4.62		4.50		3.14		3.09		1.05		3.60
DILUTION FACTOR:			1		1		1		1		1		1
DATE SAMPLED:			08/21/01		08/21/01		08/21/01		08/21/01		08/21/01		08/25/01
DATE OF RECEIPT:			08/22/01		08/22/01		08/22/01		08/22/01		08/22/01		08/27/01
SAMPLE EXTRACTION DATE:			08/23/01		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01
ANALYSIS DATE:			10/21/01		10/21/01		10/22/01		10/21/01		10/21/01		10/22/01
LABORATORY SAMPLE I.D.:			46985-74-16		46985-74-17		46985-74-18		46985-74-19		46985-74-20		46985-74-22

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Fish Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
< = The expected upper limit of the TEF values for the congener in fish.

Steve Stodola
US EPA Approval Signature

June 25, 2002
Date

May 23, 2002
B-02-05-Y-3
Revised: June 17, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, MA 01863

Re: TO No. 010, Task No. 2, TDF No. 0602
Case No. Offal/Fillet B2OF2, SDG No. 48985-84 PCB
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

209 PCB Congeners: 6/Tissue/GMP-LB-5001-0000-01F, LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the 209 PCB congeners analytical data for six fillet fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1668A, December 1999, as outlined in the Centredale Manor Tasks 19-22 QAPP (5/23/01). The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1668A, December 1999, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team PCB Congener Data Validation ESAT-01-0008 Draft (8/31/01). The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- * Matrix Spike/Matrix Spike Duplicate

- Laboratory Control Sample
- Laboratory and Field Duplicates
- Internal/Clean-up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
- * Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

The following information was used to generate the Data Validation Memorandum attachments:

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

Overall Evaluation of Data and Potential Usability Issues

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). All congeners except for one were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners except for one had low recoveries, the results for all congeners in all samples were estimated (J, UJ) due to the possibility of biased low results.

The method blank had low level contamination. However, the concentration in the method blanks was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to submit MS/MSD and duplicate precision spreadsheets with the concentrations and RPDs reported.

2. The laboratory was asked to resubmit the Form Is for sample LPX-LB-4004. The LAB QUAL flag was off by one row.

3. The laboratory was asked to submit 48514-03-15 M1668 PCB 209 mix for 10/24/01.

Items 1 thru 3 were requested via the TOPO on April 29, 2002. Items 1 thru 3 were received via the TOPO on May 8, 2002. All items were adequately addressed.

PE Samples/Accuracy Check

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). All congeners except for PCB-118 were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-84-25 FISH SRM) results which did not meet the criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	PCB-77	32	J	UJ
CIL EDF 2526	PCB-105	48	J	UJ
CIL EDF 2526	PCB-126	39	J	UJ
CIL EDF 2526	PCB-169	35	J	UJ

Since all of the congeners except for PCB-118 had low recoveries as indicated by the large %D, the results for all PCB congeners in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Calibration Verification (VER) results which did not meet Method 1668A recovery criterion and the resulting sample qualifications:

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-77	198	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-81	195	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-105	167	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-114	165	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-118	160	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-123	163	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/23/01 (Beginning)	$^{13}C_{12}$-PCB-126	176	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/24/01 (Ending)	$^{13}C_{12}$-PCB-77	163	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F

VER Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
10/24/01 (Ending)	$^{13}C_{12}$-PCB-81	163	50-150	J	UJ	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F LPX-LB-4005-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-77	170	50-150	J	UJ	GMP-LB-5001-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-81	164	50-150	J	UJ	GMP-LB-5001-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-105	169	50-150	J	UJ	GMP-LB-5001-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-114	171	50-150	J	UJ	GMP-LB-5001-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-118	163	50-150	J	UJ	GMP-LB-5001-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-123	165	50-150	J	UJ	GMP-LB-5001-0000-01F
10/24/01 (Beginning)	$^{13}C_{12}$-PCB-126	182	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-77	168	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-81	166	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-105	174	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-114	175	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-118	165	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-123	168	50-150	J	UJ	GMP-LB-5001-0000-01F
10/25/01 (Ending)	$^{13}C_{12}$-PCB-126	175	50-150	J	UJ	GMP-LB-5001-0000-01F

The data associated with recoveries of noncompliant calibration verifications are qualified due to the high variability. The quantitation of the associated analytes in the samples could be biased.

Chromatographic Resolution

Many PCB congeners coeluted on the SPB-Octyl gas chromatography column used for this project. This situation was documented in Centredale Manor Tasks 19-22 QAPP (5/23/01). The laboratory reported the coeluting concentrations as totals. These totals are reported on the Data Summary Tables in this report and are not affected by the coelution of the congeners. Four of the "toxic congeners" with TEF values coeluted: PCB-114, PCB-123, PCB-156, and PCB-157.

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-12, PCB-13	PCB-12/PCB-13
PCB-18, PCB-30	PCB-18/PCB-30
PCB-20, PCB-21, PCB-28, PCB-33	PCB-20/PCB-21/PCB-28/PCB-33
PCB-24, PCB-27	PCB-24/PCB-27
PCB-26, PCB-29	PCB-26/PCB-29
PCB-40, PCB-41, PCB-71	PCB-40/PCB-41/PCB-71
PCB-43, PCB-52, PCB-73	PCB-43/PCB-52/PCB-73
PCB-44, PCB-47, PCB-65	PCB-44/PCB-47/PCB-65
PCB-45, PCB-51	PCB-45/PCB-51
PCB-49, PCB-69	PCB-49/PCB-69
PCB-50, PCB-53	PCB-50/PCB-53
PCB-59, PCB-62, PCB-75	PCB-59/PCB-62/PCB-75
PCB-61, PCB-70, PCB-74, PCB-76	PCB-61/PCB-70/PCB-74/PCB-76
PCB-82, PCB-111	PCB-82/PCB-111
PCB-83, PCB-99	PCB-83, PCB-99
PCB-85, PCB-116, PCB-117	PCB-85/PCB-116/PCB-117
PCB-86, PCB-87, PCB-97, PCB-109, PCB-119, PCB-125	PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125
PCB-89, PCB-121	PCB-89/PCB-121
PCB-90, PCB-101, PCB-113	PCB-90/PCB-101/PCB-113
PCB-88, PCB-91	PCB-88/PCB-91
PCB-93, PCB-95, PCB-98, PCB-100, PCB-102	PCB-93/PCB-95/PCB-98/PCB-100/PCB-102
PCB-108, PCB-124	PCB-108/PCB-124
PCB-110, PCB-115	PCB-110/PCB-115
PCB-114, PCB-122	2344'5-PentaCB (#114)/PCB-122

Coeluting Congeners	Reported as on the Data Summary Table:
PCB-106, PCB-107, PCB-123	PCB-106/PCB-107/2'344'5-PentaCB (#123)
PCB-128, PCB-166	PCB-128/PCB-166
PCB-129, PCB-138, PCB-160, PCB-163	PCB-129/PCB-138/PCB-160/PCB-163
PCB-134, PCB-143	PCB-134/PCB-143
PCB-135, PCB-151, PCB-154	PCB-135/PCB-151/PCB-154
PCB-137, PCB-164	PCB-137/PCB-164
PCB-146, PCB-161	PCB-146/PCB-161
PCB-147, PCB-149	PCB-147/PCB-149
PCB-153, PCB-168	PCB-153/PCB-168
PCB-156, PCB-157	233'44'5-HexaCB(#156)/233'44'5'-HexaCB(#157)
PCB-171, PCB-173	PCB-171/PCB-173
PCB-180, PCB-193	PCB-180/PCB-193
PCB-198, PCB-199	PCB-198/PCB-199

Blanks

The blank associated with this SDG was evaluated for possible sources of contamination. The following tables list the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Sample Affected
PCB-1	Method Blank (10/23/01)	7.4	37	GMP-LB-5001-0000-01F, LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F
PCB-3	Method Blank (10/23/01)	6.8	34	GMP-LB-5001-0000-01F, LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F
PCB-4	Method Blank (10/23/01)	7.0	35	LPX-LB-4001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4005-0000-01F

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Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Sample Affected
PCB-6	Method Blank (10/23/01)	5.5	28	GMP-LB-5001-0000-01F, LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4005-0000-01F
PCB-8	Method Blank (10/23/01)	21	100	GMP-LB-5001-0000-01F, LPX-LB-4001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4005-0000-01F
PCB-9	Method Blank (10/23/01)	1.1	5.5	LPX-LB-4001-0000-01F, LPX-LB-4005-0000-01F
PCB-16	Method Blank (10/23/01)	8.2	41	GMP-LB-5001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F
PCB-17	Method Blank (10/23/01)	6.8	34	GMP-LB-5001-0000-01F
PCB-18/PCB-30	Method Blank (10/23/01)	14	70	GMP-LB-5001-0000-01F
PCB-20/PCB-21/PCB-28/PCB-33	Method Blank (10/23/01)	59	300	GMP-LB-5001-0000-01F
PCB-22	Method Blank (10/23/01)	15	75	GMP-LB-5001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F
PCB-25	Method Blank (10/23/01)	2.4	12	GMP-LB-5001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4005-0000-01F
PCB-26/PCB-29	Method Blank (10/23/01)	5.8	29	GMP-LB-5001-0000-01F, LPX-LB-4003-0000-01F
PCB-31	Method Blank (10/23/01)	33	160	GMP-LB-5001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F
PCB-32	Method Blank (10/23/01)	4.8	24	GMP-LB-5001-0000-01F
PCB-40/PCB-41/PCB-71	Method Blank (10/23/01)	11	55	GMP-LB-5001-0000-01F
PCB-42	Method Blank (10/23/01)	6.0	30	GMP-LB-5001-0000-01F
PCB-45/PCB-51	Method Blank (10/23/01)	3.5	18	GMP-LB-5001-0000-01F

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Sample Affected
PCB-46	Method Blank (10/23/01)	1.4	7.0	GMP-LB-5001-0000-01F, LPX-LB-4003-0000-01F
PCB-48	Method Blank (10/23/01)	5.2	26	GMP-LB-5001-0000-01F
PCB-50/PCB-53	Method Blank (10/23/01)	2.9	14	GMP-LB-5001-0000-01F
PCB-56	Method Blank (10/23/01)	14	70	GMP-LB-5001-0000-01F
PCB-59/PCB-62/PCB-75	Method Blank (10/23/01)	25	120	GMP-LB-5001-0000-01F
PCB-64	Method Blank (10/23/01)	13	65	GMP-LB-5001-0000-01F
PCB-77	Method Blank (10/23/01)	2.0	10	GMP-LB-5001-0000-01F, LPX-LB-4005-0000-01F
PCB-84	Method Blank (10/23/01)	20	100	GMP-LB-5001-0000-01F
PCB-136	Method Blank (10/23/01)	5.6	28	GMP-LB-5001-0000-01F

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team PCB Congener data Validation ESAT-01-0008 Draft (8/31/01) criteria. Blank action levels are calculated as five times the highest concentration of the contaminant determined in any blank. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Laboratory Control Sample

The laboratory extracted and analyzed one OPR/LCS with this group of samples. The following table summarizes the Ongoing Precision and Recovery (OPR) result which did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) recovery criteria and the resulting sample qualifications:

OPR Date	Compound	% Recovery	% Recovery Range	Action		Affected Samples
				Positive Detects	NDs	
08/02/01	PCB-118	153	50-150	J	A	All

The data associated with high recoveries of a noncompliant OPR/LCS are estimated (J).

Laboratory and Field Duplicates

One laboratory duplicate pair was evaluated for this SDG (LPX-LB-4005-0000-01F/LPX-LB-4005-0000-01FDup).

The table below summarizes the laboratory duplicate results which did not meet the duplicate criterion of Relative Percent Difference (RPD) < 30% as specified by Centredale Manor Tasks 19-22 QAPP (5/23/01).

Congener	LPX-LB-4005-0000-01F	LPX-LB-4005-0000-01FDup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	Non-Detects	
PCB-209	126	193	42	J	UJ	All
PCB-45/PCB-51	41.2	57.4	33	J	UJ	All

Professional judgment was used to estimate (J, UJ) results for PCB-209 and PCB-45/PCB-51 in all samples since PCB-209 and PCB-45/PCB-51 congeners' laboratory duplicate precision was outside criterion.

Internal/Clean-up Standards

- Internal Standards

The following table summarizes the internal standard recovery that did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) acceptance criterion of 25-150%:

Standard	% Recovery	Action		Affected Sample
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-155	23	J	UJ	LPX-LB-4001-0000-01F
$^{13}C_{12}$-PCB-206	24	J	UJ	LPX-LB-4001-0000-01F
$^{13}C_{12}$-PCB-209	19	J	UJ	LPX-LB-4001-0000-01F
$^{13}C_{12}$-PCB-155	10	J	UJ	LPX-LB-4002-0000-01F
$^{13}C_{12}$-PCB-188	16	J	UJ	LPX-LB-4002-0000-01F

Standard	% Recovery	Action		Affected Sample
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-205	23	J	UJ	LPX-LB-4002-0000-01F
$^{13}C_{12}$-PCB-206	12	J	UJ	LPX-LB-4002-0000-01F
$^{13}C_{12}$-PCB-208	12	J	UJ	LPX-LB-4002-0000-01F
$^{13}C_{12}$-PCB-209	7	J	UJ	LPX-LB-4002-0000-01F
$^{13}C_{12}$-PCB-155	18	J	UJ	LPX-LB-4003-0000-01F
$^{13}C_{12}$-PCB-206	19	J	UJ	LPX-LB-4003-0000-01F
$^{13}C_{12}$-PCB-208	22	J	UJ	LPX-LB-4003-0000-01F
$^{13}C_{12}$-PCB-209	16	J	UJ	LPX-LB-4003-0000-01F
$^{13}C_{12}$-PCB-206	22	J	UJ	LPX-LB-4004-0000-01F
$^{13}C_{12}$-PCB-209	20	J	UJ	LPX-LB-4004-0000-01F
$^{13}C_{12}$-PCB-155	7	J	UJ	LPX-LB-4005-0000-01F
$^{13}C_{12}$-PCB-188	9	J	UJ	LPX-LB-4005-0000-01F
$^{13}C_{12}$-PCB-202	15	J	UJ	LPX-LB-4005-0000-01F
$^{13}C_{12}$-PCB-205	18	J	UJ	LPX-LB-4005-0000-01F
$^{13}C_{12}$-PCB-206	9	J	UJ	LPX-LB-4005-0000-01F
$^{13}C_{12}$-PCB-208	8	J	UJ	LPX-LB-4005-0000-01F
$^{13}C_{12}$-PCB-209	6	J	UJ	LPX-LB-4005-0000-01F

The corresponding non-labeled congener results are estimated as shown in the table due to internal standard percent recoveries outside method acceptance criterion.

- Clean-up Standards

The following table summarizes the Clean-up standard with a recovery which did not meet the Centredale Manor Tasks 19-22 QAPP (5/23/01) acceptance criterion of 30-135%:

Clean-up Standard	% Recovery	Action		Affected Samples
		Positive Detects	NDs	
$^{13}C_{12}$-PCB-111	24	J	UJ	LPX-LB-4002-0000-01F
$^{13}C_{12}$-PCB-111	18	J	UJ	LPX-LB-4005-0000-01F

Since low recoveries may indicate interference in the clean-up process, the sample was qualified as noted above for all congeners.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. The validated data accounts for blank contamination. The fish TEF values for the PCBs are published in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number 12, December 1998, Table 2, page 780.

System Performance

No trends noted.

May 23, 2002
B-02-05-Y-3
Revised: June 17, 2002

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

FOR
Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet B2OF2/SDG No. 48985-84 PCB

Sample Nos.	GMP-LB-5001-0000-01F	LPX-LB-4001-0000-01F	LPX-LB-4002-0000-01F	LPX-LB-4003-0000-01F	LPX-LB-4004-0000-01F	LPX-LB-4005-0000-01F
Compound						
PCB-1	J[1,6]	J[1,6]	J[1,5,6]	J[1,6]	J[1,6]	J[1,5,6]
PCB-3	J[1,6]	J[1,6]	J[1,5,6]	J[1,6]	J[1,6]	J[1,5,6]
PCB-4	J[1]	J[1,6]	J[1,5]	J[1,6]	J[1]	J[1,5,6]
PCB-5	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-6	J[1,6]	J[1,6]	J[1,5,6]	J[1,6]	J[1]	J[1,5,6]
PCB-7	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-8	J[1,6]	J[1,6]	J[1,5]	J[1,6]	J[1]	J[1,5,6]
PCB-9	J[1]	J[1,6]	J[1,5]	J[1]	J[1]	J[1,5,6]
PCB-10	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-12/PCB-13	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-16	J[1,6]	J[1]	J[1,5]	J[1,6]	J[1,6]	J[1,5,6]
PCB-17	J[1,6]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-18/PCB-30	J[1,6]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-19	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-20/PCB-21/PCB-28/PCB-33	J[1,6]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-22	J[1,6]	J[1]	J[1,5]	J[1,6]	J[1,6]	J[1,5,6]
PCB-24/PCB-27	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet B2OF2/SDG No. 48985-84 PCB

Sample Nos.	GMP-LB-5001-0000-01F	LPX-LB-4001-0000-01F	LPX-LB-4002-0000-01F	LPX-LB-4003-0000-01F	LPX-LB-4004-0000-01F	LPX-LB-4005-0000-01F
Compound						
PCB-25	$J^{1,6}$	J^{1}	$J^{1,5}$	$J^{1,6}$	J^{1}	$J^{1,5,6}$
PCB-26/PCB-29	$J^{1,6}$	J^{1}	$J^{1,5}$	J^{1}	J^{1}	$J^{1,5}$
PCB-31	$J^{1,6}$	J^{1}	$J^{1,5}$	$J^{1,6}$	$J^{1,6}$	$J^{1,5,6}$
PCB-32	$J^{1,6}$	J^{1}	$J^{1,5}$	J^{1}	J^{1}	$J^{1,5}$
PCB-40/PCB-41/PCB-71	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-42	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-43/PCB-52/PCB-73	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-44/PCB-47/PCB-65	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-45/PCB-51	$J^{1,2,3,6}$	$J^{1,2,3}$	$J^{1,2,3,5}$	$J^{1,2,3}$	$J^{1,2,3}$	$J^{1,2,3,5}$
PCB-46	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$
PCB-48	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-49/PCB-69	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-50/PCB-53	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-56	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-59/PCB-62/PCB-75	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-60	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-63	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-64	$J^{1,3,6}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-66	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet B2OF2/SDG No. 48985-84 PCB

Sample Nos.	GMP-LB-5001-0000-01F	LPX-LB-4001-0000-01F	LPX-LB-4002-0000-01F	LPX-LB-4003-0000-01F	LPX-LB-4004-0000-01F	LPX-LB-4005-0000-01F
Compound						
PCB-61/PCB-70/PCB-74/PCB-76	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
33'44'-TetraCB (#77)	J[1,3,6]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5,6]
344'5-TetraCB (#81)	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-82/PCB-111	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-83/PCB-99	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-84	J[1,3,6]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-85/PCB-116/PCB-117	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-89/PCB-121	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-90/PCB-101/PCB-113	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-88/PCB-91	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-92	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
233'44'-PentaCB (#105)	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-108/PCB-124	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]
PCB-110/PCB-115	J[1,3]	J[1,3]	J[1,3,5]	J[1,3]	J[1,3]	J[1,3,5]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet B2OF2/SDG No. 48985-84 PCB

Sample Nos.	GMP-LB-5001-0000-01F	LPX-LB-4001-0000-01F	LPX-LB-4002-0000-01F	LPX-LB-4003-0000-01F	LPX-LB-4004-0000-01F	LPX-LB-4005-0000-01F
Compound						
2344'5-PentaCB (#114)/PCB-122	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
23'44'5-PentaCB (#118)	$J^{1,3,7}$	$J^{1,3,7}$	$J^{1,3,5,7}$	$J^{1,3,7}$	$J^{1,3,7}$	$J^{1,3,5,7}$
PCB-106/PCB-107/2'344'5-PentaCB (#123)	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
33'44'5-PentaCB (#126)	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$	$J^{1,3}$	$J^{1,3}$	$J^{1,3,5}$
PCB-128/PCB-166	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-129/PCB-138/PCB-160/PCB-163	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-130	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-131	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-132	$J^{1,}$	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-134/PCB-143	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-135/PCB-151/PCB-154	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-136	$J^{1,5}$	$J^{1,5}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-137/PCB-164	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-141	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-144	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$
PCB-146/PCB-161	J^{1}	$J^{1,4}$	$J^{1,4,5}$	$J^{1,4}$	J^{1}	$J^{1,4,5}$

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet B2OF2/SDG No. 48985-84 PCB

Sample Nos.	GMP-LB-5001-0000-01F	LPX-LB-4001-0000-01F	LPX-LB-4002-0000-01F	LPX-LB-4003-0000-01F	LPX-LB-4004-0000-01F	LPX-LB-4005-0000-01F
Compound						
PCB-147/PCB-149	J[1]	J[1,4]	J[1,4,5]	J[1,4]	J[1]	J[1,4,5]
PCB-153/PCB-168	J[1]	J[1,4]	J[1,4,5]	J[1,4]	J[1]	J[1,4,5]
233'44'5-HexaCB (#156)/233'44'5'-HexaCB (#157)	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-158	J[1]	J[1,4]	J[1,4,5]	J[1,4]	J[1]	J[1,4,5]
23'44'55'-HexaCB (#167)	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
33'44'55'-HexaCB (#169)	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-170	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-171/PCB-173	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-172	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-174	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-175	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-176	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-177	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-178	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-180/PCB-193	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-182	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-183	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-184	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]

Table I
Recommendation Summary Table for 209 PCB Congeners
Centredale Manor Site
Case No.: Offal/Fillet B2OF2/SDG No. 48985-84 PCB

Sample Nos.	GMP-LB-5001-0000-01F	LPX-LB-4001-0000-01F	LPX-LB-4002-0000-01F	LPX-LB-4003-0000-01F	LPX-LB-4004-0000-01F	LPX-LB-4005-0000-01F
Compound						
PCB-185	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-187	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
233'44'55'-HeptaCB (#189)	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
PCB-190	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-191	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-194	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-195	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-196	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-197	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-198/PCB-199	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-200	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-201	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-203	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-205	J[1]	J[1]	J[1,4,5]	J[1]	J[1]	J[1,4,5]
PCB-206	J[1]	J[1,4]	J[1,4,5]	J[1,4]	J[1,4]	J[1,4,5]
PCB-207	J[1]	J[1,4]	J[1,4,5]	J[1,4]	J[1,4]	J[1,4,5]
PCB-209	J[1,2]	J[1,2,4]	J[1,2,4,5]	J[1,2,4]	J[1,2,4]	J[1,2,4,5]

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Table I
Recommendation Summary Table for PCB Congeners

A	-	Accept all results.
J[1]	-	PE %D outside criterion; J detects, UJ non-detects.
J[2]	-	Duplicate precision outside criterion; J detects, UJ non-detects.
J[3]	-	VER recoveries outside criterion; J detects, UJ non-detects.
J[4]	-	Internal standard recoveries outside criterion; J detects, UJ non-detects.
J[5]	-	Clean-up standard recoveries outside criterion; J detects, UJ non-detects.
J[6]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
J[7]	-	OPR/LCS recovery outside criterion; J detects.

EPA-NE - Data Validation Worksheet
Overall Evaluation of Data - Data Validation Memorandum - Table II

PCB ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: J[1,2,3,4,5,6,7]	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for PCB congeners in fish tissue). All congeners except for one were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value. Since all of the congeners except for one had low recoveries, the results for all congeners in all samples were estimated (J, UJ) due to the possibility of biased low results. The method blank had low level contamination. However, the concentration in the method blanks was insignificant when compared to the concentration found in the field samples. Therefore, the method blank contamination does not impact data usability. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.
** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 6/17/02

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Offsit/Files B2CF2
LABORATORY: BATTELLE

SDG No. 48965-64 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GMP-LB-5001-0000-01F		LPX-LB-4001-0000-01F		LPX-LB-4002-0000-01F		LPX-LB-4003-0000-01F	
STATION LOCATION:		GREYSTONE MILL POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-1		UJ	5.32	UJ	8.67	UJ	8.77	UJ	6.06
PCB-3		UJ	4.77	UJ	8.60	UJ	6.42	UJ	5.27
PCB-4		UJ	92.53	UJ	27.63	43.99 J		UJ	23.51
PCB-5		UJ	9.93	UJ	9.93	UJ	9.99	UJ	9.99
PCB-6		UJ	7.10	UJ	17.90	UJ	22.60	UJ	11.09
PCB-7		UJ	9.93	UJ	9.93	UJ	9.99	UJ	9.99
PCB-8		UJ	20.06	UJ	64.09	103.76 J		UJ	39.88
PCB-9		UJ	9.93	UJ	5.21	8.95 J		UJ	9.99
PCB-10		UJ	9.93	UJ	9.93	UJ	9.99	UJ	9.99
PCB-12/PCB-13		UJ	19.87	UJ	19.85	UJ	19.97	UJ	19.87
PCB-16		UJ	9.39	67.50 J		151.20 J		UJ	31.63
PCB-17		UJ	7.39	61.65 J		186.23 J		36.85 J	
PCB-18/PCB-30		UJ	18.00	165.14 J		365.64 J		78.94 J	
PCB-19		2.86 J		19.31 J		44.29 J		11.69 J	
PCB-20/PCB-21/PCB-28/PCB-33		UJ	73.60	726.20 J		1624.88 J		307.52 J	
PCB-22		UJ	17.64	115.18 J		249.85 J		UJ	54.64
PCB-24/PCB-27		UJ	39.73	18.08 J		39.14 J		7.90 J	
PCB-25		UJ	3.72	22.11 J		50.63 J		UJ	7.75
PCB-26/PCB-29		UJ	10.26	59.58 J		142.08 J		UJ	27.70
PCB-31		UJ	40.65	257.75 J		503.73 J		UJ	57.30
PCB-32		UJ	4.52	58.22 J		135.47 J		30.87 J	
PCB-40/PCB-41/PCB-71		UJ	34.14	253.14 J		764.62 J		130.41 J	
PCB-42		UJ	23.67	171.12 J		545.94 J		88.88 J	
PCB-43/PCB-52/PCB-73		298.10 J		1374.18 J		3931.41 J		650.73 J	
PCB-44/PCB-47/PCB-65		41.26 J		205.35 J		622.11 J		115.20 J	
PCB-46/PCB-51		UJ	8.44	77.08 J		210.84 J		38.62 J	
PCB-46		UJ	3.26	18.38 J		54.12 J		UJ	6.73
PCB-48		UJ	13.09	87.98 J		262.95 J		41.80 J	
PCB-49/PCB-69		92.50 J		617.22 J		1527.04 J		252.30 J	
PCB-50/PCB-53		UJ	7.16	58.26 J		178.12 J		34.46 J	
PCB-56		UJ	40.74	196.84 J		541.24 J		82.67 J	
PCB-59/PCB-62/PCB-75		UJ	89.31	486.64 J		1461.30 J		273.12 J	
PCB-60		54.36 J		136.57 J		384.83 J		77.85 J	
PCB-63		9.98 J		33.48 J		88.37 J		16.98 J	
PCB-64		UJ	61.65	309.71 J		1060.94 J		172.83 J	
PCB-66		251.52 J		1278.32 J		3638.03 J		621.88 J	
PCB-67/PCB-70/PCB-74/PCB-76		350.36 J		1170.24 J		3011.64 J		453.40 J	
3,3',4,4'-TetraCB (#77)	0.0001	UJ	5.21	27.81 J		66.08 J		10.63 J	
3,4,4',5-TetraCB (#81)	0.0005	UJ	99.33	UJ	99.27	UJ	99.86	UJ	99.87
PCB-82/PCB-111		52.09 J		236.54 J		914.43 J		150.31 J	
PCB-83/PCB-99		402.28 J		1547.00 J		4959.44 J		619.44 J	
PCB-84		UJ	61.91	336.63 J		1226.86 J		228.08 J	
PCB-85/PCB-116/PCB-117		144.48 J		523.22 J		2326.84 J		354.42 J	
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125		378.48 J		1764.30 J		6801.54 J		1059.30 J	
PCB-89/PCB-121		1.72 J		13.16 J		35.27 J		7.71 J	
PCB-90/PCB-101/PCB-113		658.82 J		2842.82 J		8092.31 J		1484.97 J	
PCB-88/PCB-91		56.88 J		270.14 J		1045.66 J		165.06 J	
PCB-92		124.86 J		476.22 J		1512.32 J		240.83 J	
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		501.65 J		1350.10 J		4907.60 J		807.20 J	
2,3,3',4,4'-PentaCB (#105)	< 0.000005	266.94 J		530.52 J		2238.01 J		375.11 J	
PCB-108/PCB-124		26.64 J		94.44 J		288.58 J		40.94 J	

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Dilin/Filed E2OF2
LABORATORY: BATTELLE

SDG No. 48985-84 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GRP-LB-9001-0000-01F		LPX-LB-4001-0000-01F		LPX-LB-4002-0000-01F		LPX-LB-4003-0000-01F	
STATION LOCATION:		GREYSTONE MILL POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-11/PCB-115		887.10 J		2868.56 J		10771.02 J		1056.08 J	
2,3,4,4',5-PentaCB (#114)/PCB-122	< 0.000005	18.89 J		62.79 J		184.74 J		32.88 J	
2,3',4,4',5-PentaCB (#118)	< 0.000005	857.81 J		5143.41 J		10882.18 J		1746.23 J	
PCB-123/PCB-40/KZ 2,3,4,4',5-PentaCB (#123)	< 0.000005	87.24 J		308.82 J		678.05 J		160.85 J	
3,3',4,4',5-PentaCB (#126)	0.005	UJ	195.58	3.82 J		21.32 J		5.72 J	
PCB-128/PCB-166		163.72 J		895.04 J		2810.48 J		378.20 J	
PCB-129/PCB-138/PCB-160/PCB-163		850.84 J		3108.40 J		13187.60 J		1873.58 J	
PCB-130		84.35 J		168.03 J		728.45 J		114.39 J	
PCB-131		7.16 J		31.77 J		118.65 J		15.89 J	
PCB-132		122.91 J		465.14 J		2191.43 J		341.84 J	
PCB-134/PCB-143		22.70 J		81.84 J		318.24 J		83.84 J	
PCB-135/PCB-151/PCB-154		109.83 J		384.73 J		1322.79 J		169.38 J	
PCB-136		UJ	15.36	72.29 J		383.45 J		43.77 J	
PCB-137/PCB-164		87.26 J		329.82 J		1212.89 J		178.20 J	
PCB-141		110.95 J		303.39 J		1160.32 J		165.33 J	
PCB-144		16.09 J		68.09 J		132.74 J		29.60 J	
PCB-146/PCB-161		162.78 J		237.70 J		798.12 J		136.78 J	
PCB-147/PCB-149		423.34 J		1377.76 J		5490.84 J		616.10 J	
PCB-148/PCB-165		619.59 J		1947.80 J		5148.40 J		620.62 J	
2,3,3',4,4',5-HexaCB (#156)/2,3,3',4,4',5'-HexaCB (#157)	< 0.000005	76.39 J		284.40 J		1010.74 J		143.40 J	
PCB-158		79.84 J		243.09 J		1108.70 J		163.25 J	
2,3',4,4',5,5'-HexaCB (#167)	< 0.000005	32.42 J		104.44 J		447.87 J		87.61 J	
3,3',4,4',5,5'-HexaCB (#169)	< 0.000005	UJ	89.33	UJ	99.27	UJ	99.86	UJ	99.87
PCB-170		148.79 J		385.15 J		2359.77 J		294.69 J	
PCB-171/PCB-173		38.29 J		114.64 J		463.84 J		81.20 J	
PCB-172		67.87 J		86.27 J		258.17 J		38.05 J	
PCB-174		334.25 J		153.19 J		808.88 J		117.46 J	
PCB-175		14.02 J		6.87 J		33.17 J		3.82 J	
PCB-176		7.62 J		14.88 J		83.78 J		8.78 J	
PCB-177		58.80 J		152.39 J		535.40 J		93.16 J	
PCB-178		50.87 J		43.12 J		163.30 J		19.59 J	
PCB-180/PCB-193		319.72 J		496.14 J		2436.24 J		308.22 J	
PCB-182		UJ	199.86	UJ	199.65	UJ	199.72	UJ	199.73
PCB-183		112.43 J		102.63 J		600.78 J		28.76 J	
PCB-184		UJ	199.86	UJ	199.65	UJ	199.72	UJ	199.73
PCB-185		18.20 J		15.76 J		81.60 J		13.10 J	
PCB-187		407.39 J		298.99 J		1281.64 J		173.80 J	
2,3,3',4,4',5,5'-HeptaCB (#189)	< 0.000005	UJ	99.33	9.65 J		34.41 J		UJ	99.87
PCB-190		73.28 J		72.48 J		396.60 J		43.84 J	
PCB-191		6.82 J		8.97 J		54.36 J		UJ	199.73
PCB-194		172.16 J		63.21 J		318.15 J		46.38 J	
PCB-195		31.86 J		28.73 J		177.07 J		21.08 J	
PCB-196		174.89 J		41.84 J		207.26 J		31.08 J	
PCB-197		14.88 J		2.40 J		UJ	199.72	UJ	199.73
PCB-198/PCB-199		1230.32 J		258.14 J		1258.83 J		209.58 J	
PCB-200		8.38 J		5.80 J		30.86 J		UJ	199.73
PCB-201		68.70 J		15.49 J		63.67 J		16.63 J	
PCB-203		453.82 J		103.87 J		435.25 J		81.62 J	
PCB-205		13.38 J		2.40 J		28.64 J		UJ	199.73
PCB-206		1841.29 J		247.28 J		1320.25 J		224.62 J	
PCB-207		177.54 J		UJ	199.65	105.35 J		UJ	199.73
PCB-208		1087.46 J		146.78 J		570.40 J		148.65 J	
TOTAL PCB		14584.17 J		36608.16 J		131708.49 J		28448.23 J	
TOXIC EQUIVALENCY(1):			0.0064 J		0.042 J		0.19 J		0.042 J
PERCENT SOLIDS:			21.0		21.7		20.8		19.8
PERCENT LIPIDS:			0.93		1.14		0.99		0.59
DILUTION FACTOR:			1		1		1		1
DATE SAMPLED:			05/22/01		06/21/01		06/21/01		06/21/01
DATE OF RECEIPT:			05/25/01		06/22/01		06/22/01		06/22/01
SAMPLE EXTRACTION DATE:			05/27/01		06/27/01		06/27/01		06/27/01
ANALYSIS DATE:			10/24/01		10/23/01		10/23/01		10/23/01
LABORATORY SAMPLE I.D.:			48985-84-22		48985-84-16		48985-84-17		48985-84-18

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. OlfaFillet B2OP2
LABORATORY: BATTELLE

SDG No. 46965-64 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-LB-4004-0000-01F		LPX-LB-4005-0000-01F					
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND					
MATRIX:		TISSUE		TISSUE					
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*				
PCB-1		UJ	4.48	UJ	5.67				
PCB-3		UJ	3.99	UJ	4.99				
PCB-4		99.82 J		UJ	15.85				
PCB-5		UJ	9.98	UJ	9.95				
PCB-6		UJ	10.38	UJ	9.13				
PCB-7		UJ	9.98	UJ	9.95				
PCB-8		UJ	35.56	UJ	38.98				
PCB-9		UJ	9.98	UJ	3.69				
PCB-10		UJ	9.98	UJ	9.95				
PCB-12/PCB-13		UJ	19.96	UJ	19.89				
PCB-15		UJ	29.36	UJ	35.03				
PCB-17		38.38 J		40.45 J					
PCB-18/PCB-30		75.92 J		87.10 J					
PCB-19		8.27 J		9.57 J					
PCB-20/PCB-21/PCB-28/PCB-33		387.00 J		398.84 J					
PCB-22		UJ	51.11	UJ	52.16				
PCB-24/PCB-27		8.66 J		9.20 J					
PCB-25		12.76 J		UJ	10.76				
PCB-26/PCB-29		36.12 J		38.02 J					
PCB-31		UJ	133.69	UJ	108.71				
PCB-32		28.80 J		31.97 J					
PCB-40/PCB-41/PCB-71		144.03 J		184.66 J					
PCB-42		186.14 J		117.29 J					
PCB-43/PCB-52/PCB-73		986.26 J		1098.53 J					
PCB-44/PCB-47/PCB-65		144.57 J		191.64 J					
PCB-45/PCB-51		39.86 J		41.20 J					
PCB-46		6.58 J		11.19 J					
PCB-48		50.03 J		62.50 J					
PCB-49/PCB-69		354.60 J		377.06 J					
PCB-50/PCB-53		30.66 J		35.94 J					
PCB-56		115.79 J		82.40 J					
PCB-59/PCB-62/PCB-75		283.60 J		336.30 J					
PCB-60		74.76 J		150.56 J					
PCB-63		24.19 J		29.85 J					
PCB-64		203.82 J		218.74 J					
PCB-66		839.35 J		1369.68 J					
PCB-67/PCB-70/PCB-74/PCB-76		702.16 J		636.12 J					
3,3',4,4'-TetraCB (#77)	0.0001	16.87 J		UJ	9.77				
3,4,4',5-TetraCB (#81)	0.0005	UJ	99.62	UJ	99.46				
PCB-82/PCB-111		147.14 J		UJ	99.46				
PCB-83/PCB-99		1897.40 J		2093.30 J					
PCB-84		166.06 J		201.28 J					
PCB-85/PCB-116/PCB-117		376.38 J		918.68 J					
PCB-86/PCB-87/PCB-97/PCB-109/PCB-119/PCB-125		1156.42 J		2055.78 J					
PCB-89/PCB-121		UJ	99.82	8.60 J					
PCB-90/PCB-101/PCB-113		2067.90 J		3821.07 J					
PCB-88/PCB-91		160.34 J		258.62 J					
PCB-92		347.09 J		541.92 J					
PCB-93/PCB-95/PCB-98/PCB-100/PCB-102		855.30 J		1024.00 J					
2,3,3',4,4'-PentaCB (#105)	< 0.000005	387.53 J		1061.87 J					
PCB-106/PCB-124		60.42 J		77.38 J					

Data Summary Table
Polychlorinated Biphenyls Analysis - Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CRMS NO. CRMS/Rel 02CP2
LABORATORY: BATTELLE

SDG No. 48985-84 PCB

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-LB-9904-0000-01F		LPX-LB-4095-0000-01F	
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE	
		ng/kg	DL/EMPC*	ng/kg	DL/EMPC*
PCB-110/PCB-115		1022.16 J		311.51 J	
2,3,4,6,5-PentaCB (#114)/PCB-122	< 0.000005	45.35 J		82.89 J	
2,3',4,4',5-PentaCB (#118)	< 0.000005	2123.05 J		531.53 J	
PCB-106/PCB-107/2',3,4,4',5-PentaCB (#121)	< 0.000005	199.44 J		419.01 J	
3,3',4,4',5-PentaCB (#126)	0.005	UJ	199.60	29.72 J	
PCB-129/PCB-138		375.82 J		1030.44 J	
PCB-128/PCB-158/PCB-160/PCB-163		2470.85 J		5982.00 J	
PCB-130		131.47 J		234.16 J	
PCB-131		15.51 J		33.19 J	
PCB-132		322.42 J		353.11 J	
PCB-134/PCB-143		92.74 J		46.16 J	
PCB-135/PCB-151/PCB-154		257.61 J		284.45 J	
PCB-136		50.22 J		39.63 J	
PCB-137/PCB-144		298.60 J		528.42 J	
PCB-141		244.05 J		515.83 J	
PCB-144		38.13 J		78.74 J	
PCB-146/PCB-161		209.04 J		343.85 J	
PCB-147/PCB-149		1131.84 J		1820.20 J	
PCB-150/PCB-168		1285.68 J		2198.84 J	
2,3,3',4,4',5-HexaCB (#156)/2,3,3',4,4',5'-HexaCB (#157)	< 0.000005	188.08 J		453.00 J	
PCB-158		157.45 J		472.78 J	
2,3',4,4',5,5'-HexaCB (#167)	< 0.000005	53.02 J		202.05 J	
3,3',4,4',5,5'-HexaCB (#169)	< 0.000005	UJ	53.02	UJ	99.49
PCB-170		308.81 J		1049.78 J	
PCB-171/PCB-173		83.05 J		258.42 J	
PCB-172		65.90 J		83.38 J	
PCB-174		114.42 J		210.54 J	
PCB-175		6.88 J		12.09 J	
PCB-176		11.27 J		11.98 J	
PCB-177		129.18 J		378.44 J	
PCB-178		37.24 J		43.66 J	
PCB-180/PCB-193		480.28 J		858.02 J	
PCB-182		UJ	198.64	UJ	198.02
PCB-183		97.32 J		178.76 J	
PCB-184		UJ	198.64	UJ	198.02
PCB-185		11.29 J		18.70 J	
PCB-187		392.70 J		475.44 J	
2,3,3',4,4',5,5'-HeptaCB (#189)	< 0.000005	8.83 J		14.06 J	
PCB-190		62.63 J		134.03 J	
PCB-191		18.43 J		22.91 J	
PCB-194		82.25 J		164.02 J	
PCB-195		31.16 J		74.31 J	
PCB-196		62.02 J		73.38 J	
PCB-197		UJ	199.64	4.29 J	
PCB-198/PCB-199		342.38 J		482.04 J	
PCB-200		UJ	199.64	UJ	199.52
PCB-201		14.04 J		18.01 J	
PCB-203		112.37 J		126.17 J	
PCB-205		UJ	199.64	6.06 J	
PCB-206		480.85 J		382.12 J	
PCB-207		34.31 J		38.88 J	
PCB-209		202.09 J		128.96 J	
TOTAL PCB		28349.72 J		48483.63 J	
TOXIC EQUIVALENCY(1):			0.059 J		0.18 J
PERCENT SOLIDS:			19.1		18.3
PERCENT LIPIDS:			0.45		0.18
DILUTION FACTOR:			1		1
DATE SAMPLED:			05/21/01		05/21/01
DATE OF RECEIPT:			05/22/01		05/22/01
SAMPLE EXTRACTION DATE:			06/27/01		06/27/01
ANALYSIS DATE:			10/23/01		10/24/01
LABORATORY SAMPLE I.D.:			48985-84-19		48985-84-20

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife". Environmental Health Perspectives, Volume 106, Number 12), December 1998, Table 2, page 780.
< = The expected upper limit of the TEF values for the congener in fish.

Steve Stodola
US EPA Approval Signature

3/22/02
Date

March 14, 2002
B-02-03-Y-3
Revised: March 21, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Cheslmsford, MA 01863

Re: TO No. 04, Task No. 2, TDF No. 0313
Case No. Whole Body Fish B1OF4, SDG No. 48985-35 D/F
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

Dioxin/Furan, HCX and TCX: 20/Fish Tissue/APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-WS-4009-0000-01, GMP-WS-5001-0000-01, LPX-WS-4001-0000-01, LPX-WS-4002-0000-01, LPX-WS-4003-0000-01, LPX-WS-4004-0000-01, LPX-WS-4005-0000-01, LPX-WS-4006-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01, LPX-WS-4009-0000-01, RAB-BB-5001-0000-01

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 20 whole body fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter

to EPA. See the Supporting Documentation section. The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- * Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample
- Laboratory and Field Duplicates
- * Internal/Clean-up Standards
- Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
- * Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

<u>The following information was used to generate the Data Validation Memorandum attachments:</u>

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

<u>Overall Evaluation of Data and Potential Usability Issues</u>

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of biased low results.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the

field samples. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

PE Samples/Accuracy Check

One CIL Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-35-25 FISH SRM) results which did not meet the criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	2378-TCDD	62	J	UJ
CIL EDF 2526	12378-PeCDD	65	J	UJ
CIL EDF 2526	123478-HxCDD	70	J	UJ
CIL EDF 2526	123678-HxCDD	67	J	UJ
CIL EDF 2526	123789-HxCDD	72	J	UJ
CIL EDF 2526	1234678-HpCDD	66	J	UJ
CIL EDF 2526	OCDD	63	J	UJ
CIL EDF 2526	2378-TCDF	52	J	UJ
CIL EDF 2526	12378-PeCDF	62	J	UJ
CIL EDF 2526	23478-PeCDF	63	J	UJ
CIL EDF 2526	123478-HxCDF	62	J	UJ
CIL EDF 2526	123678-HxCDF	63	J	UJ
CIL EDF 2526	123789-HxCDF	66	J	UJ
CIL EDF 2526	234678-HxCDF	63	J	UJ

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	1234678-HpCDF	63	J	UJ
CIL EDF 2526	1234789-HpCDF	59	J	UJ
CIL EDF 2526	OCDF	63	J	UJ

Since all of the congeners had low recoveries, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD < 25 % and the resulting sample qualifications:

IC Date	Compound	% RSD	Action		Affected Samples
			Positive Detects	NDs	
07/19/01	TCX	30	J	UJ	All

The data associated with the noncompliant initial calibration are qualified due to the variability. The quantitation of the associated analyte in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of HCX. Therefore, professional judgement was used to estimate (J,UJ) all HCX results due to the poor chromatography.

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following table summarizes the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration (10g Sample) ng/Kg	Action Level (10g Sample) ng/Kg	Samples Affected
2378-TCDD	Method Blank (8/12/01)	0.46 (5g Sample)	2.2 (5g Sample)	GMP-WS-5001
12378-PeCDD	Method Blank (8/13/01)	0.068	0.34	APC-WS-4001, APC-WS-4002, APC-WS-4004
12378-PeCDD	Method Blank (8/13/01)	0.14 (5g Sample)	0.68 (5g Sample)	LPX-WS-4007, LPX-WS-4008, LPX-WS-4009
1234678-HpCDD	Method Blank (8/14/01)	0.13	0.67	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005, RAB-BB-5001
1234678-HpCDD	Method Blank (8/14/01)	0.26 (5g Sample)	1.3 (5g Sample)	APC-WS-4008, APC-WS-4009, GMP-WS-5001
OCDD	Method Blank (8/14/01)	0.93	9.3	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005, APC-WS-4006, LPX-WS-4001, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004, LPX-WS-4005, RAB-BB-5001
OCDD	Method Blank (8/14/01)	1.9 (5g sample)	19 (5g Sample)	APC-WS-4007, APC-WS-4008, APC-WS-4009, GMP-WS-5001, LPX-WS-4007
123478-HxCDF	Method Blank (8/13/01)	0.12	0.60	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4005, APC-WS-4006, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004, LPX-WS-4005, LPX-WS-4006
123478-HxCDF	Method Blank (8/13/01)	0.24 (5g Sample)	1.2 (5g Sample)	LPX-WS-4007, LPX-WS-4008
123678-HxCDF	Method Blank (8/14/01)	0.082	0.41	APC-WS-4001, APC-WS-4005, LPX-WS-4003, LPX-WS-4004, LPX-WS-4005, LPX-WS-4006
123678-HxCDF	Method Blank (8/14/01)	0.16	0.82	LPX-WS-4008
1234678-HpCDF	Method Blank (8/13/01)	0.072	0.36	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4006, LPX-WS-4001, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004, LPX-WS-4005

Congener	Type of Blank	Blank Concentration (10g Sample) ng/Kg	Action Level (10g Sample) ng/Kg	Samples Affected
1234678-HpCDF	Method Blank (8/13/01)	0.14 (5g Sample)	0.72 (5g Sample)	APC-WS-4009, GMP-WS-5001, LPX-WS-4007
1234789-HpCDF	Method Blank (8/14/01)	0.098	0.49	LPX-WS-4003, LPX-WS-4006
OCDF	Method Blank (8/14/01)	0.44	4.4	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005, APC-WS-4006, LPX-WS-4001, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004, LPX-WS-4006
OCDF	Method Blank (8/14/01)	0.88 (5g Sample)	8.8 (5g Sample)	GMP-WS-5001, LPX-WS-4007, LPX-WS-4008, LPX-WS-4009
Total TCDD	Method Blank (8/12/01)	0.23	2.3	RAB-BB-5001
Total TCDD	Method Blank (8/12/01)	0.46 (5g Sample)	4.6 (5g Sample)	GMP-WS-5001
Total PeCDD	Method Blank (8/13/01)	0.067	0.67	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005
Total PeCDD	Method Blank (8/13/01)	0.13 (5g Sample)	1.3 (5g Sample)	LPX-WS-4007, LPX-WS-4008
Total HxCDD	Method Blank (8/13/01)	0.12	1.2	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005, APC-WS-4006, LPX-WS-4001, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004
Total HxCDD	Method Blank (8/13/01)	0.24 (5g Sample)	2.4 (5g Sample)	APC-WS-4007, GMP-WS-5001, LPX-WS-4007, LPX-WS-4008, LPX-WS-4009
Total HpCDD	Method Blank (8/14/01)	0.13	1.3	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005, APC-WS-4006, LPX-WS-4003, LPX-WS-4004, RAB-BB-5001
Total HpCDD	Method Blank (8/14/01)	0.26 (5g Sample)	2.6 (5g Sample)	APC-WS-4008, APC-WS-4009, GMP-WS-5001
Total HxCDF	Method Blank (8/12/01)	0.14	1.4	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4005, APC-WS-4006, LPX-WS-4001, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004, LPX-WS-4005

Congener	Type of Blank	Blank Concentration (10g Sample) ng/Kg	Action Level (10g Sample) ng/Kg	Samples Affected
Total HxCDF	Method Blank (8/12/01)	0.28 (5g Sample)	2.8 (5g Sample)	APC-WS-4009, LPX-WS-4007, LPX-WS-4008, LPX-WS-4009
Total HpCDF	Method Blank (8/14/01)	0.17	1.7	APC-WS-4001, APC-WS-4002, APC-WS-4003, APC-WS-4004, APC-WS-4006, LPX-WS-4001, LPX-WS-4002, LPX-WS-4003, LPX-WS-4004, LPX-WS-4005
Total HpCDF	Method Blank (8/14/01)	0.34 (5g Sample)	3.4 (5g Sample)	APC-WS-4009, GMP-WS-5001, LPX-WS-4007, LPX-WS-4008, LPX-WS-4009

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: APC-WS-4009MS/APC-WS-4009MSD.

The table below summarizes the tissue MS/MSD results which did not meet the recovery criteria of 50-120% and/or Relative Percent Difference (RPD) < 30% for Centredale Manor Tasks 19-22 QAPP (5/23/01).

APC-WS-4009					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
TCX	33	31	5*	J	UJ
HCX	91*	60*	41	J	UJ

* Recoveries and/or RPDs were acceptable

Professional judgement was used to estimate (J,UJ) values for HCX and TCX in all samples since percent recoveries and/or precision were outside the required criteria.

Laboratory Control Sample

The laboratory extracted and analyzed one OPR/LCS with this group of samples. The following

table summarizes the Ongoing Precision and Recovery (OPR) result which did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) recovery criteria and the resulting sample qualifications:

OPR Date	Compound	% Recovery	% Recovery Range	Action		Affected Samples
				Positive Detects	NDs	
08/12/01	HCX	47	50-120	J	UJ	All

The data associated with recoveries of a noncompliant OPR are qualified due to the low recovery.

Laboratory and Field Duplicates

One laboratory duplicate pair was evaluated for this SDG LPX-WS-4009/LPX-WS-4009Dup.

The table below summarizes the tissue duplicate results that did not meet the laboratory duplicate criterion of Relative Percent Difference (RPD) < 30% as specified in Centredale Manor Tasks 19-22 QAPP (5/23/01).

Congener	LPX-WS-4009	LPX-WS-4009Dup	RPD	Action	Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	
2378-TCDD	397	555	33	J	LPX-WS-4009
HCX	81.4	180	76	J	LPX-WS-4009

2378-TCDD and HCX were estimated (J) in sample LPX-WS-4009 due to duplicate precision outside criterion.

Sample Analysis and Identification

The HCX concentration in sample APC-WS-4001 had a ion ratio of 1.46 which was outside the acceptance range of 1.05 to 1.43. The HCX concentration was reported as an EMPC concentration on the Data Summary Table.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data

validator using the validated data discussed above in this report. As a result, the TE values in the Data Summary Table may differ from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are the ones published in Environmental Health Perspectives, volume 106, Number 12, December 1998, "Toxic Equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

System Performance

The results for HCX and TCX indicated analytical problems. The problems included a noncompliant initial calibration for TCX, poor HCX chromatography, low HCX recovery in the LCS, and poor MS/MSD precision for HCX. The TCX recoveries in the MS/MSD were 33% and 31%, respectively. The recovery of the TCX in the LCS was 50%. Therefore, professional judgement was used to estimate (UJ) the TCX results and to raise the detection limits for the non-detects to the level of the TCX in the LCS.

No trends were noted with the dioxin/furan analysis.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Whole Body Fish B1OF4/SDG No. 48985-35 D/F

Sample Nos.	APC-WS-4001-0000-01	APC-WS-4002-0000-01	APC-WS-4003-0000-01	APC-WS-4004-0000-01	APC-WS-4005-0000-01	APC-WS-4006-0000-01	APC-WS-4007-0000-01	APC-WS-4008-0000-01	APC-WS-4009-0000-01	GMP-WS-5001-0000-01
Compound										
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
12378-PeCDD	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]
OCDD	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1]	J[1]	J[1]	J[1]
123678-HxCDF	J[1,5]	J[1]	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]	J[1,5]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1]	J[1]	J[1,5]
HCX	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]
TCX	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Whole Body Fish B1OF4/SDG No. 48985-35 D/F

Sample Nos.	LPX-WS-4001-0000-01	LPX-WS-4002-0000-01	LPX-WS-4003-0000-01	LPX-WS-4004-0000-01	LPX-WS-4005-0000-01	LPX-WS-4006-0000-01	LPX-WS-4007-0000-01	LPX-WS-4008-0000-01	LPX-WS-4009-0000-01	RAB-BB-5001-0000-01
Compound										
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,7]	J[1]
12378-PeCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
OCDD	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1]
123678-HxCDF	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1]	J[1]	J[1]
1234789-HpCDF	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]
HCX	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6]	J[2,4,6,7]	J[2,4,6]
TCX	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]	J[3,6,8]

Table I
Recommendation Summary Table for Dioxins/Furans

A	-	Accept results.
J[1]	-	SRM %D outside criterion; J detects, UJ non-detects.
J[2]	-	Chromatographic resolution outside criterion; J detects, UJ non-detects.
J[3]	-	Initial calibration %RSD outside criterion; J, detects, UJ non-detects.
J[4]	-	OPR recoveries outside criterion; J detects, UJ non-detects.
J[5]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
J[6]	-	MS/MSD recovery and/or RPDs outside criteria; J detects, UJ non-detects.
J[7]	-	Duplicate RPDs outside criteria; J detects.
J[8]	-	The detection limits were raised; UJ non-detects

EI)E - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples. Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: J[1,2,3,4,5,6,7,8]	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of biased low results. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 3/21/02

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples (ng/Kg Wet Weight)

SITE: Centredale Manor - N. Providence, RI
CASE No. Whole Body Fish B1OF4 SDG No. 48985-35 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-WS-4001-0000-01		APC-WS-4002-0000-01		APC-WS-4003-0000-01		APC-WS-4004-0000-01		APC-WS-4005-0000-01		APC-WS-4006-0000-01	
STATION LOCATION:		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC
2,3,7,8-TCDD	1.0	326.04 J		79.43 J		801.21 J		79.89 J		510.83 J		680.22 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.29	UJ	0.32	0.52 J		UJ	0.21	0.39 J		0.70 J	
1,2,3,4,7,8-HxCDD	0.5	0.10 J		0.18 J		UJ	0.23	0.07 J		UJ	0.13	0.28 J	
1,2,3,6,7,8-HxCDD	0.01	0.24 J		0.30 J		0.37 J		0.25 J		0.19 J		0.48 J	
1,2,3,7,8,9-HxCDD	0.01	UJ	0.21	UJ	0.19	UJ	0.22	UJ	0.17	UJ	0.13	UJ	0.26
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.47	UJ	0.44	UJ	0.60	UJ	0.51	UJ	0.39	0.89 J	
OCDD	< 0.0001	UJ	1.18	UJ	1.13	UJ	1.13	UJ	1.24	UJ	0.99	UJ	1.77
2,3,7,8-TCDF	0.05	1.74 J#		1.67 J#		2.22 J#		2.50 J#		1.68 J#		2.72 J#	
1,2,3,7,8-PeCDF	0.05	0.12 J		0.18 J		0.21 J		UJ	0.30	UJ	0.31	0.20 J	
2,3,4,7,8-PeCDF	0.5	UJ	0.18	0.26 J		0.45 J		UJ	0.31	0.30 J		0.50 J	
1,2,3,4,7,8-HxCDF	0.1	UJ	0.12	UJ	0.14	UJ	0.17	UJ	0.15	UJ	0.11	UJ	0.17
1,2,3,6,7,8-HxCDF	0.1	UJ	0.06	UJ	0.09	UJ	0.15	UJ	0.15	UJ	0.07	UJ	0.17
1,2,3,7,8,9-HxCDF	0.1	UJ	0.31	UJ	0.10	UJ	0.18	UJ	0.16	UJ	0.17	UJ	0.20
2,3,4,6,7,8-HxCDF	0.1	UJ	0.28	0.08 J		UJ	0.16	UJ	0.16	UJ	0.16	0.08 J	
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.17	UJ	0.17	UJ	0.22	UJ	0.18	UJ	0.13	UJ	0.28
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.23	UJ	0.20	UJ	0.19	UJ	0.18	UJ	0.14	UJ	0.24
OCDF	< 0.0001	UJ	0.21	UJ	0.25	UJ	0.18	UJ	0.10	UJ	0.12	UJ	0.19
TOTAL TCDD		326.04 J		79.43 J		801.21 J		79.89 J		510.83 J		680.22 J	
TOTAL PeCDD		UJ	0.29	UJ	0.32	UJ	0.52	UJ	0.21	UJ	0.39	0.70 J	
TOTAL HxCDD		UJ	0.51	UJ	0.51	UJ	0.37	UJ	0.32	UJ	0.51	UJ	1.17
TOTAL HpCDD		UJ	0.47	UJ	0.44	UJ	0.77	UJ	0.73	UJ	0.53	UJ	0.89
TOTAL TCDF		1.77 J		1.78 J		2.30 J		0.79 J		1.42 J		2.19 J	
TOTAL PeCDF		1.61 J		1.10 J		2.24 J		0.80 J		0.68 J		1.85 J	
TOTAL HxCDF		UJ	0.60	UJ	0.57	UJ	0.70	UJ	0.49	UJ	0.56	UJ	0.78
TOTAL HpCDF		UJ	0.30	UJ	0.32	UJ	0.26	UJ	0.60	UJ	0.13	UJ	0.33
HCX - Hexachloroxanthene			23.49 *	14.74 J		89.31 J		63.95 J		45.49 J		60.04 J	
TCX - Tetrachloroxanthene		UJ	50.00	UJ	50.00	UJ	50.00	UJ	50.00	UJ	50.00	UJ	50.00
TOXIC EQUIVALENT(1):		330 J		80 J		800 J		80 J		510 J		680 J	
PERCENT SOLIDS:		29.0		26.4		25.2		25.6		25.8		29.2	
PERCENT LIPIDS:		5.42		6.75		5.24		5.20		5.91		8.72	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/20/01		06/20/01		06/20/01		06/20/01		06/20/01		06/20/01	
DATE OF RECEIPT:		06/21/01		06/21/01		06/21/01		06/21/01		06/21/01		06/21/01	
SAMPLE EXTRACTION DATE:		08/01/01		08/01/01		08/01/01		08/01/01		08/01/01		08/01/01	
ANALYSIS DATE:		08/13/01		08/13/01		08/13/01		08/13/01		08/13/01		08/13/01	
LAB SAMPLE ID:		48985-35-08		48985-35-09		48985-35-10		48985-35-11		48985-35-12		48985-35-13	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.
= Result reported from confirmation analysis

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples (ng/Kg Wet Weight)

SITE: Centredale Manor Providence, RI
CASE No. Whole Body Fish B1OF4 SDG No. 48985-35 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-WS-4007-0000-01		APC-WS-4008-0000-01		APC-AE-4009-0000-01		GMP-WS-5001-0000-01		LPX-WS-4001-0000-01		LPX-WS-4002-0000-01	
STATION LOCATION:		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		GREYSTONE MILL POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC
2,3,7,8-TCDD	1.0	101.12 J		409.82 J		220.11 J		UJ	1.23	216.76 J		253.38 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.63	UJ	0.67	UJ	0.80	0.71 J		1.65 J		1.32 J	
1,2,3,4,7,8-HxCDD	0.5	UJ	0.55	UJ	0.92	UJ	0.53	UJ	0.44	UJ	0.28	0.23 J	
1,2,3,6,7,8-HxCDD	0.01	UJ	0.59	UJ	0.99	UJ	0.54	0.31 J		UJ	0.29	UJ	0.36
1,2,3,7,8,9-HxCDD	0.01	UJ	0.54	UJ	0.90	UJ	0.50	UJ	0.42	UJ	0.27	UJ	0.33
1,2,3,4,6,7,8-HpCDD	0.001	UJ	1.27	UJ	0.83	UJ	0.57	UJ	0.75	1.38 J		1.43 J	
OCDD	< 0.0001	UJ	1.38	UJ	3.33	UJ	1.44	UJ	2.56	UJ	7.58	UJ	6.58
2,3,7,8-TCDF	0.05	0.54 J		UJ	0.48	1.42 J#		7.19 J#		2.39 J#		2.23 J#	
1,2,3,7,8-PeCDF	0.05	UJ	0.61	UJ	0.52	UJ	0.75	UJ	0.68	UJ	0.34	0.16 J	
2,3,4,7,8-PeCDF	0.5	UJ	0.57	UJ	0.47	UJ	0.71	UJ	0.64	UJ	0.31	0.30 J	
1,2,3,4,7,8-HxCDF	0.1	UJ	0.61	UJ	0.54	UJ	0.42	UJ	0.44	UJ	0.15	UJ	0.10
1,2,3,6,7,8-HxCDF	0.1	UJ	0.62	UJ	0.54	UJ	0.42	UJ	0.44	UJ	0.15	UJ	0.26
1,2,3,7,8,9-HxCDF	0.1	UJ	0.70	UJ	0.65	UJ	0.50	UJ	0.54	UJ	0.17	UJ	0.30
2,3,4,6,7,8-HxCDF	0.1	UJ	0.64	UJ	0.58	UJ	0.44	UJ	0.48	UJ	0.16	UJ	0.28
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.84	UJ	1.46	UJ	0.22	UJ	0.19	UJ	0.33	UJ	0.36
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.91	UJ	1.58	UJ	0.56	UJ	0.53	UJ	0.27	UJ	0.25
OCDF	< 0.0001	UJ	0.36	UJ	0.69	UJ	0.80	UJ	0.27	UJ	0.70	UJ	0.60
TOTAL TCDD		101.12 J		409.82 J		220.11 J		UJ	1.23	216.76 J		253.38 J	
TOTAL PeCDD		UJ	0.63	UJ	0.67	UJ	0.80	3.17 J		1.65 J		1.44 J	
TOTAL HxCDD		UJ	0.20	UJ	0.93	UJ	0.52	UJ	0.31	UJ	0.10	UJ	0.49
TOTAL HpCDD		UJ	1.27	UJ	0.83	UJ	0.57	UJ	0.75	2.37 J		2.23 J	
TOTAL TCDF		0.64 J		UJ	0.48	1.00 J		4.11 J		0.86 J		1.67 J	
TOTAL PeCDF		0.30 J		UJ	0.49	0.47 J		3.47 J		0.30 J		1.32 J	
TOTAL HxCDF		UJ	0.64	UJ	0.57	UJ	0.37	UJ	1.58	UJ	0.28	UJ	0.32
TOTAL HpCDF		UJ	0.88	UJ	1.52	UJ	0.22	UJ	1.10	UJ	1.04	UJ	0.77
HCX - Hexachloroxanthene		51.64 J		49.20 J		64.45 J		UJ	39.74	24.94 J		26.30 J	
TCX - Tetrachloroxanthene		UJ	99.00	UJ	99.00	UJ	99.00	UJ	99.00	UJ	50.00	UJ	50.00
TOXIC EQUIVALENT(1):		100 J		410 J		220 J		1.1 J		220 J		260 J	
PERCENT SOLIDS:		29.9		27.2		27.4		39.5		24.9		27.5	
PERCENT LIPIDS:		6.00		5.36		6.82		4.35		5.71		5.57	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/20/01		06/20/01		06/20/01		06/22/01		06/21/01		06/21/01	
DATE OF RECEIPT:		06/21/01		06/21/01		06/21/01		06/26/01		06/22/01		06/22/01	
SAMPLE EXTRACTION DATE:		08/01/01		08/01/01		08/01/01		08/01/01		08/01/01		08/01/01	
ANALYSIS DATE:		08/13/01		08/13/01		08/14/01		08/14/01		08/13/01		08/13/01	
LAB SAMPLE ID:		48985-35-17		48985-35-18		48985-35-22		48985-35-19		48985-35-02		48985-35-03	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.
= Result reported from confirmation analysis

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples (ng/Kg Wet Weight)

SITE: Centredale Manor - N. Providence, RI
CASE No. Whole Body Fish B1OF4 SDG No. 48985-35 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-WS-4003-0000-01		LPX-WS-4004-0000-01		LPX-WS-4005-0000-01		LPX-WS-4006-0000-01		LPX-WS-4007-0000-01		LPX-WS-4008-0000-01	
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC
2,3,7,8-TCDD	1.0	415.92 J		667.00 J		1365.49 J		722.86 J		730.92 J		507.32 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.50	0.77 J		1.69 J		0.93 J		UJ	0.66	UJ	0.64
1,2,3,4,7,8-HxCDD	0.5	UJ	0.44	0.28 J		0.38 J		0.44 J		0.29 J		0.25 J	
1,2,3,6,7,8-HxCDD	0.01	0.37 J		0.69 J		0.99 J		0.75 J		0.68 J		UJ	0.48
1,2,3,7,8,9-HxCDD	0.01	UJ	0.42	0.21 J		0.28 J		0.41 J		0.23 J		UJ	0.43
1,2,3,4,6,7,8-HpCDD	0.001	0.79 J		1.24 J		1.41 J		2.81 J		2.05 J		3.22 J	
OCDD	< 0.0001	UJ	2.38	UJ	2.50	UJ	1.81	11.84 J		UJ	8.56	20.43 J	
2,3,7,8-TCDF	0.05	5.50 J#		2.32 J#		8.09 J#		3.43 J#		3.66 J#		3.69 J#	
1,2,3,7,8-PeCDF	0.05	UJ	0.37	0.20 J		0.38 J		0.26 J		UJ	0.62	0.23 J	
2,3,4,7,8-PeCDF	0.5	0.41 J		0.65 J		1.28 J		0.68 J		0.60 J		UJ	0.42
1,2,3,4,7,8-HxCDF	0.1	UJ	0.17	UJ	0.24	UJ	0.18	UJ	0.32	UJ	0.35	UJ	0.21
1,2,3,6,7,8-HxCDF	0.1	UJ	0.41	UJ	0.15	UJ	0.19	UJ	0.26	UJ	0.31	UJ	0.19
1,2,3,7,8,9-HxCDF	0.1	0.12 J		UJ	0.36	UJ	0.22	UJ	0.12	UJ	0.36	UJ	0.42
2,3,4,6,7,8-HxCDF	0.1	0.12 J		0.09 J		0.17 J		0.21 J		UJ	0.32	0.14 J	
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.28	UJ	0.29	UJ	0.32	0.99 J		UJ	0.64	1.08 J	
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.20	UJ	0.44	UJ	0.30	UJ	0.23	UJ	0.31	UJ	0.49
OCDF	< 0.0001	UJ	0.43	UJ	0.20	UJ	0.33	UJ	1.62	UJ	0.81	UJ	2.15
TOTAL TCDD		415.92 J		667.00 J		1365.49 J		722.86 J		730.92 J		507.32 J	
TOTAL PeCDD		UJ	0.50	0.77 J		1.77 J		0.93 J		UJ	0.66	UJ	0.64
TOTAL HxCDD		UJ	0.71	UJ	1.18	1.66 J		1.60 J		UJ	1.78	UJ	0.25
TOTAL HpCDD		UJ	0.79	UJ	1.24	1.41 J		4.24 J		3.26 J		5.82 J	
TOTAL TCDF		1.19 J		2.40 J		8.76 J		3.41 J		2.88 J		2.07 J	
TOTAL PeCDF		0.41 J		1.90 J		3.03 J		2.01 J		1.63 J		1.49 J	
TOTAL HxCDF		UJ	0.82	UJ	1.02	UJ	1.28	1.83 J		UJ	1.40	UJ	1.45
TOTAL HpCDF		UJ	1.38	UJ	0.44	UJ	0.50	1.99 J		UJ	1.46	UJ	2.67
HCX - Hexachloroxanthene		38.64 J		77.69 J		54.34 J		76.81 J		76.88 J		80.61 J	
TCX - Tetrachloroxanthene		UJ	50.00	UJ	50.00	UJ	50.00	UJ	50.00	UJ	100.00	UJ	100.00
TOXIC EQUIVALENT(1):		420 J		670 J		1400 J		720 J		730 J		510 J	
PERCENT SOLIDS:		23.7		28.0		32.8		29.4		30.1		28.6	
PERCENT LIPIDS:		5.36		7.09		12.1		7.63		10.0		7.79	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/21/01		06/21/01		06/21/01		06/21/01		06/21/01		06/21/01	
DATE OF RECEIPT:		06/22/01		06/22/01		06/22/01		06/22/01		06/22/01		06/22/01	
SAMPLE EXTRACTION DATE:		08/01/01		08/01/01		08/01/01		08/01/01		08/01/01		08/01/01	
ANALYSIS DATE:		08/13/01		08/13/01		08/13/01		08/13/01		08/13/01		08/13/01	
LAB SAMPLE ID:		48985-35-04		48985-35-05		48985-35-06		48985-35-07		48985-35-15		48985-35-16	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.
= Result reported from confirmation analysis

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples (ng/Kg Wet Weight)

SITE: Centredale Manor - N. Providence, RI
CASE No. Whole Body Fish B1OF4 SDG No. 48985-35 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-WS-4009-0000-01			RAB-BB-5001-0000-01		
STATION LOCATION:		LYMANSVILLE POND			ASSAPUMPSETT BROOK		
MATRIX:		TISSUE			TISSUE		
TCDD/TCDF CONC.:		ng/Kg		DL/EMPC	ng/Kg		DL/EMPC
2,3,7,8-TCDD	1.0	396.95	J		1.51	J	
1,2,3,7,8-PeCDD	1.0		UJ	0.62		UJ	0.30
1,2,3,4,7,8-HxCDD	0.5		UJ	0.64		UJ	0.25
1,2,3,6,7,8-HxCDD	0.01	0.45	J			UJ	0.27
1,2,3,7,8,9-HxCDD	0.01		UJ	0.60		UJ	0.24
1,2,3,4,6,7,8-HpCDD	0.001	3.47	J			UJ	0.46
OCDD	< 0.0001	24.30	J			UJ	0.97
2,3,7,8-TCDF	0.05	3.61	J#		0.20	J	
1,2,3,7,8-PeCDF	0.05	0.19	J			UJ	0.45
2,3,4,7,8-PeCDF	0.5		UJ	0.67	0.19	J	
1,2,3,4,7,8-HxCDF	0.1		UJ	0.58		UJ	0.14
1,2,3,6,7,8-HxCDF	0.1		UJ	0.60		UJ	0.14
1,2,3,7,8,9-HxCDF	0.1		UJ	0.71		UJ	0.16
2,3,4,6,7,8-HxCDF	0.1		UJ	0.65		UJ	0.14
1,2,3,4,6,7,8-HpCDF	0.01	1.14	J			UJ	0.09
1,2,3,4,7,8,9-HpCDF	0.01		UJ	0.90		UJ	0.10
OCDF	< 0.0001		UJ	2.20		UJ	0.26
TOTAL TCDD		396.95	J			UJ	1.51
TOTAL PeCDD		4.28	J			UJ	0.30
TOTAL HxCDD			UJ	0.45		UJ	0.25
TOTAL HpCDD		6.36	J			UJ	0.46
TOTAL TCDF		1.54	J		0.23	J	
TOTAL PeCDF		1.21	J		0.19	J	
TOTAL HxCDF			UJ	1.80		UJ	0.14
TOTAL HpCDF			UJ	2.47		UJ	0.10
HCX - Hexachloroxanthene		81.40	J			UJ	19.96
TCX - Tetrachloroxanthene			UJ	100.00		UJ	50.00
TOXIC EQUIVALENT(1):		400	J		1.6	J	
PERCENT SOLIDS:		27.8			25.0		
PERCENT LIPIDS:		6.77			3.59		
DILUTION FACTOR:		1.0			1.0		
DATE SAMPLED:		06/21/01			06/26/01		
DATE OF RECEIPT:		06/22/01			06/28/01		
SAMPLE EXTRACTION DATE:		08/01/01			08/01/01		
ANALYSIS DATE:		08/14/01			08/13/01		
LAB SAMPLE ID:		48985-35-20			48985-35-14		

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already estimated.

(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.

Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.

< = The expected upper limit of the TEF values for the congener in fish.

= Result reported from confirmation analysis

Steve Stodola
US EPA Approval Signature

3/8/02
Date

February 22, 2002
B-02-02-Y-1
Revised: March 8, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Cheslmsford, MA 01863

Re: TO No. 04, Task No. 2, TDF No. 0273
Case No. Whole Body Fish B4OF4, SDG No. 48985-43D/F
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

Dioxin/Furan, HCX and TCX:13/Fish Tissue/APC-WS-4010-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, LPX-WS-4010-0000-01, RAB-BB-5002-0000-01, RAB-BB-5003-0000-01

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 13 whole body fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter to EPA. See the Supporting Documentation section. The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check

*	•	Window Defining Mix
	•	Initial and Continuing Calibrations
	•	Chromatographic Resolution
*	•	Instrument Sensitivity Check
	•	Blanks
	•	Matrix Spike/Matrix Spike Duplicate
	•	Laboratory Control Sample/Laboratory Control Sample Duplicate
*	•	Laboratory and Field Duplicates
*	•	Internal/Clean-up Standards
*	•	Sample Analysis and Identification
	•	Sample Quantitation
*	•	Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
	•	2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
*	•	Required Sample Reruns and Second Column Confirmation
	•	System Performance

* - All criteria were met for this parameter.

The following information was used to generate the Data Validation Memorandum attachments:

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

Overall Evaluation of Data and Potential Usability Issues

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality to be used for human health (HHRA) and ecological risk assessments (ERA).

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of biased low results.

The TCX results indicated analytical problems. The problems included noncompliant initial calibration for TCX, low OPR TCX recovery, poor MS/MSD precision for TCX, and low MS/MSD recovery for TCX. All TCX data was rejected due to noncompliant OPR recoveries.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the dioxin/furan data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are

qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the dioxin/furan data. However, the TCX data were rejected. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to submit corrected Form Is for samples LPX-WS-4010 and APC-WS-4010 the date received should be 7/19/01 not 7/31/01.

2. The laboratory was asked to submit their SOP for HCX and TCX analysis with documented acceptance criteria.

Items 1 and 2 were requested via the TOPO on October 16, 2001. Items 1 and 2 were received via the TOPO on December 14, 2001. All items were adequately addressed.

PE Samples/Accuracy Check

One CIL Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-43-18 FISH SRM) results which did not meet the criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	2378-TCDD	64	J	UJ
CIL EDF 2526	12378-PeCDD	66	J	UJ
CIL EDF 2526	123478-HxCDD	72	J	UJ
CIL EDF 2526	123678-HxCDD	69	J	UJ
CIL EDF 2526	123789-HxCDD	72	J	UJ
CIL EDF 2526	1234678-HpCDD	68	J	UJ
CIL EDF 2526	OCDD	66	J	UJ
CIL EDF 2526	2378-TCDF	54	J	UJ

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	12378-PeCDF	64	J	UJ
CIL EDF 2526	23478-PeCDF	64	J	UJ
CIL EDF 2526	123478-HxCDF	65	J	UJ
CIL EDF 2526	123678-HxCDF	66	J	UJ
CIL EDF 2526	123789-HxCDF	69	J	UJ
CIL EDF 2526	234678-HxCDF	66	J	UJ
CIL EDF 2526	1234678-HpCDF	66	J	UJ
CIL EDF 2526	1234789-HpCDF	65	J	UJ
CIL EDF 2526	OCDF	64	J	UJ

Since all of the congeners had low recoveries, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD ≤25 % and the resulting sample qualifications:

IC Date	Compound	% RSD	Action		Affected Samples
			Positive Detects	NDs	
07/20/01	TCX	30	J	UJ	All

The data associated with the noncompliant initial calibration are qualified due to the variability. The quantitation of the associated analyte in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of

HCX. Therefore, professional judgement was used to estimate (J,UJ) all HCX results due to the poor chromatography.

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following table summarizes the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
2378-TCDD	Method Blank (8/10/01)	0.099	0.49	GMP-WS-5004, GMP-WS-5009, RAB-BB-5003
12378-PeCDD	Method Blank (8/10/01)	0.16	0.81	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5006, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, LPX-WS-4010
1234678-HpCDD	Method Blank (8/10/01)	0.30	1.5	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5006, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, LPX-WS-4010, RAB-BB-5003
OCDD	Method Blank (8/10/01)	1.8	18	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5006, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, GMP-WS-5010, LPX-WS-4010, RAB-BB-5003
1234678-HpCDF	Method Blank (8/10/01)	0.096	0.48	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, LPX-WS-4010
1234789-HpCDF	Method Blank (8/10/01)	0.16	0.80	GMP-WS-5007
OCDF	Method Blank (8/10/01)	0.89	8.9	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5006, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, GMP-WS-5010, LPX-WS-4010
Total TCDD	Method Blank (8/10/01)	0.099	0.99	GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5007, GMP-WS-5009, GMP-WS-5010, RAB-BB-5003

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
Total PeCDD	Method Blank (8/9/01)	0.18	1.8	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5006, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, LPX-WS-4010
Total HpCDD	Method Blank (8/10/01)	0.48	4.8	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5006, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, LPX-WS-4010, RAB-BB-5003
Total HpCDF	Method Blank (8/10/01)	0.26	2.6	APC-WS-4010, GMP-WS-5002, GMP-WS-5003, GMP-WS-5004, GMP-WS-5005, GMP-WS-5007, GMP-WS-5008, GMP-WS-5009, LPX-WS-4010

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: GMP-WS-5007MS/GMP-WS-5007MSD.

The table below summarizes the tissue MS/MSD results which did not meet the recovery criteria of 50-120% and/or Relative Percent Difference (RPD) ≤ 30% as documented in the Centredale Manor Tasks 19-22 QAPP (5/23/01).

GMP-WS-5007					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
HCX	85*	140	49	J	UJ
TCX	3	4	44	J	UJ

* Recoveries and/or RPDs were acceptable

Professional judgement was used to estimate (J,UJ) values for HCX and TCX in all samples since percent recoveries and/or precision were outside the required criteria.

Laboratory Control Sample

The laboratory extracted and analyzed one OPR/LCS with this group of samples. The following table summarizes the Ongoing Precision and Recovery (OPR) result which did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) recovery criteria and the resulting sample qualifications:

OPR Date	Compound	% Recovery	% Recovery Range	Action		Affected Samples
				Positive Detects	NDs	
08/02/01	TCX	3	50-120	R	R	All

The data associated with low recoveries of a noncompliant (less than 10% recovery) OPR are rejected (R).

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. As a result, the TE values in the Data Summary Table may differ from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are the ones published in Environmental Health Perspectives, volume 106, Number 12, December 1998, "Toxic Equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

System Performance

No trends were noted with the dioxin/furan analysis. The results for HCX and TCX indicated analytical problems. The problems included noncompliant initial calibration for TCX, poor HCX chromatography, low OPR TCX recovery, poor MS/MSD precision for HCX and TCX, and low MS/MSD recovery for TCX.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Results
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Whole Body Fish B4OF4/SDG No. 48985-43 D/F

Sample Nos.	APC-WS-4010-0000-01	GMP-WS-5002-0000-01	GMP-WS-5003-0000-01	GMP-WS-5004-0000-01	GMP-WS-5005-0000-01	GMP-WS-5006-0000-01	GMP-WS-5007-0000-01
Compound							
2378-TCDD	J[1]	J[1]	J[1]	J[1,4]	J[1]	J[1]	J[1]
12378-PeCDD	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4]	J[1,4]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]
OCDD	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,4]
OCDF	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1,4]
HCX	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Whole Body Fish B4OF4/SDG No. 48985-43 D/F

Sample Nos.	GMP-WS-5008-0000-01	GMP-WS-5009-0000-01	GMP-WS-5010-0000-01	LPX-WS-4010-0000-01	RAB-BB-5002-0000-01	RAB-BB-5003-0000-01
Compound						
2378-TCDD	J[1]	J[1,4]	J[1]	J[1]	J[1]	J[1,4]
12378-PeCDD	J[1,4]	J[1,4]	J[1]	J[1,4]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1,4]	J[1,4]	J[1]	J[1,4]	J[1]	J[1,4]
OCDD	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1,4]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1,4]	J[1,4]	J[1]	J[1,4]	J[1]	J[1]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,4]	J[1,4]	J[1,4]	J[1,4]	J[1]	J[1]
HCX	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans

A	-	Accept results.
J^1	-	SRM %D outside criterion; J detects, UJ non-detects.
J^2	-	Poor chromatography; J detects, UJ non-detects.
J^3	-	MS/MSD recovery and/or RPDs outside criteria; J detects, UJ non-detects.
J^4	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
R^1	-	Low OPR recoveries; R non-detects.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN/HCX/TCX ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality to be used for human health (HHRA) and ecological risk assessments (ERA).	Yes, Sampling Method appropriate for all samples. Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: $J^{1,2,3,4}$, R^1	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of biased low results. The TCX results indicated analytical problems. The problems included: noncompliant initial calibration for TCX, low OPR TCX recovery, poor MS/MSD precision for TCX, and low MS/MSD recovery for TCX. All TCX data was rejected due to noncompliant OPR recoveries. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the dioxin/furan data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the dioxin/furan data. However, the TCX data were rejected. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 3/8/02

SITE: Centr. .lanor - N. Providence, RI
CASE NO. Whole Body Fish 84OF4 SDG No. 48985-43 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-WS-4010-0000-01		GMP-WS-5002-0000-01		GMP-WS-5003-0000-01		GMP-WS-5004-0000-01		GMP-WS-5005-0000-01	
STATION LOCATION:		ALLENDALE POND CHANNEL		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	243.51 J		0.86 J		0.79 J		UJ	0.40	0.57 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.23	UJ	0.61	UJ	0.55	UJ	0.23	UJ	0.42
1,2,3,4,7,8-HxCDD	0.5	UJ	0.18	0.28 J		UJ	0.28	UJ	0.16	UJ	0.28
1,2,3,6,7,8-HxCDD	0.01	0.14 J		0.49 J		0.58 J		0.14 J		0.32 J	
1,2,3,7,8,9-HxCDD	0.01	UJ	0.18	0.11 J		0.11 J		0.05 J		UJ	0.26
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.15	UJ	0.83	UJ	1.11	UJ	0.39	UJ	0.78
OCDD	< 0.0001	UJ	0.73	UJ	1.68	UJ	2.12	UJ	1.18	UJ	3.31
2,3,7,8-TCDF	0.05	1.07 J#		5.83 J#		6.33 J#		2.10 J#		3.79 J#	
1,2,3,7,8-PeCDF	0.05	UJ	0.23	0.25 J		0.35 J		0.11 J		UJ	0.47
2,3,4,7,8-PeCDF	0.5	0.21 J		0.52 J		0.57 J		0.26 J		0.35 J	
1,2,3,4,7,8-HxCDF	0.1	UJ	0.11	0.21 J		0.27 J		UJ	0.15	UJ	0.29
1,2,3,6,7,8-HxCDF	0.1	UJ	0.11	0.19 J		0.23 J		0.05 J		UJ	0.28
1,2,3,7,8,9-HxCDF	0.1	UJ	0.14	UJ	0.17	UJ	0.20	UJ	0.18	UJ	0.35
2,3,4,6,7,8-HxCDF	0.1	0.02 J		0.13 J		UJ	0.17	UJ	0.15	UJ	0.30
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.10	UJ	0.28	UJ	0.41	UJ	0.17	UJ	0.35
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.15	UJ	0.19	UJ	0.16	UJ	0.18	UJ	0.23
OCDF	< 0.0001	UJ	0.11	UJ	0.20	UJ	0.20	UJ	0.15	UJ	0.71
TOTAL TCDD		243.51 J		UJ	0.86	UJ	0.83	UJ	0.40	UJ	0.57
TOTAL PeCDD		UJ	0.28	UJ	0.61	UJ	0.55	UJ	0.23	UJ	0.42
TOTAL HxCDD		0.14 J		1.05 J		0.97 J		0.20 J		0.34 J	
TOTAL HpCDD		UJ	0.16	UJ	1.04	UJ	1.42	UJ	0.39	UJ	1.35
TOTAL TCDF		0.64 J		5.42 J		7.12 J		2.03 J		3.36 J	
TOTAL PeCDF		0.40 J		3.85 J		3.84 J		1.26 J		1.88 J	
TOTAL HxCDF		0.14 J	-	1.46 J		1.85 J		0.29 J		0.60 J	
TOTAL HpCDF		UJ	0.10	UJ	0.58	UJ	0.55	UJ	0.29	UJ	1.00
HCX - Hexachloroxanthene		UJ	19.87	UJ	20.01	UJ	19.98	UJ	19.99	UJ	20.02
TCX - Tetrachloroxanthene		R		R		R		R		R	
TOXIC EQUIVALENT(1):		240 J		1.6 J		1.5 J		0.25 J		0.93 J	
PERCENT SOLIDS:		26.0		40.2		40.0		36.9		38.4	
PERCENT LIPIDS:		5.75		12.4		13.1		8.93		8.69	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/20/01		06/22/01		06/22/01		06/22/01		06/22/01	
DATE OF RECEIPT:		06/21/01		06/26/01		06/26/01		06/26/01		06/26/01	
SAMPLE EXTRACTION DATE:		08/02/01		08/02/01		08/02/01		08/02/01		08/02/01	
ANALYSIS DATE:		08/09/01		08/09/01		08/10/01		08/10/01		08/10/01	
LAB SAMPLE ID:		48985-43-03		48985-43-04		48985-43-05		48985-43-06		48985-43-07	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife": Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.
= Result reported from confirmation analysis

Steve Stodola
US EPA Approval Signature

3/21/02
Date

March 5, 2002
B-02-03-Y-2
Revised: March 19, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, MA 01863

Re: TO No. 04, Task No. 2, TDF No. 0309
Case No. Whole Body Fish B2OF4, SDG No. 48985-53 D/F
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

Dioxin/Furan, HCX and TCX: 20/Fish Tissue/APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, DYP-AE-4003-0000-01, GMP-AE-5001-0000-01, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 20 whole body fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter to EPA. See the Supporting Documentation section. The data were

evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- * Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- Matrix Spike/Matrix Spike Duplicate
- * Laboratory Control Sample
- * Laboratory and Field Duplicates
- * Internal/Clean-up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
- * Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

<u>The following information was used to generate the Data Validation Memorandum attachments:</u>

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

<u>Overall Evaluation of Data and Potential Usability Issues</u>

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality to be used for human health (HHRA) and ecological risk assessments (ERA).

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of bias low results.

The initial calibration for TCX was noncompliant. The initial calibration % RSD was exceeded. There were no other additional quality control checks, such as MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

PE Samples/Accuracy Check

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-53-24 FISH SRM) results which did not meet criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D from consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	2378-TCDD	71	J	UJ
CIL EDF 2526	12378-PeCDD	74	J	UJ
CIL EDF 2526	123478-HxCDD	78	J	UJ
CIL EDF 2526	123678-HxCDD	76	J	UJ
CIL EDF 2526	123789-HxCDD	78	J	UJ
CIL EDF 2526	1234678-HpCDD	76	J	UJ
CIL EDF 2526	OCDD	74	J	UJ
CIL EDF 2526	2378-TCDF	68	J	UJ
CIL EDF 2526	12378-PeCDF	71	J	UJ
CIL EDF 2526	23478-PeCDF	73	J	UJ
CIL EDF 2526	123478-HxCDF	72	J	UJ
CIL EDF 2526	123678-HxCDF	75	J	UJ
CIL EDF 2526	123789-HxCDF	74	J	UJ

PE Sample Number	Congener	%D from consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	234678-HxCDF	71	J	UJ
CIL EDF 2526	1234678-HpCDF	73	J	UJ
CIL EDF 2526	1234789-HpCDF	72	J	UJ
CIL EDF 2526	OCDF	71	J	UJ

Since all of the congeners had low recoveries, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD < 25 % and the resulting sample qualifications:

IC Date	Compound	% RSD	Action		Affected Samples
			Positive Detects	NDs	
07/21/01	TCX	30	J	UJ	All

The data associated with the noncompliant initial calibration are qualified due to the variability. The quantitation of the associated analyte in the samples could be biased.

The following table summarizes the Calibration Verification (VER) results which did not meet Method 1613B recovery criteria and the resulting sample qualifications:

VER Date	Compound	Recovery (ng/ml)	Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
08/17/01 (Ending)	$^{13}C_{12}$-1234789-HpCDF	159	77-129	J	UJ	LPX-AE-4004, LPX-AE-4006, LPX-AE-4007, GMP-AE-5001

The data associated with the recoveries of noncompliant calibration verifications are qualified due to the high recovery. The quantitation of the associated analytes in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of HCX. Therefore, professional judgement was used to estimate (J,UJ) all HCX results due to the poor chromatography.

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following tables list the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
12378-PeCDD	Method Blank (8/15/01)	0.64	3.2	APC-AE-4002, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, LPX-AE-4001, LPX-AE-4002, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009
1234678-HpCDD	Method Blank (8/15/01)	0.32	1.6	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4007, DYP-AE-4003, LPX-AE-4001, LPX-AE-4003
OCDD	Method Blank (8/15/01)	0.91	9.1	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, GMP-AE-5001, LPX-AE-4001, LPX-AE-4002, LPX-AE-4003, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009
123478-HxCDF	Method Blank (8/15/01)	0.12	0.60	APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4005, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, LPX-AE-4003, LPX-AE-4004, LPX-AE-4005, LPX-AE-4009
234678-HxCDF	Method Blank (8/15/01)	0.08	0.40	APC-AE-4002, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
1234678-HpCDF	Method Blank (8/15/01)	0.13	0.65	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4006, APC-AE-4007, APC-AE-4009, DYP-AE-4003, LPX-AE-4001, LPX-AE-4002, LPX-AE-4003, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007
1234789-HpCDF	Method Blank (8/15/01)	0.14	0.70	DYP-AE-4003, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008
OCDF	Method Blank (8/15/01)	0.31	3.1	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, GMP-AE-5001, LPX-AE-4001, LPX-AE-4002, LPX-AE-4003, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009
Total PeCDD	Method Blank (8/15/01)	0.64	6.4	APC-AE-4002, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, GMP-AE-5001, LPX-AE-4001, LPX-AE-4002, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009
Total HpCDD	Method Blank (8/15/01)	0.41	4.1	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, LPX-AE-4001, LPX-AE-4002, LPX-AE-4003, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008
Total HxCDF	Method Blank (8/15/01)	3.7	37	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, LPX-AE-4001, LPX-AE-4003, LPX-AE-4004, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Samples Affected
Total HpCDF	Method Blank (8/15/01)	0.26	2.6	APC-AE-4001, APC-AE-4002, APC-AE-4003, APC-AE-4004, APC-AE-4005, APC-AE-4006, APC-AE-4007, APC-AE-4008, APC-AE-4009, DYP-AE-4003, LPX-AE-4001, LPX-AE-4002, LPX-AE-4003, LPX-AE-4005, LPX-AE-4006, LPX-AE-4007, LPX-AE-4008, LPX-AE-4009

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: GMP-AE-5001MS/GMP-AE-5001MSD.

The table below summarizes the tissue MS/MSD results which did not meet the recovery criteria of 50-120% and/or Relative Percent Difference (RPD) < 30% as documented in the Centredale Manor Tasks 19-22 QAPP (5/23/01).

GMP-AE-5001					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
123789-HxCDD	198	101*	65	J	UJ
HCX	64*	132	70	J	UJ

* Recoveries and/or RPDs were acceptable

Professional judgement was used to estimate (J,UJ) values for 123789-HxCDD and HCX in all samples since percent recoveries and/or precision were outside the required criteria.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. As a result, the TE values in the Data Summary Table may differ from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are the ones published in Environmental Health Perspectives, Volume 106, Number 12, December 1998, "Toxic Equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

System Performance

No trends were noted with the dioxin/furan analysis. However, the results for HCX and TCX indicated analytical problems with these two compounds. The problems included noncompliant initial calibration, poor HCX chromatography, and poor MS/MSD precision for HCX.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Whole Body Fish B2OF4/SDG No. 48985-53 D/F

Sample Nos.	APC-AE-4001-0000-01	APC-AE-4002-0000-01	APC-AE-4003-0000-01	APC-AE-4004-0000-01	APC-AE-4005-0000-01	APC-AE-4006-0000-01	APC-AE-4007-0000-01	APC-AE-4008-0000-01	APC-AE-4009-0000-01	DYP-AE-4003-0000-01
Compound										
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDD	J[1]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
1234678-HpCDD	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1]	J[1,5]	J[1]	J[1]	J[1,5]
OCDD	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
123678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1,5]	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
1234678-HpCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,5]
OCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
HCX	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Whole Body Fish B2OF4/SDG No. 48985-53 D/F

Sample Nos.	GMP-AE-5001-0000-01	LPX-AE-4001-0000-01	LPX-AE-4002-0000-01	LPX-AE-4003-0000-01	LPX-AE-4004-0000-01	LPX-AE-4005-0000-01	LPX-AE-4006-0000-01	LPX-AE-4007-0000-01	LPX-AE-4008-0000-01	LPX-AE-4009-0000-01
Compound										
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDD	J[1]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
1234678-HpCDD	J[1]	J[1,5]	J[1]	J[1,5]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDD	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1]	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1]	J[1]	J[1,5]
123678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
1234678-HpCDF	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1]	J[1]
1234789-HpCDF	J[1,4]	J[1]	J[1]	J[1]	J[1,4,5]	J[1,5]	J[1,4,5]	J[1,4,5]	J[1,5]	J[1]
OCDF	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
HCX	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]	J[2,3]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans

A	-	Accept results.
J[1]	-	SRM %D outside criterion; J detects, UJ non-detects.
J[2]	-	Chromatographic resolution outside criterion; J detects, UJ non-detects.
J[3]	-	MS/MSD recovery and/or RPDs outside criteria; J detects, UJ non-detects.
J[4]	-	VER recoveries outside criterion; J detects, UJ non-detects.
J[5]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
R[1]	-	Non-compliant method detection limits and recovery; R non-detects.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality to be used for human health (HHRA) and ecological risk assessments (ERA).	Yes, Sampling Method appropriate for all samples. Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: $J^{1,2,3,4,5}$, R^{1}	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of bias low results. The initial calibration for TCX was noncompliant. The initial calibration % RSD was exceeded. There were no other additional quality control checks, such as MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples were less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 3/19/02

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B2OF4 SDG No. 48985-53 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-AE-4001-0000-01			APC-AE-4002-0000-01			APC-AE-4003-0000-01			APC-AE-4004-0000-01			APC-AE-4005-0000-01			APC-AE-4006-0000-01		
STATION LOCATION:		ALLENDALE POND			ALLENDALE POND			ALLENDALE POND			ALLENDALE POND			ALLENDALE POND			ALLENDALE POND		
MATRIX:		TISSUE			TISSUE			TISSUE			TISSUE			TISSUE			TISSUE		
TCDD/TCDF CONC.:		ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC
2,3,7,8-TCDD	1.0	54.64	J		138.75	J		84.23	J		76.49	J		225.32	J		306.91	J	
1,2,3,7,8-PeCDD	1.0		UJ	1.15		UJ	0.49		UJ	0.50		UJ	0.23		UJ	0.60		UJ	0.59
1,2,3,4,7,8-HxCDD	0.5		UJ	0.58	0.42	J			UJ	0.39	0.18	J			UJ	0.21	0.25	J	
1,2,3,6,7,8-HxCDD	0.01		UJ	0.57	1.87	J		0.84	J		0.57	J		1.68	J		1.16	J	
1,2,3,7,8,9-HxCDD	0.01		UJ	0.54	0.32	J			UJ	0.37		UJ	0.18	0.17	J			UJ	0.34
1,2,3,4,6,7,8-HpCDD	0.001		UJ	0.58		UJ	2.03		UJ	0.96		UJ	0.71	1.72	J		1.68	J	
OCDD	< 0.0001		UJ	1.96		UJ	3.44		UJ	2.01		UJ	1.14		UJ	2.78		UJ	2.81
2,3,7,8-TCDF	0.05		UJ	0.40		UJ	0.45		UJ	0.49		UJ	0.22		UJ	0.15		UJ	0.32
1,2,3,7,8-PeCDF	0.05		UJ	0.61		UJ	0.51		UJ	0.58		UJ	0.33		UJ	0.26		UJ	0.28
2,3,4,7,8-PeCDF	0.5		UJ	0.60		UJ	0.49		UJ	0.54		UJ	0.32		UJ	0.25		UJ	0.28
1,2,3,4,7,8-HxCDF	0.1		UJ	0.28		UJ	0.27		UJ	0.17		UJ	0.13		UJ	0.19		UJ	0.24
1,2,3,6,7,8-HxCDF	0.1		UJ	0.28	0.33	J		0.11	J		0.16	J		0.22	J		0.14	J	
1,2,3,7,8,9-HxCDF	0.1		UJ	0.32		UJ	0.30		UJ	0.38		UJ	0.15		UJ	0.12		UJ	0.28
2,3,4,6,7,8-HxCDF	0.1		UJ	0.30		UJ	0.25		UJ	0.36		UJ	0.12		UJ	0.13		UJ	0.10
1,2,3,4,6,7,8-HpCDF	0.01		UJ	0.30		UJ	0.86		UJ	0.34		UJ	0.30	0.76	J			UJ	0.60
1,2,3,4,7,8,9-HpCDF	0.01		UJ	0.36		UJ	0.26		UJ	0.49		UJ	0.25		UJ	0.15		UJ	0.17
OCDF	< 0.0001		UJ	0.54		UJ	0.40		UJ	0.39		UJ	0.08		UJ	0.28		UJ	0.27
TOTAL TCDD		54.64	J		138.75	J		84.23	J		76.49	J		225.32	J		306.91	J	
TOTAL PeCDD			UJ	1.15		UJ	0.49		UJ	0.50		UJ	0.23		UJ	0.60		UJ	0.69
TOTAL HxCDD			UJ	0.56	2.60	J		0.84	J		0.75	J		1.85	J		1.41	J	
TOTAL HpCDD			UJ	0.58		UJ	2.03		UJ	0.96		UJ	0.83		UJ	1.93		UJ	1.95
TOTAL TCDF			UJ	0.40		UJ	0.45		UJ	0.49		UJ	0.22	0.12	J		0.23	J	
TOTAL PeCDF			UJ	0.61		UJ	0.50	0.72	J			UJ	0.33		UJ	0.26	0.83	J	
TOTAL HxCDF			UJ	0.24		UJ	0.86		UJ	0.27		UJ	0.38		UJ	0.63		UJ	0.39
TOTAL HpCDF			UJ	0.50		UJ	1.63		UJ	0.34		UJ	0.57		UJ	1.09		UJ	0.68
HCX - Hexachloroxanthene		36.72	J		91.29	J		46.54	J		72.39	J		109.04	J		89.16	J	
TCX - Tetrachloroxanthene			R			R			R			R			R			R	
TOXIC EQUIVALENT(1):		55	J		140	J		84	J		77	J		220	J		310	J	
PERCENT SOLIDS:		26.8			36.1			29.4			31.3			34.6			32.2		
PERCENT LIPIDS:		7.33			15.8			10.7			14.3			17.7			13.4		
DILUTION FACTOR:		1.0			1.0			1.0			1.0			1.0			1.0		
DATE SAMPLED:		06/20/01			06/20/01			06/20/01			06/20/01			06/20/01			06/20/01		
DATE OF RECEIPT:		06/21/01			06/21/01			06/21/01			06/21/01			06/21/01			06/21/01		
SAMPLE EXTRACTION DATE:		08/07/01			08/07/01			08/07/01			08/07/01			08/07/01			08/07/01		
ANALYSIS DATE:		08/16/01			08/16/01			08/16/01			08/16/01			08/16/01			08/16/01		
LAB SAMPLE ID:		48985-53-17			48985-53-18			48985-53-19			48985-56-04			48985-56-03			48985-56-02		

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B2OF4 SDG No. 48985-53 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	APC-AE-4007-0000-01		APC-AE-4008-0000-01		APC-AE-4009-0000-01		DYP-AE-4003-0000-01		GMP-AE-5001-0000-01		LPX-AE-4001-0000-01	
STATION LOCATION:		ALLENDALE POND		ALLENDALE POND		ALLENDALE POND		DYERVILLE POND		GREYSTONE MILL POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC
2,3,7,8-TCDD	1.0	9.28 J		26.49 J		92.59 J		74.96 J		UJ	0.31	133.52 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.19	UJ	0.48	UJ	0.61	UJ	0.41	UJ	0.28	UJ	1.03
1,2,3,4,7,8-HxCDD	0.5	UJ	0.09	0.49 J		0.32 J		UJ	0.47	UJ	0.27	UJ	0.25
1,2,3,6,7,8-HxCDD	0.01	0.47 J		1.75 J		1.28 J		1.89 J		UJ	0.28	2.62 J	
1,2,3,7,8,9-HxCDD	0.01	0.15 J		0.43 J		0.19 J		0.38 J		UJ	0.26	0.37 J	
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.89	2.41 J		1.87 J		UJ	2.81	UJ	1.10	UJ	2.14
OCDD	< 0.0001	UJ	1.55	UJ	2.39	UJ	7.86	UJ	3.88	UJ	0.63	UJ	2.48
2,3,7,8-TCDF	0.05	UJ	0.20	0.08 J		0.06 J		UJ	0.48	UJ	0.26	UJ	0.33
1,2,3,7,8-PeCDF	0.05	UJ	0.23	0.08 J		UJ	0.25	UJ	0.70	UJ	0.40	UJ	0.44
2,3,4,7,8-PeCDF	0.5	0.15 J		0.31 J		UJ	0.19	UJ	0.64	UJ	0.38	UJ	0.42
1,2,3,4,7,8-HxCDF	0.1	UJ	0.14	UJ	0.36	UJ	0.18	UJ	0.28	UJ	0.30	UJ	0.25
1,2,3,6,7,8-HxCDF	0.1	0.13 J		0.33 J		UJ	0.24	0.20 J		UJ	0.30	UJ	0.24
1,2,3,7,8,9-HxCDF	0.1	0.02 J		UJ	0.11	UJ	0.28	UJ	0.54	UJ	0.33	UJ	0.27
2,3,4,6,7,8-HxCDF	0.1	UJ	0.11	UJ	0.26	UJ	0.11	UJ	0.14	UJ	0.32	UJ	0.26
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.22	0.87 J		UJ	0.64	UJ	0.93	UJ	0.48	UJ	0.50
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.14	UJ	0.19	UJ	0.14	UJ	0.13	UJ	0.42	UJ	0.34
OCDF	< 0.0001	UJ	0.09	UJ	0.23	UJ	0.54	UJ	0.45	UJ	0.23	UJ	0.37
TOTAL TCDD		9.28 J		26.49 J		92.59 J		74.96 J		UJ	0.31	133.52 J	
TOTAL PeCDD		UJ	0.19	UJ	0.48	UJ	0.61	UJ	0.05	UJ	0.04	UJ	1.03
TOTAL HxCDD		1.08 J		3.12 J		2.11 J		2.27 J		0.06 J		2.99 J	
TOTAL HpCDD		UJ	0.89	UJ	2.51	UJ	2.27	UJ	3.32	UJ	1.10	UJ	2.32
TOTAL TCDF		UJ	0.20	0.08 J		0.06 J		UJ	0.48	UJ	0.26	0.06 J	
TOTAL PeCDF		0.15 J		0.66 J		0.59 J		UJ	0.67	UJ	0.39	UJ	0.43
TOTAL HxCDF		UJ	0.40	UJ	1.04	UJ	0.30	UJ	0.88	UJ	0.31	UJ	0.36
TOTAL HpCDF		UJ	0.22	UJ	0.97	UJ	1.99	UJ	1.06	UJ	0.44	UJ	1.71
HCX - Hexachloroxanthene		UJ	19.98	7.74 J		70.11 J		34.30 J		UJ	39.63	107.74 J	
TCX - Tetrachloroxanthene		R		R		R		R		R		R	
TOXIC EQUIVALENT(1):		9.4 J		27 J		93 J		75 J		0.0 UJ		130 J	
PERCENT SOLIDS:		30.0		35.2		31.3		42.2		22.1		34.2	
PERCENT LIPIDS:		13.4		17.2		11.0		13.5		4.56		17.8	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/20/01		06/20/01		06/20/01		07/02/01		06/22/01		06/21/01	
DATE OF RECEIPT:		06/21/01		06/21/01		06/21/01		07/03/01		06/26/01		06/22/01	
SAMPLE EXTRACTION DATE:		08/07/01		08/07/01		08/07/01		08/07/01		08/07/01		08/07/01	
ANALYSIS DATE:		08/16/01		08/16/01		08/16/01		08/16/01		08/17/01		08/16/01	
LAB SAMPLE ID:		48985-53-11		48985-53-12		48985-53-13		48985-53-23		48985-56-10		48985-53-14	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B2OF4 SDG No. 48985-53 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-AE-4002-0000-01			LPX-AE-4003-0000-01			LPX-AE-4004-0000-01			LPX-AE-4005-0000-01			LPX-AE-4006-0000-01			LPX-AE-4007-0000-01		
STATION LOCATION:		LYMANSVILLE POND			LYMANSVILLE POND			LYMANSVILLE POND			LYMANSVILLE POND			LYMANSVILLE POND			LYMANSVILLE POND		
MATRIX:		TISSUE			TISSUE			TISSUE			TISSUE			TISSUE			TISSUE		
TCDD/TCDF CONC.:		ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC	ng/Kg		DL/EMPC
2,3,7,8-TCDD	1.0	53.74	J		25.15	J		84.75	J		180.52	J		136.02	J		177.48	J	
1,2,3,7,8-PeCDD	1.0		UJ	1.38		UJ	0.69		UJ	0.65		UJ	0.97		UJ	0.84		UJ	1.06
1,2,3,4,7,8-HxCDD	0.5	0.93	J		0.41	J		0.48	J		0.64	J		0.44	J		0.64	J	
1,2,3,6,7,8-HxCDD	0.01	4.32	J		1.79	J		1.79	J		2.91	J		2.31	J		2.85	J	
1,2,3,7,8,9-HxCDD	0.01		UJ	0.19		UJ	0.39	0.47	J		0.27	J		0.23	J		0.22	J	
1,2,3,4,6,7,8-HpCDD	0.001	4.86	J			UJ	1.81	3.55	J		2.56	J		2.09	J		2.48	J	
OCDD	< 0.0001		UJ	5.05		UJ	2.93		UJ	8.86		UJ	2.62		UJ	2.30		UJ	2.44
2,3,7,8-TCDF	0.05		UJ	0.34		UJ	0.36		UJ	0.15		UJ	0.13		UJ	0.20		UJ	0.17
1,2,3,7,8-PeCDF	0.05		UJ	0.32		UJ	0.51		UJ	0.16		UJ	0.27		UJ	0.28		UJ	0.20
2,3,4,7,8-PeCDF	0.5		UJ	0.31		UJ	0.52		UJ	0.16		UJ	0.25		UJ	0.27	0.16	J	
1,2,3,4,7,8-HxCDF	0.1		UJ	0.18		UJ	0.21		UJ	0.33		UJ	0.24		UJ	0.20		UJ	0.07
1,2,3,6,7,8-HxCDF	0.1		UJ	0.17	0.32	J		0.25	J		0.21	J			UJ	0.20	0.18	J	
1,2,3,7,8,9-HxCDF	0.1		UJ	0.18		UJ	0.35		UJ	0.23		UJ	0.09		UJ	0.22		UJ	0.08
2,3,4,6,7,8-HxCDF	0.1		UJ	0.18		UJ	0.33		UJ	0.15		UJ	0.13		UJ	0.12		UJ	0.13
1,2,3,4,6,7,8-HpCDF	0.01		UJ	1.13		UJ	0.51	1.60	J			UJ	0.60		UJ	0.49		UJ	0.62
1,2,3,4,7,8,9-HpCDF	0.01		UJ	0.52		UJ	0.32		UJ	0.16		UJ	0.06		UJ	0.11		UJ	0.09
OCDF	< 0.0001		UJ	0.38		UJ	0.40		UJ	1.46		UJ	0.23		UJ	0.33		UJ	0.25
TOTAL TCDD		53.74	J		25.15	J		84.75	J		180.52	J		136.02	J		177.48	J	
TOTAL PeCDD			UJ	1.55		UJ	0.69		UJ	0.65		UJ	0.97		UJ	0.84		UJ	1.06
TOTAL HxCDD		5.24	J		2.19	J		2.93	J		3.84	J		2.99	J		3.71	J	
TOTAL HpCDD			UJ	4.98		UJ	2.00	4.23	J			UJ	2.56		UJ	2.09		UJ	2.48
TOTAL TCDF			UJ	0.34	0.01	J		0.02	J		0.02	J			UJ	0.20	0.01	J	
TOTAL PeCDF			UJ	0.31		UJ	0.51		UJ	0.16	0.37	J		0.19	J		0.16	J	
TOTAL HxCDF			UJ	0.18		UJ	0.53		UJ	0.95		UJ	0.60		UJ	0.12		UJ	0.33
TOTAL HpCDF			UJ	1.29		UJ	2.02	2.63	J			UJ	0.83		UJ	1.00		UJ	1.03
HCX - Hexachloroxanthene		24.18	J		39.29	J		35.35	J		56.72	J		61.96	J		52.06	J	
TCX - Tetrachloroxanthene			R			R			R			R			R			R	
TOXIC EQUIVALENT(1):		54	J		25	J		85	J		180	J		140	J		180	J	
PERCENT SOLIDS:		37.1			31.8			33.8			37.3			32.4			38.5		
PERCENT LIPIDS:		17.2			19.8			16.3			15.9			16.7			21.2		
DILUTION FACTOR:		1.0			1.0			1.0			1.0			1.0			1.0		
DATE SAMPLED:		06/21/01			06/21/01			06/21/01			06/21/01			06/21/01			06/21/01		
DATE OF RECEIPT:		06/22/01			06/22/01			06/22/01			06/22/01			06/22/01			06/22/01		
SAMPLE EXTRACTION DATE:		08/07/01			08/07/01			08/07/01			08/07/01			08/07/01			08/07/01		
ANALYSIS DATE:		08/16/01			08/16/01			08/17/01			08/16/01			08/17/01			08/17/01		
LAB SAMPLE ID:		48985-53-15			48985-53-16			48985-56-05			48985-53-03			48985-56-06			48985-56-07		

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Whole Body Fish B2OF4 SDG No. 48985-53 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-AE-4008-0000-01			LPX-AE-4009-0000-01		
STATION LOCATION:		LYMANSVILLE POND			LYMANSVILLE POND		
MATRIX:		TISSUE			TISSUE		
TCDD/TCDF CONC.:		ng/Kg		DL/EMPC	ng/Kg		DL/EMPC
2,3,7,8-TCDD	1.0	209.19	J		246.73	J	
1,2,3,7,8-PeCDD	1.0		UJ	1.05		UJ	1.46
1,2,3,4,7,8-HxCDD	0.5	0.86	J		0.84	J	
1,2,3,6,7,8-HxCDD	0.01	3.70	J		4.30	J	
1,2,3,7,8,9-HxCDD	0.01	0.37	J		0.41	J	
1,2,3,4,6,7,8-HpCDD	0.001	3.29	J		3.90	J	
OCDD	< 0.0001		UJ	3.43		UJ	5.54
2,3,7,8-TCDF	0.05		UJ	0.22	0.06	J	
1,2,3,7,8-PeCDF	0.05		UJ	0.32		UJ	0.18
2,3,4,7,8-PeCDF	0.5	0.19	J		0.25	J	
1,2,3,4,7,8-HxCDF	0.1		UJ	0.09		UJ	0.24
1,2,3,6,7,8-HxCDF	0.1		UJ	0.09	0.32	J	
1,2,3,7,8,9-HxCDF	0.1		UJ	0.10		UJ	0.18
2,3,4,6,7,8-HxCDF	0.1		UJ	0.18		UJ	0.22
1,2,3,4,6,7,8-HpCDF	0.01	0.83	J		0.84	J	
1,2,3,4,7,8,9-HpCDF	0.01		UJ	0.12		UJ	0.27
OCDF	< 0.0001		UJ	0.36		UJ	0.69
TOTAL TCDD		209.19	J		246.73	J	
TOTAL PeCDD			UJ	1.05		UJ	1.46
TOTAL HxCDD		4.93	J		6.20	J	
TOTAL HpCDD			UJ	3.40	4.26	J	
TOTAL TCDF			UJ	0.22	0.23	J	
TOTAL PeCDF		0.56	J		1.33	J	
TOTAL HxCDF			UJ	0.20		UJ	0.78
TOTAL HpCDF			UJ	1.64		UJ	1.40
HCX - Hexachloroxanthene		57.07	J		96.23	J	
TCX - Tetrachloroxanthene			R			R	
TOXIC EQUIVALENT(1):		210	J		250	J	
PERCENT SOLIDS:		35.7			38.0		
PERCENT LIPIDS:		18.5			22.1		
DILUTION FACTOR:		1.0			1.0		
DATE SAMPLED:		06/21/01			06/21/01		
DATE OF RECEIPT:		06/22/01			06/22/01		
SAMPLE EXTRACTION DATE:		08/07/01			08/07/01		
ANALYSIS DATE:		08/16/01			08/16/01		
LAB SAMPLE ID:		48985-53-06			48985-53-07		

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(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Steve Stodola
US EPA Approval Signature

4/11/02
Date

March 28, 2002
B-02-03-Z-12
Revised: April 11, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, Massachusetts 01863

Re: Task Order No. 004, Task No. 2, TDF No. 0322
Case No. Whole Body Fish B3OF4, SDG No. 48985-67 D/F
Battelle Laboratories - Columbus, OH
Centredale Manor Site - North Providence, RI

Dioxin/Furan/HCX/TCX: 19/Fish Tissue/APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, LPX-AE-4010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 19 whole body fish tissue samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and finally to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter to EPA. See the Supporting Documentation

section. The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- * Matrix Spike/Matrix Spike Duplicate
- * Laboratory Control Sample/Laboratory Control Sample Duplicate
- * Laboratory and Field Duplicates
- * Internal/Clean up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specifity
- Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

The following information was used to generate the Data Validation Memorandum attachments:

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

Overall Evaluation of Data and Potential Usability Issues

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners

were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30%D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results.

The initial calibration %RSD criterion for TCX was noncompliant. There were no other additional quality control checks, such as a MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. If the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the dioxin/furan data. However, the TCX data were rejected. See the discussion below for details. The reported results are usable for the site objectives with the exception of the TCX data.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or was missing:

1. The laboratory was asked to submit original Chain-of-Custody forms received from the sampler for the samples from this SDG.

2. The laboratory was asked to confirm that no daily calibrations were analyzed for HCX and TCX.

3. The laboratory was asked to explain why 12378-PeCDD and 1234678-HpCDD were reported as EMPC values in sample number GMP-AE-5004. These two analytes met ion ratio criteria.

4. The laboratory was asked to submit %lipids for sample numbers: DYP-AE-5001-0000-01 and DYP-AE-5002-000-01.

The above items were requested via the TOPO on November 14, 2001 (items 1 through 3) and on February 1, 2002 (item # 4) and were received via the TOPO on January 12, 2003 and on February 14, 2002. All items were adequately addressed.

PE Samples/Accuracy Check

One CIL Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-67-24 FISH SRM) results which did not meet %D criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D	Action	
			Positive Detects	NDs
CIL EDF 2526	2378-TCDD	77	J	UJ
CIL EDF 2526	12378-PeCDD	80	J	UJ
CIL EDF 2526	123478-HxCDD	84	J	UJ
CIL EDF 2526	123678-HxCDD	82	J	UJ
CIL EDF 2526	123789-HxCDD	84	J	UJ
CIL EDF 2526	1234678-HpCDD	81	J	UJ
CIL EDF 2526	OCDD	81	J	UJ
CIL EDF 2526	2378-TCDF	71	J	UJ
CIL EDF 2526	12378-PeCDF	78	J	UJ
CIL EDF 2526	23478-PeCDF	78	J	UJ
CIL EDF 2526	123478-HxCDF	79	J	UJ
CIL EDF 2526	123678-HxCDF	80	J	UJ
CIL EDF 2526	123789-HxCDF	82	J	UJ
CIL EDF 2526	234678-HxCDF	79	J	UJ
CIL EDF 2526	1234678-HpCDF	81	J	UJ
CIL EDF 2526	1234789-HpCDF	79	J	UJ
CIL EDF 2526	OCDF	79	J	UJ

Since all of the congeners had low recoveries as indicated by the large %Ds, the results for dioxin/furans in all the samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD ≤ 25% and the resulting sample qualifications:

IC Date	Compound	%RSD	Action		Affected Samples
			Positive Detects	NDs	
07/19/01	TCX	30	J	UJ	All samples

The data associated with the noncompliant initial calibration are qualified due to the high variability. The quantitation of the associated analyte in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad peak shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of HCX. Therefore, professional judgement was used to estimate (J, UJ) all the HCX results due to poor chromatography.

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following table summarizes the highest concentration of the contamination that was detected in the blanks. The table lists action levels and the affected samples:

- Method Blanks

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
2378-TCDD	Method Blank (8/20/01)	0.071	0.35	GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
12378-PeCDD	Method Blank (8/20/01)	0.17	0.83	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01 RAB-AE-5006-0000-01
123478-HxCDD	Method Blank (8/20/01)	0.023	0.12	GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5009-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01
1234678-HpCDD	Method Blank (8/20/01)	0.097	0.48	RAB-AE-5003-0000-01, RAB-AE-5004-0000-01
OCDD	Method Blank (8/20/01)	0.76	7.6	All
2378-TCDF	Method Blank (8/20/01)	0.037	0.19	DYP-AE-4001-0000-01, GMP-AE-5010-0000 RAB-AE-5002-0000-01, RAB-AE-5004-0000-01
123478-HxCDF	Method Blank (8/20/01)	0.068	0.34	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, LPX-AE-4010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01
123678-HxCDF	Method Blank (8/20/01)	0.028	0.14	APC-AE-4010-0000-01, GMP-AE-5009-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01
234678-HxCDF	Method Blank (8/20/01)	0.040	0.20	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01 GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, LPX-AE-4010-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000
1234678-HpCDF	Method Blank (8/20/01)	0.053	0.27	GMP-AE-5003-0000-01, GMP-AE-5007-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5006-0000-01

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
OCDF	Method Blank (8/20/01)	0.16	1.6	All
Total Tetra Dioxins	Method Blank (8/23/01)	0.088	0.88	GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01
Total Penta Dioxins	Method Blank (8/20/01)	0.96	9.6	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, LPX-AE-4010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01
Total Hepta Dioxins	Method Blank (8/20/01)	0.12	1.2	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5007-0000-01, GMP-AE-5009-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01
Total Tetra Furans	Method Blank (8/20/01)	0.037	0.37	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, GMP-AE-5008-0000-01, GMP-AE-5010-0000-01, RAB-AE-5002-0000-01, RAB-AE-5004-0000-01,
Total Penta Furans	Method Blank (8/20/01)	0.050	0.50	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5004-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5009-0000-01, LPX-AE-4010-0000-01, RAB-AE-5002-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01
Total Hexa Furans	Method Blank (8/20/01)	0.14	1.4	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01 GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, LPX-AE-4010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
Total Hepta Furans	Method Blank (8/20/01)	0.096	0.96	APC-AE-4010-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01 GMP-AE-5009-0000-01, GMP-AE-5010-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, RAB-AE-5006-0000-01

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than or equal to the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Sample Quantitation

Concentrations quantitated and reported by the laboratory below the lowest calibration standard are flagged (J) on the Data Summary Table. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. As a result, the TE values in the Data Summary Table differ slightly from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are the ones published in Environmental Health Perspectives, Volume 106, Number 12, December 1998. "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

System Performance

No trends were noted with the dioxin/furan analysis. The results for HCX and TCX indicated analytical problems. The problems included: noncompliant TCX initial calibration and poor HCX chromatography. There were no other supporting quality control checks such as MS/MSD or LCS to demonstrate that the method could detect TCX in the samples.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Maria E. Baca
Senior Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PES Score Reports
Communications
Field Sampling Notes

Table I
Recommendation Summary Table for Dioxins/Furans/TCX/HCX
Centredale Manor Site - North Providence, RI Site
Case No. Whole Body Fish B3OF4, SDG No. 48985-67 D/F

Sample Nos.	APC-AE-4010-0000-01	DYP-AE-4001-0000-01	DYP-AE-4002-0000-01	GMP-AE-5002-0000-01	GMP-AE-5003-0000-01	GMP-AE-5004-0000-01	GMP-AE-5005-0000-01
Compound							
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1,3]	J[1,3]	J[1,3]
12378-PeCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123478-HxCDD	J[1]	J[1]	J[1]	J[1,3]	J[1,3]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
2378-TCDF	J[1]	J[1,3]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123678-HxCDF	J[1,3]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
1234678-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1,3]	J[1]	J[1]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
HCX	J[2]	J[2]	J[2]	J[2]	J[2]	J[2]	J[2]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans/TCX/HCX
Centredale Manor Site - North Providence, RI Site
Case No. Whole Body Fish B3OF4, SDG No. 48985-67 D/F

Sample Nos.	GMP-AE-5006-0000-01	GMP-AE-5007-0000-01	GMP-AE-5008-0000-01	GMP-AE-5009-0000-01	GMP-AE-5010-0000-01	LPX-AE-4010-0000-01	RAB-AE-5001-0000-01
Compound							
2378-TCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1,3]
12378-PeCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1,3]
123478-HxCDD	J[1]	J[1]	J[1]	J[1,3]	J[1]	J[1]	J[1,3]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,2]	J[1,3]	J[1,3]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1,3]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,3]	J[1,3]	J[1]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123678-HxCDF	J[1]	J[1]	J[1]	J[1,3]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1]
1234678-HpCDF	J[1]	J[1,3]	J[1]	J[1]	J[1]	J[1]	J[1,3]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
HCX	J[2]	J[2]	J[2]	J[2]	J[2]	J[2]	J[2]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans/TCX/HCX
Centredale Manor Site - North Providence, RI Site
Case No. Whole Body Fish B3OF4, SDG No. 48985-67 D/F

Sample Nos.	RAB-AE- 5002-0000-01	RAB-AE-5003-0000-01	RAB-AE-5004-0000-01	RAB-AE-5005-0000-01	RAB-AE-5006-0000-01
Compound					
2378-TCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1]
12378-PeCDD	J[1]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123478-HxCDD	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1]	J[1,3]	J[1,3]	J[1]	J[1]
OCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
2378-TCDF	J[1,3]	J[1]	J[1,3]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123678-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
1234678-HpCDF	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1,3]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
HCX	J[2]	J[2]	J[2]	J[2]	J[2]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans/TCX/HCX

A	-	Accept results.
R[1]	-	Non-compliant method detection limits and recovery; R non-detects.
J[1]	-	SRM %D outside criterion; J detects, UJ non-detects.
J[2]	-	Poor chromatography; J detects, UJ non-detects.
J[3]	-	Method Blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the reported concentration.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN/HCX/TCX ANALYSIS					
DQO (List all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: R[1,2]	Refer to qualification in R/S Key on Table I: N/A	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30%D from the consensus value. Since all of the congeners had low recoveries, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results. The initial calibration for TCX was noncompliant. The initial calibration %RSD criteria was exceeded. There were no other additional quality control checks, such as a MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. If the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the dioxin/furan data. However, the TCX data were rejected. See the discussion in the data validation memorandum for details. The reported results are usable for the site objectives with the exception of the TCX data.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: Marie Bare

Date: 4/11/02

Dx mary Table
Dioxin/Furan Anal Issue Samples (wet weight)

SITE: Centredale Manor - North Providence, RI
CASE NO.: Whole Body Fish B3OF4 SDG NO.: 48985-67 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity	APC-AE-4010-0000-01		DYP-AE-4001-0000-01		DYP-AE-4002-0000-01		GMP-AE-5002-0000-01		GMP-AE-5003-0000-01		GMP-AE-5004-0000-01		GMP-AE-5005-0000-01	
STATION LOCATION:	Equivalency	Allendale Pond Channel		Dyerville Pond		Dyerville Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond	
MATRIX:	Factors (1)	Tissue		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue	
TCDD/TCDF CONC.:		pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	93.12 J		30.75 J		49.23 J		0.45 J		UJ	0.14	UJ	0.35	UJ	0.26
1,2,3,7,8-PeCDD	1.0	UJ	0.48	UJ	0.40	UJ	0.54	UJ	0.31	UJ	0.21	U	0.29 *	UJ	0.41
1,2,3,4,7,8-HxCDD	0.5	0.29 J		0.16 J		0.26 J		UJ	0.12	UJ	0.08	0.23 J		0.18 J	
1,2,3,6,7,8-HxCDD	0.01	1.03 J		0.80 J		1.40 J		0.61 J		0.41 J		0.86 J		0.73 J	
1,2,3,7,8,9-HxCDD	0.01	0.15 J		0.14 J		0.23 J		0.10 J		0.09 J		0.17 J		0.21 J	
1,2,3,4,6,7,8-HpCDD	0.001	0.96 J		0.88 J		1.85 J		0.76 J		0.50 J			1.06 *	1.38 J	
OCDD	<0.0001	UJ	1.37	UJ	1.21	UJ	4.74	UJ	2.28	UJ	0.82	UJ	2.94	UJ	3.10
2,3,7,8-TCDF	0.05	UJ	0.16	UJ	0.03	UJ	0.11	UJ	0.12	UJ	0.12	UJ	0.11	UJ	0.10
1,2,3,7,8-PeCDF	0.05	UJ	0.10	UJ	0.09	UJ	0.16	UJ	0.17	UJ	0.15	UJ	0.20	UJ	0.19
2,3,4,7,8-PeCDF	0.5	0.12 J		UJ	0.08	UJ	0.16	0.18 J		0.16 J		0.24 J		0.27 J	
1,2,3,4,7,8-HxCDF	0.1	UJ	0.15	UJ	0.15	UJ	0.17	UJ	0.14	UJ	0.13	UJ	0.26	UJ	0.25
1,2,3,6,7,8-HxCDF	0.1	UJ	0.12	UJ	0.09	0.16 J		0.40 J		UJ	0.11	0.27 J		0.22 J	
1,2,3,7,8,9-HxCDF	0.1	UJ	0.10	UJ	0.11	UJ	0.21	UJ	0.05	UJ	0.12	UJ	0.07	UJ	0.12
2,3,4,6,7,8-HxCDF	0.1	UJ	0.07	UJ	0.08	UJ	0.13	UJ	0.10	UJ	0.05	UJ	0.16	UJ	0.15
1,2,3,4,6,7,8-HpCDF	0.01	0.42 J		0.35 J		0.66 J		0.32 J		UJ	0.20	0.49 J		0.46 J	
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.13	UJ	0.22	UJ	0.39	UJ	0.17	UJ	0.16	UJ	0.16	UJ	0.16
OCDF	<0.0001	UJ	0.12	UJ	0.10	UJ	0.40	UJ	0.24	UJ	0.18	UJ	0.23	UJ	0.38
TOTAL TCDD		93.12 J		30.75 J		49.23 J		UJ	0.45	UJ	0.14	UJ	0.35	UJ	0.26
TOTAL PeCDD		UJ	0.48	UJ	0.41	UJ	0.54	UJ	0.31	UJ	0.21	UJ	0.29	UJ	0.41
TOTAL HxCDD		1.39 J		1.17 J		2.25 J		0.83 J		0.59 J		1.26 J		1.12 J	
TOTAL HpCDD		UJ	0.96	UJ	0.88	1.85 J		UJ	1.03	UJ	0.50	1.38 J		1.76 J	
TOTAL TCDF		UJ	0.06	UJ	0.03	UJ	0.11	UJ	0.12	UJ	0.12	UJ	0.11	UJ	0.10
TOTAL PeCDF		UJ	0.44	UJ	0.07	UJ	0.16	UJ	0.18	0.82 J		UJ	0.24	1.40 J	
TOTAL HxCDF		UJ	0.34	UJ	0.23	UJ	0.46	UJ	0.78	UJ	0.22	UJ	0.69	UJ	0.90
TOTAL HpCDF		UJ	0.49	UJ	0.36	UJ	0.66	1.40 J		UJ	0.90	UJ	0.86	UJ	0.65
HCX - Hexachloroxanthene		49.50 J		23.03 J		31.54 J		UJ	19.93	UJ	19.92	UJ	19.97	UJ	19.68
TCX - Tetrachloroxanthene		R		R		R		R		R		R		R	
TOXICITY EQUIVALENCY(1):		93 J		31 J		49 J		0.59 J		0.083 J		0.28 J		0.26 J	
PERCENT SOLIDS:		29.05		43.36		42.03		30.52		31.38		33.20		33.60	
PERCENT LIPIDS:		10.83		11.63		11.35		13.37		13.24		16.62		16.95	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/20/01		07/02/01		07/02/01		06/22/01		06/22/01		06/22/01		06/22/01	
DATE OF RECEIPT:		06/21/01		07/03/01		07/03/01		06/26/01		06/26/01		06/26/01		06/26/01	
AMPLE EXTRACTION DATE:		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01	
ANALYSIS DATE:		08/30/01		08/31/01		08/31/01		08/30/01		08/30/01		08/30/01		08/30/01	
LAB SAMPLE ID:		48985-67-03		48985-67-22		48985-67-23		48985-67-04		48985-67-05		48985-67-06		48985-67-07	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already e
(1) = The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106(12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Tissue Samples (wet weight)

SITE: Centredale Manor - North Providence, RI
CASE NO.: Whole Body Fish B3OF4 SDG NO.: 48985-67 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GMP-AE-5006-0000-01		GMP-AE-5007-0000-01		GMP-AE-5008-0000-01		GMP-AE-5009-0000-01		GMP-AE-5010-0000-01		LPX-AE-4D10-0000-01		RAB-AE-5001-0000-01	
STATION LOCATION:		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Lymansville Pond		Assapumpsett Brook, Ref	
MATRIX:		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue	
TCDD/TCDF CONC.:		pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	UJ	0.31	UJ	0.16	UJ	0.21	UJ	0.15	UJ	0.18	154.37 J		UJ	0.34
1,2,3,7,8-PeCDD	1.0	UJ	0.45	UJ	0.26	UJ	0.27	UJ	0.23	UJ	0.53	0.87 J		UJ	0.13
1,2,3,4,7,8-HxCDD	0.5	0.23 J		0.13 J		0.16 J		UJ	0.10	0.19 J		0.76 J		UJ	0.10
1,2,3,6,7,8-HxCDD	0.01	1.00 J		0.79 J		0.69 J		0.62 J		0.94 J		3.62 J		0.33 J	
1,2,3,7,8,9-HxCDD	0.01	0.22 J		0.14 J		0.10 J		0.14 J		0.12 J		0.30 J		0.07 J	
1,2,3,4,6,7,8-HpCDD	0.001	1.33 J		0.82 J		1.43 J		0.83 J		1.16 J		3.72 J		0.52 J	
OCDD	<0.0001	UJ	2.24	UJ	1.36	UJ	4.42	UJ	2.14	UJ	1.43	UJ	3.20	UJ	0.99
2,3,7,8-TCDF	0.05	UJ	0.17	UJ	0.20	0.30 J		UJ	0.16	UJ	0.04	UJ	0.14	UJ	0.15
1,2,3,7,8-PeCDF	0.05	UJ	0.10	UJ	0.17	0.26 J		UJ	0.14	UJ	0.19	UJ	0.12	UJ	0.17
2,3,4,7,8-PeCDF	0.5	0.28 J		0.17 J		UJ	1.12	0.16 J		UJ	0.59	0.20 J		UJ	0.17
1,2,3,4,7,8-HxCDF	0.1	UJ	0.25	UJ	0.19	0.46 J		UJ	0.15	UJ	0.18	UJ	0.23	UJ	0.09
1,2,3,6,7,8-HxCDF	0.1	0.26 J		UJ	0.13	0.24 J		UJ	0.14	0.21 J		0.25 J		UJ	0.09
1,2,3,7,8,9-HxCDF	0.1	UJ	0.09	UJ	0.15	UJ	0.13	UJ	0.13	UJ	0.12	UJ	0.11	UJ	0.10
2,3,4,6,7,8-HxCDF	0.1	UJ	0.16	UJ	0.10	UJ	0.09	UJ	0.10	UJ	0.14	UJ	0.16	UJ	0.09
1,2,3,4,6,7,8-HpCDF	0.01	0.48 J		UJ	0.27	0.64 J		0.37 J		0.54 J		0.76 J		UJ	0.13
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.16	UJ	0.15	0.17 J		UJ	0.13	UJ	0.30	UJ	0.17	UJ	0.23
OCDF	<0.0001	UJ	0.21	UJ	0.10	UJ	0.68	UJ	0.32	UJ	0.21	UJ	0.30	UJ	0.10
TOTAL TCDD		UJ	0.31	UJ	0.16	UJ	0.21	UJ	0.15	UJ	0.18	154.37 J		UJ	0.34
TOTAL PeCDD		UJ	0.45	UJ	0.26	UJ	0.27	UJ	0.23	UJ	0.53	UJ	0.87	UJ	0.13
TOTAL HxCDD		1.47 J		1.06 J		0.95 J		0.86 J		1.25 J		4.68 J		0.50 J	
TOTAL HpCDD		1.33 J		UJ	0.82	2.03 J		UJ	1.08	1.26 J		3.72 J		UJ	0.63
TOTAL TCDF		UJ	0.17	UJ	0.20	UJ	0.30	UJ	0.18	UJ	0.04	UJ	0.14	UJ	0.15
TOTAL PeCDF		UJ	0.28	UJ	0.17	0.53 J		UJ	0.18	0.93 J		UJ	0.32	UJ	0.17
TOTAL HxCDF		UJ	0.76	UJ	0.29	1.39 J		UJ	0.56	UJ	0.53	UJ	0.64	UJ	0.18
TOTAL HpCDF		UJ	0.71	UJ	0.69	1.45 J		UJ	0.51	UJ	0.74	1.03 J		UJ	0.24
HCX - Hexachloroxanthene		UJ	19.59	UJ	19.98	UJ	19.90	UJ	19.93	UJ	19.85	40.55 J		UJ	19.94
TCX - Tetrachloroxanthene		R		R		R		R		R		R		R	
TOXICITY EQUIVALENCY(1):		0.30 J		0.16 J		0.20 J		0.092 J		0.13 J		160 J		0.0045 J	
PERCENT SOLIDS:		32.75		31.54		28.04		28.29		36.25		37.98		33.14	
PERCENT LIPIDS:		18.71		16.85		12.07		13.80		19.79		21.67		12.97	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/22/01		06/22/01		06/22/01		06/22/01		06/26/01		06/21/01		06/26/01	
DATE OF RECEIPT:		06/26/01		06/26/01		06/26/01		06/26/01		06/27/01		06/22/01		06/29/01	
AMPLE EXTRACTION DATE:		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01	
ANALYSIS DATE:		08/30/01		08/30/01		08/31/01		08/31/01		08/31/01		08/30/01		08/31/01	
LAB SAMPLE ID:		48985-67-08		48985-67-09		48985-67-10		48985-67-11		48985-67-12		48985-67-02		48985-67-15	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already e
# = Results are reported from a confirmation analysis.
(1) = The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106(12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Datr ary Table
Dioxin/Furan Analys. sue Samples (wet weight)

SITE: Centredale Manor - North Providence, RI
CASE NO.: Whole Body Fish B3OF4 SDG NO.: 48985-67 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity	RAB-AE-5002-0000-01		RAB-AE-5003-0000-01		RAB-AE-5004-0000-01		RAB-AE-5005-0000-01		RAB-AE-5006-0000-01	
STATION LOCATION:	Equivalency	Assapumpsett Brook, Ref		Assapumpsett Brook, Ref		Assapumpsett Brook, Ref		Assapumpsett Brook, Ref		Assapumpsett Brook, Ref	
MATRIX:	Factors (1)	Tissue		Tissue		Tissue		Tissue		Tissue	
TCDD/TCDF CONC.:		pg/g	DL/EMPC	pg/g	DL/EMP	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	UJ	0.15	UJ	0.18	UJ	0.29	UJ	0.24	1.53 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.15	UJ	0.08	UJ	0.10	UJ	0.10	UJ	0.20
1,2,3,4,7,8-HxCDD	0.5	UJ	0.09	UJ	0.06	UJ	0.08	UJ	0.16	0.18 J	
1,2,3,6,7,8-HxCDD	0.01	0.27 J		0.34 J		0.33 J		0.55 J		0.44 J	
1,2,3,7,8,9-HxCDD	0.01	0.06 J		0.08 J		0.09 J		UJ	0.15	0.11 J	
1,2,3,4,6,7,8-HpCDD	0.001	0.52 J		UJ	0.38	UJ	0.47	1.14 J		0.66 J	
OCDD	<0.0001	UJ	0.94	UJ	0.69	UJ	0.83	UJ	1.68	UJ	1.32
2,3,7,8-TCDF	0.05	UJ	0.03	UJ	0.10	UJ	0.04	UJ	0.15	UJ	0.09
1,2,3,7,8-PeCDF	0.05	UJ	0.10	UJ	0.10	UJ	0.13	UJ	0.20	UJ	0.14
2,3,4,7,8-PeCDF	0.5	0.12 J		UJ	0.10	0.17 J		UJ	0.21	0.09 J	
1,2,3,4,7,8-HxCDF	0.1	UJ	0.10	UJ	0.09	UJ	0.15	UJ	0.10	UJ	0.12
1,2,3,6,7,8-HxCDF	0.1	UJ	0.06	UJ	0.05	UJ	0.11	UJ	0.04	UJ	0.07
1,2,3,7,8,9-HxCDF	0.1	UJ	0.07	UJ	0.10	UJ	0.09	UJ	0.21	UJ	0.10
2,3,4,6,7,8-HxCDF	0.1	UJ	0.04	UJ	0.05	UJ	0.11	UJ	0.06	UJ	0.08
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.18	UJ	0.14	UJ	0.16	0.39 J		UJ	0.19
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.14	UJ	0.08	UJ	0.08	UJ	0.27	UJ	0.18
OCDF	<0.0001	UJ	0.12	UJ	0.18	UJ	0.10	UJ	0.66	UJ	0.31
TOTAL TCDD		UJ	0.15	UJ	0.18	UJ	0.29	UJ	0.24	1.53 J	
TOTAL PeCDD		UJ	0.15	UJ	0.08	UJ	0.10	UJ	0.10	UJ	0.20
TOTAL HxCDD		0.44 J		0.48 J		0.50 J		0.55 J		0.74 J	
TOTAL HpCDD		UJ	0.70	UJ	0.38	UJ	0.54	UJ	1.14	UJ	0.66
TOTAL TCDF		UJ	0.03	UJ	0.10	UJ	0.04	UJ	0.15	UJ	0.09
TOTAL PeCDF		UJ	0.13	UJ	0.10	UJ	0.17	UJ	0.01	UJ	0.09
TOTAL HxCDF		UJ	0.37	UJ	0.26	UJ	0.41	UJ	0.20	UJ	0.27
TOTAL HpCDF		UJ	0.38	UJ	0.14	UJ	0.21	UJ	0.58	UJ	0.27
HCX		UJ	19.96	UJ	19.85	UJ	19.96	UJ	19.91	UJ	19.96
TCX		R		R		R		R		R	
TOXICITY EQUIVALENCY(1):		0.064 J		0.0042 J		0.090 J		0.010 J		1.7 J	
PERCENT SOLIDS:		29.02		25.95		31.69		27.54		35.90	
PERCENT LIPIDS:		8.21		8.81		11.94		8.63		19.43	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/26/01		06/26/01		06/27/01		06/27/01		07/02/01	
DATE OF RECEIPT:		06/29/01		06/29/01		06/29/01		06/29/01		07/03/01	
AMPLE EXTRACTION DATE:		08/20/01		08/20/01		08/20/01		08/20/01		08/20/01	
ANALYSIS DATE:		08/31/01		08/31/01		08/31/01		08/31/01		08/31/01	
LAB SAMPLE ID:		48985-67-16		48985-67-17		48985-67-18		48985-67-19		48985-67-20	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they
(1) = The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106(12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Steve Stodola
US EPA Approval Signature

3/19/02
Date

March 6, 2002
B-02-03-Z-02
Revised: March 19, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, Massachusetts 01863

Re: Task Order No. 004, Task No. 2, TDF No. 0351
Case No. Offal/Fillet B1OF3, SDG No. 48985-74 D/F
Battelle Laboratories - Columbus, OH
Centredale Manor Site - North Providence, RI

Dioxin/Furan/HCX/TCX: 20/Fish Tissue/GMP-LB-5001-0000-01-O, GMP-LB-5002-0000-01-O, GMP-LB-5003-0000-01-O, GMP-LB-5004-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4003-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4008-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 20 offal fish tissue samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and finally to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter to EPA. See the Supporting documentation Section.

The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample/Laboratory Control Sample Duplicate
- * Laboratory and Field Duplicates
- * Internal/Clean up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specifity
- Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

<u>The following information was used to generate the Data Validation Memorandum attachments:</u>

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

<u>Overall Evaluation of Data and Potential Usability Issues</u>

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30%D from

the consensus value. Since all of the congeners recovered low, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results.

The initial calibration for TCX was noncompliant. The initial calibration % RSD criteria was exceeded. There were no other additional quality control checks, such as a MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. If the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data dioxin/furan. However, the TCX data were rejected. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or was missing:

1. The laboratory was asked to submit an initial calibration analyzed on 7/17/01 for confirmation analysis (DB 225 column).

2. The laboratory was asked to explain why the results for 2378-TCDF in sample LPX-LB-4001-0000-01 and its duplicate were reported from the confirmation and not the primary column.

3. The laboratory was asked to provide calculations for 2378-TCDD in sample GMP-LB-5002-0000-01. Based on the information provided, the data validator could not duplicate the reported result for this analyte.

4. On page 1567, the laboratory used "CIL EDF 2513" as a reference number for the SRM. However on page 0061, the laboratory included Certificate of Analysis with the Catalog No.: EDF-2526. The laboratory was asked to clarify this discrepancy and if necessary to resubmit corrected/affected pages.

5. The laboratory did not provide the tabulated results/spreadsheet for the method blank analyzed on 9/2/01. The laboratory was asked to submit the missing page.

6. On page 1538, the laboratory reported positive result for OCDF with a "U" instead of "J" qualifier. The laboratory was asked to resubmit corrected form for the method blank.

7. The laboratory was asked to explain why 12378-PeCDD and 23478-PeCDF in sample number LPX-LB-4006-0000-01 and 2378-TCDD in sample number GMP-LB-5002-0000-01 were reported as EMPC values. These analytes met the ion ratio criteria.

The above items were requested via the TOPO on January 3, 2002 and were received via the TOPO on February 7, 2002. All items were adequately addressed.

PE Samples/Accuracy Check

One CIL Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-74-25 FISH SRM) results which did not meet %D criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D	Action	
			Positive Detects	NDs
CIL EDF 2526	2378-TCDD	67.1	J	UJ
CIL EDF 2526	12378-PeCDD	70.8	J	UJ
CIL EDF 2526	123478-HxCDD	74.6	J	UJ
CIL EDF 2526	123678-HxCDD	72.8	J	UJ
CIL EDF 2526	123789-HxCDD	74.3	J	UJ
CIL EDF 2526	1234678-HpCDD	71.4	J	UJ
CIL EDF 2526	OCDD	69.2	J	UJ
CIL EDF 2526	2378-TCDF	62.1	J	UJ
CIL EDF 2526	12378-PeCDF	66.4	J	UJ
CIL EDF 2526	23478-PeCDF	68.3	J	UJ
CIL EDF 2526	123478-HxCDF	68.8	J	UJ
CIL EDF 2526	123678-HxCDF	68.9	J	UJ
CIL EDF 2526	123789-HxCDF	70.7	J	UJ
CIL EDF 2526	234678-HxCDF	69.4	J	UJ
CIL EDF 2526	1234678-HpCDF	68.8	J	UJ
CIL EDF 2526	1234789-HpCDF	68.3	J	UJ
CIL EDF 2526	OCDF	67.8	J	UJ

Since all of the congeners had low recoveries, the results for dioxin/furans in all samples were estimated (J, UJ) due to possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD ≤ 25% and the resulting sample qualifications:

IC Date	Compound	%RSD	Action		Affected Samples
			Positive Detects	NDs	
07/19/01	TCX	30	J	UJ	All

The data associated with the noncompliant initial calibration are qualified due to the variability. The quantitation of the associated analyte in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad peak shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of HCX. Therefore, professional judgement was used to estimate (J, UJ) all the HCX results due to poor chromatography.

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following table summarizes the highest concentration of the contamination that was detected in the blanks. The table lists action levels and the affected samples:

- Method Blanks

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
1234678-HpCDD	Method Blank (5g) (8/23/01)	0.11	0.56	LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4005-0000-01-O
1234678-HpCDD	Method Blank (10g) (8/23/01)	0.056	0.28	LPX-LB-4006-0000-01-O, LPX-LB-4010-0000-01-O, GMP-LB-5001-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
OCDD	Method Blank (5g) (8/23/01)	1.0	10	LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4003-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O
OCDD	Method Blank (10g) (8/23/01)	0.51	5.1	GMP-LB-5001-0000-01-O, GMP-LB-5002-0000-01-O, GMP-LB-5004-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4008-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O,
123478-HxCDF	Method Blank (5g) (8/23/01)	0.15	0.76	LPX-LB-4002-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O, GMP-LB-5003-0000-01-O
123478-HxCDF	Method Blank (10g) (8/23/01)	0.076	0.38	GMP-LB-5001-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4008-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O,
123678-HxCDF	Method Blank (5g) (8/23/01)	0.058	0.29	GMP-LB-5003-0000-01-O, LPX-LB-4001-0000-01-O
123678-HxCDF	Method Blank (10g) (8/23/01)	0.029	0.14	GMP-LB-5001-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4008-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O
1234678-HpCDF	Method Blank (5g) (8/23/01)	0.049	0.24	LPX-LB-4003-0000-01-O LPX-LB-4005-0000-01-O

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
1234678-HpCDF	Method Blank (10g) (8/23/01)	0.025	0.12	GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O
OCDF	Method Blank (5g) (8/23/01)	0.16	1.6	GMP-LB-5003-0000-01-O, LPX-LB-4003-0000-01-O, LPX-LB-4005-0000-01-O
OCDF	Method Blank (10g) (8/23/01)	0.080	0.80	GMP-LB-5004-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O
Total Hepta Dioxins	Method Blank (5g) (8/23/01)	0.11	1.1	LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4003-0000-01-O, LPX-LB-4005-0000-01-O
Total Hepta Dioxins	Method Blank (10g) (8/23/01)	0.056	0.56	GMP-LB-5001-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4008-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O
Total Hexa Furans	Method Blank (5g) (8/23/01)	0.24	2.4	GMP-LB-5003-0000-01-O, LPX-LB-4001-0000-01-O, LPX-LB-4002-0000-01-O, LPX-LB-4004-0000-01-O, LPX-LB-4005-0000-01-O

Congener	Type of Blank	Blank Concentration (pg/g, wet)	Action Level (pg/g, wet)	Samples Affected
Total Hexa Furans	Method Blank (10g) (8/23/01)	0.12	1.2	GMP-LB-5001-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4008-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O
Total Hepta Furans	Method Blank (5g) (8/23/01)	0.11	1.1	GMP-LB-5003-0000-01-O, LPX-LB-4003-0000-01-O, LPX-LB-4005-0000-01-O
Total Hepta Furans	Method Blank (10g) (8/23/01)	0.053	0.53	GMP-LB-5001-0000-01-O, GMP-LB-5005-0000-01-O, GMP-LB-5006-0000-01-O, GMP-LB-5007-0000-01-O, GMP-LB-5008-0000-01-O, GMP-LB-5009-0000-01-O, GMP-LB-5010-0000-01-O, LPX-LB-4006-0000-01-O, LPX-LB-4007-0000-01-O, LPX-LB-4009-0000-01-O, LPX-LB-4010-0000-01-O

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than or equal to the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: GMP-LB-5003-0000-01-OMS/GMP-LB-5003-0000-01-OMSD.

The table below summarizes the tissue MS/MSD results which did not meet the recovery criterion of 50-120% and/or Relative Percent Difference (RPD) ≤ 30% as documented in the Centredale Manor Tasks 19-22 QAPP (5/23/01).

GMP-LB-5003-0000-01-O					
Compound	MS % Rec.	MSD % Rec.	RPD	Action	
				Positive Detects	NDs
HCX	99*	64*	42	J	UJ

* Recoveries and/or RPDs were acceptable.

Professional judgement was used to estimate (J, UJ) positive results and non-detected results for HCX in all samples since the RPD was outside the criterion.

Laboratory Control Sample

The laboratory extracted and analyzed one OPR/LCS with this group of samples. The following table summarizes the Ongoing Precision and recovery (OPR) result which did not meet the Centredale Manor Tasks 19-22 QAPP (5/23/01) recovery criteria and the resulting sample qualifications:

OPR Date	Compound	% Recovery	% Recovery Range	Action		Affected Samples
				Positive Detects	NDs	
8/23/01	HCX	195	50-120	J	None	All

Professional judgement was used to estimate (J) HCX positive results in all of the samples due to high LCS recovery. The HCX positive results might be biased high.

Sample Quantitation

Concentrations quantitated and reported by the laboratory below the lowest calibration standard are flagged (J) on the Data Summary Table. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. As a result, the TE values in the

Data Summary Table may differ from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are the ones published in Environmental Health Perspectives, Volume 106, Number 12, December 1998. "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

Required Sample Reruns and Second Column Confirmation

Concentrations reported from the confirmation analysis are flagged with a (#) on the Data Summary Table.

System Performance

No trends were noted with the dioxin/furan analysis. The results for HCX and TCX indicated analytical problems. The problems included: noncompliant TCX initial calibration, poor HCX chromatography, high HCX recovery LCS, and poor matrix spike/matrix spike duplicate precision for HCX. There were no other supporting quality control checks such as MS/MSD or LCS to demonstrate that the method could detect TCX in the samples.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Marie Baca

Maria E. Baca
Senior Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PES Score Reports
Communications
Field Notes

Table I
Recommendation Summary Table for Dioxins/Furans/TCX/HCX
Centredale Manor Site - North Providence, RI Site
Case No. Offal/Fillet B1OF3, SDG No. 48985-74 D/F

Sample Nos.	GMP-LB-5001-0000-01-O	GMP-LB-5002-0000-01-O	GMP-LB-5003-0000-01-O	GMP-LB-5004-0000-01-O	GMP-LB-5005-0000-01-O	GMP-LB-5006-0000-01-O	GMP-LB-5007-0000-01-O
Compound							
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1,3]	J[1]	J[1]	J[1]	J[1,3]	J[1,3]	J[1,3]
OCDD	J[1,3]	J[1,3]	J[1]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,3]	J[1]	J[1,3]	J[1]	J[1,3]	J[1,3]	J[1,3]
123678-HxCDF	J[1,3]	J[1]	J[1,3]	J[1]	J[1,3]	J[1,3]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1,3]	J[1,3]	J[1,3]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1]	J[1]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1]
HCX	J[2,4]	J[2,4]	J[2,4]	J[2,4]	J[2,4]	J[2,4]	J[2,4]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site - North Providence, RI Site
Case No. Offal/Fillet B1OF3, SDG No. 48985-74 D/F

Sample Nos.	LPX-LB-4005-0000-01-O	LPX-LB-4006-0000-01-O	LPX-LB-4007-0000-01-O	LPX-LB-4008-0000-01-O	LPX-LB-4009-0000-01-O	LPX-LB-4010-0000-01-O
Compound						
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1,3]	J[1,3]	J[1]	J[1]	J[1]	J[1,3]
OCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123678-HxCDF	J[1]	J[1]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1,3]	J[1,3]	J[1]	J[1]	J[1,3]	J[1,3]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1,3]	J[1,3]
HCX	J[2,4,5]	J[2,4,5]	J[2,4,5]	J[2,4,5]	J[2,4,5]	J[2,4,5]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans/TCX/HCX
Centredale Manor Site - North Providence, RI Site
Case No. Offal/Fillet B1OF3, SDG No. 48985-74 D/F

Sample Nos.	GMP-LB-5008-0000-01-O	GMP-LB-5009-0000-01-O	GMP-LB-5010-0000-01-O	LPX-LB-4001-0000-01-O	LPX-LB-4002-0000-01-O	LPX-LB-4003-0000-01-O	LPX-LB-4004-0000-01-O
Compound							
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1]
OCDD	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]	J[1,3]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1,3]	J[1]	J[1,3]
123678-HxCDF	J[1]	J[1]	J[1]	J[1,3]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1,3]	J[1,3]	J[1,3]	J[1]	J[1]	J[1,3]	J[1]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1]	J[1]	J[1,3]	J[1]	J[1]	J[1,3]	J[1]
HCX	J[2,4]	J[2,4]	J[2,4]	J[2,4,5]	J[2,4,5]	J[2,4]	J[2,4]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans

A	-	Accept results.
J[1]	-	SRM %D outside criterion; J detects, UJ non-detects.
J[2]	-	Poor chromatography; J detects, UJ non-detects.
J[3]	-	Method Blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the reported concentration.
J[4]	-	MS/MSD recovery and/or RPDs outside criterion; J detects, UJ non-detects.
J[5]	-	OPR recovery high; J detects.
R[1]	-	Non-compliant method detection limits and recovery; R non-detects.

EP[illegible]E - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN/HCX/TCX ANALYSIS					
DQO (List all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Nos, Sampling Method not appropriate for all samples. Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: R[1]J[1,2,3,4,5]	Refer to qualification in R/S Key on Table I: N/A	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30%D from the consensus value. Since all of the congeners recovered low, the results for dioxin/furans in all samples were estimated (J, UJ) due to possibility of biased low results. The initial calibration for TCX was noncompliant. The initial calibration % RSD criteria was exceeded. There were no other additional quality control checks, such as a MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. If the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data dioxin/furan. However, the TCX data were rejected. See the discussion in the data validation memo . The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: Marie Bono

Date: 3/19/02

Data Summary Table
Dioxin/Furan Analysis - Tissue Samples (wet weight)

SITE: Centredale Manor - North Providence, RI
CASE NO.: Offal/Fillet B1OF3 SDG NO.: 48985-74 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity	GMP-LB-5001-0000-01-O		GMP-LB-5002-0000-01-O		GMP-LB-5003-0000-01-O		GMP-LB-5004-0000-01-O		GMP-LB-5005-0000-01-O		GMP-LB-5006-0000-01-O		GMP-LB-5007-0000-01-O	
STATION LOCATION:	Equivalency	Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond	
MATRIX:	Factors (1)	Tissue		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue	
TCDD/TCDF CONC.:		pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	0.25 J			0.18 *	0.45 J		0.20 J		0.34 J		0.40 J		0.21 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.30	UJ	0.23	0.15 J		UJ	0.43	0.36 J		0.23 J		UJ	0.24
1,2,3,4,7,8-HxCDD	0.5	UJ	0.23	UJ	0.27	UJ	0.15	UJ	0.57	0.06 J		0.04 J		UJ	0.16
1,2,3,6,7,8-HxCDD	0.01	0.13 J		UJ	0.29	0.21 J		UJ	0.55	0.23 J		0.17 J		0.16 J	
1,2,3,7,8,9-HxCDD	0.01	UJ	0.23	UJ	0.26	UJ	0.14	UJ	0.52	UJ	0.17	UJ	0.17	UJ	0.15
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.17	UJ	1.28	0.88 J		UJ	1.31	UJ	0.26	UJ	0.19	UJ	0.12
OCDD	0.0001	UJ	0.49	UJ	0.50	16.42 J		UJ	0.73	UJ	0.66	UJ	0.38	UJ	0.31
2,3,7,8-TCDF	0.05	0.38 J		0.13 J		0.31 J		0.26 J		0.47 J		0.46 J		0.29 J	
1,2,3,7,8-PeCDF	0.05	0.05 J		UJ	0.14	0.13 J		UJ	0.16	0.12 J		UJ	0.16	0.07 J	
2,3,4,7,8-PeCDF	0.5	UJ	0.19	UJ	0.14	0.22 J		0.20 J		0.28 J		0.19 J		0.14 J	
1,2,3,4,7,8-HxCDF	0.1	UJ	0.09	UJ	0.17	UJ	0.26	UJ	0.28	UJ	0.15	UJ	0.06	UJ	0.08
1,2,3,6,7,8-HxCDF	0.1	UJ	0.04	UJ	0.16	UJ	0.06	UJ	0.28	UJ	0.11	UJ	0.04	UJ	0.13
2,3,4,6,7,8-HxCDF	0.1	UJ	0.21	UJ	0.19	0.03 J		UJ	0.32	UJ	0.18	UJ	0.17	UJ	0.15
1,2,3,7,8,9-HxCDF	0.1	UJ	0.19	UJ	0.18	0.07 J		UJ	0.28	UJ	0.18	UJ	0.16	UJ	0.14
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.34	UJ	0.46	0.28 J		UJ	0.52	UJ	0.10	UJ	0.04	UJ	0.06
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.36	UJ	0.54	UJ	0.21	UJ	0.60	UJ	0.22	UJ	0.25	UJ	0.13
OCDF	<0.0001	UJ	0.37	UJ	0.30	UJ	0.35	UJ	0.24	UJ	0.12	UJ	0.09	UJ	0.16
TOTAL TCDD		0.25 J			0.18 *	0.45 J		0.20 J		0.34 J		0.40 J		0.21 J	
TOTAL PeCDD		1.90 J		UJ	0.23	0.15 J		UJ	0.43	0.42 J		0.23 J		0.18 J	
TOTAL HxCDD		0.13 J		UJ	0.27	0.24 J		UJ	0.54	0.29 J		0.21 J		0.16 J	
TOTAL HpCDD		UJ	0.17	UJ	1.28	1.36 J		UJ	1.31	UJ	0.30	UJ	0.19	UJ	0.12
TOTAL TCDF		0.38 J		0.13 J		0.31 J		0.26 J		0.53 J		0.46 J		0.29 J	
TOTAL PeCDF		0.05 J		UJ	0.14	0.39 J		0.46 J		0.40 J		0.19 J		0.21 J	
TOTAL HxCDF		UJ	0.27	UJ	0.18	UJ	0.52	UJ	0.29	UJ	0.40	UJ	0.09	UJ	0.08
TOTAL HpCDF		UJ	0.12	UJ	0.50	UJ	0.28	UJ	0.56	UJ	0.16	UJ	0.04	UJ	0.06
HCX - Hexachloroxanthene		UJ	19.96	UJ	19.94	UJ	39.79	UJ	19.95	UJ	19.99	UJ	19.99	UJ	19.91
TCX - Tetrachloroxanthene		R		R		R		R		R		R		R	
TOXICITY EQUIVALENCY(1):		0.27 J		0.18 J		0.75 J		0.32 J		0.89 J		0.78 J		0.30 J	
PERCENT SOLIDS:		28.60		23.87		20.52		24.95		25.10		28.77		27.83	
PERCENT LIPIDS:		2.13		1.73		3.60		2.41		4.96		3.64		2.55	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/22/01		06/22/01		06/25/01		06/25/01		06/25/01		06/25/01		06/25/01	
DATE OF RECEIPT:		06/26/01		06/26/01		06/27/01		06/27/01		06/27/01		06/27/01		06/27/01	
SAMPLE EXTRACTION DATE:		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01	
ANALYSIS DATE:		09/01/01		09/01/01		09/03/01		09/01/01		09/02/01		09/02/01		09/02/01	
LAB SAMPLE ID:		48985-74-07		48985-74-08		48985-74-22		48985-74-09		48985-74-10		48985-74-11		48985-74-12	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already estimated.
(1) = The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106 (12), December 1998, Table 2, page 780.
<= The expected upper limit of the TEF values for the congener in fish.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.

Data Summary Table
Dioxin/Furan Analysis - Tissue Samples (wet weight)

SITE: Centredale Manor - North Providence, RI
CASE NO.: Offal/Fillet B1OF3 SDG NO.: 48985-74 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GMP-LB-5008-0000-01-O		GMP-LB-5009-0000-01-O		GMP-LB-5010-0000-01-O		LPX-LB-4001-0000-01-O		LPX-LB-4002-0000-01-O		LPX-LB-4003-0000-01-O		LPX-LB-4004-0000-01-O	
STATION LOCATION:		Greystone Mill Pond		Greystone Mill Pond		Greystone Mill Pond		Lymansville Pond		Lymansville Pond		Lymansville Pond		Lymansville Pond	
MATRIX:		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue	
TCDD/TCDF CONC.:		pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	0.33 J		0.20 J		0.83 J		355.38 J		404.81 J		181.03 J		122.34 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.20	UJ	0.19	0.15 J		0.59 J		0.75 J		0.25 J		0.19 J	
1,2,3,4,7,8-HxCDD	0.5	UJ	0.12	UJ	0.09	UJ	0.16	UJ	0.30	UJ	0.35	UJ	0.38	UJ	0.45
1,2,3,6,7,8-HxCDD	0.01	0.19 J		UJ	0.08	UJ	0.16	0.40 J		0.31 J		UJ	0.38	UJ	0.46
1,2,3,7,8,9-HxCDD	0.01	UJ	0.11	UJ	0.08	UJ	0.15	UJ	0.29	UJ	0.33	UJ	0.36	UJ	0.43
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.17	UJ	0.06	UJ	0.18	UJ	0.39	UJ	0.36	0.57 J		UJ	1.41
OCDD	0.0001	UJ	0.34	UJ	0.23	UJ	0.47	UJ	0.64	UJ	0.70	UJ	3.71	UJ	0.38
2,3,7,8-TCDF	0.05	0.41 J		0.15 J		0.40 J		1.34 J#		0.46 J		0.30 J		0.16 J	
1,2,3,7,8-PeCDF	0.05	0.07 J		0.07 J		UJ	0.18	UJ	0.40	UJ	0.27	UJ	0.32	UJ	0.35
2,3,4,7,8-PeCDF	0.5	UJ	0.17	UJ	0.15	0.08 J		0.39 J		0.29 J		UJ	0.31	UJ	0.35
1,2,3,4,7,8-HxCDF	0.1	UJ	0.17	UJ	0.05	UJ	0.07	UJ	0.42	UJ	0.14	UJ	0.36	UJ	0.10
1,2,3,6,7,8-HxCDF	0.1	UJ	0.08	UJ	0.08	UJ	0.11	UJ	0.10	UJ	0.49	UJ	0.35	UJ	0.34
2,3,4,6,7,8-HxCDF	0.1	UJ	0.10	UJ	0.10	UJ	0.13	UJ	0.47	UJ	0.56	UJ	0.40	UJ	0.39
1,2,3,7,8,9-HxCDF	0.1	UJ	0.08	UJ	0.09	UJ	0.12	UJ	0.44	UJ	0.52	UJ	0.36	UJ	0.36
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.07	UJ	0.03	UJ	0.04	UJ	0.52	UJ	0.46	UJ	0.22	UJ	0.52
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.15	UJ	0.08	UJ	0.23	UJ	0.60	UJ	0.56	UJ	0.84	UJ	0.61
OCDF	<0.0001	UJ	0.21	UJ	0.14	UJ	0.06	UJ	0.34	UJ	0.40	UJ	0.26	UJ	0.64
TOTAL TCDD		0.33 J		0.20 J		0.82 J		355.38 J		404.81 J		181.03 J		122.34 J	
TOTAL PeCDD		0.09 J		0.22 J		1.47 J		0.59 J		0.75 J		0.25 J		0.19 J	
TOTAL HxCDD		0.19 J		UJ	0.08	UJ	0.15	0.52 J		0.31 J		UJ	0.37	UJ	0.45
TOTAL HpCDD		UJ	0.17	UJ	0.06	UJ	0.18	UJ	0.39	UJ	0.36	UJ	0.57	UJ	1.41
TOTAL TCDF		0.46 J		0.15 J		0.40 J		0.86 J		0.66 J		0.30 J		0.16 J	
TOTAL PeCDF		0.52 J		0.07 J		0.16 J		0.72 J		0.54 J		0.84 J		0.34 J	
TOTAL HxCDF		UJ	0.18	UJ	0.05	UJ	0.07	UJ	0.30	UJ	0.14	UJ	0.37	UJ	0.10
TOTAL HpCDF		UJ	0.13	UJ	0.13	UJ	0.11	UJ	0.56	UJ	0.51	UJ	0.22	UJ	0.56
HCX - Hexachloroxanthene		UJ	19.95	UJ	19.92	UJ	19.95	36.21 J		29.52 J		UJ	39.92	UJ	40.00
TCX - Tetrachloroxanthene		R		R		R		R		R		R		R	
TOXICITY EQUIVALENCY(1):		0.36 J		0.21 J		1.0 J		360 J		410 J		180 J		120 J	
PERCENT SOLIDS:		24.65		25.10		26.28		27.18		25.21		24.95		21.19	
PERCENT LIPIDS:		3.71		1.63		3.14		4.62		4.50		3.14		3.09	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/25/01		06/25/01		06/26/01		06/21/01		06/21/01		06/21/01		06/21/01	
DATE OF RECEIPT:		06/27/01		06/27/01		06/27/01		06/22/01		06/22/01		06/22/01		06/22/01	
AMPLE EXTRACTION DATE:		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01	
ANALYSIS DATE:		09/02/01		09/02/01		09/02/01		09/03/01		09/03/01		09/03/01		09/03/01	
LAB SAMPLE ID:		48985-74-13		48985-74-14		48985-74-15		48985-74-16		48985-74-17		48985-74-18		48985-74-19	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already estimated.
# = Results are reported from a confirmation analysis.
(1) = The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106 (12), December 1998, Table 2, page 780.
<= The expected upper limit of the TEF values for the congener in fish.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.

Data Summary Table
Dioxin/Furan Analysis - Tissue Samples (wet weight)

SITE: Centredale Manor - North Providence, RI
CASE NO.: Offal/Fillet B1OF3 SDG NO.: 48985-74 D/F
LABORATORY: Battelle

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-LB-4005-0000-01-O		LPX-LB-4006-0000-01-O		LPX-LB-4007-0000-01-O		LPX-LB-4008-0000-01-O		LPX-LB-4009-0000-01-O		LPX-LB-4010-0000-01-O	
STATION LOCATION:		Lymansville Pond		Lymansville Pond		Lymansville Pond		Lymansville Pond		Lymansville Pond		Lymansville Pond	
MATRIX:		Tissue		Tissue		Tissue		Tissue		Tissue		Tissue	
TCDD/TCDF CONC.:		pg/g	DL/EMP	pg/g	DL/EMPC	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*	pg/g	DL/EMPC*
2,3,7,8-TCDD	1.0	157.93 J		440.62 J		331.74 J		126.46 J		434.74 J		205.69 J	
1,2,3,7,8-PeCDD	1.0	0.47 J			0.40 *	0.68 J		0.32 J		0.69 J		0.37 J	
1,2,3,4,7,8-HxCDD	0.5	0.12 J		UJ	0.13	0.07 J		UJ	0.29	0.09 J		UJ	0.24
1,2,3,6,7,8-HxCDD	0.01	0.25 J		0.20 J		0.28 J		0.21 J		0.44 J		0.22 J	
1,2,3,7,8,9-HxCDD	0.01	UJ	0.32	0.04 J		0.06 J		UJ	0.27	0.11 J		UJ	0.24
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.24	UJ	0.23	0.37 J		0.31 J		0.52 J		UJ	0.28
OCDD	0.0001	UJ	0.98	UJ	0.47	UJ	0.91	UJ	0.59	UJ	0.92	UJ	0.94
2,3,7,8-TCDF	0.05	0.24 J		0.16 J		0.26 J		0.30 J		0.47 J		0.14 J	
1,2,3,7,8-PeCDF	0.05	0.56 J		UJ	0.19	UJ	0.15	UJ	0.18	UJ	0.14	UJ	0.21
2,3,4,7,8-PeCDF	0.5	0.49 J			0.32 *	UJ	0.14	UJ	0.18	UJ	0.15	UJ	0.21
1,2,3,4,7,8-HxCDF	0.1	UJ	0.40	UJ	0.08	UJ	0.10	UJ	0.08	UJ	0.14	UJ	0.09
1,2,3,6,7,8-HxCDF	0.1	0.34 J		0.16 J		UJ	0.13	UJ	0.08	UJ	0.12	UJ	0.04
2,3,4,6,7,8-HxCDF	0.1	0.17 J		UJ	0.12	UJ	0.20	UJ	0.22	UJ	0.22	UJ	0.26
1,2,3,7,8,9-HxCDF	0.1	0.17 J		UJ	0.11	UJ	0.19	UJ	0.20	UJ	0.19	UJ	0.23
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.19	UJ	0.05	UJ	0.35	UJ	0.45	UJ	0.10	UJ	0.09
1,2,3,4,7,8,9-HpCDF	0.01	0.08 J		UJ	0.13	UJ	0.39	UJ	0.50	UJ	0.45	UJ	0.46
OCDF	<0.0001	UJ	0.14	UJ	0.08	UJ	0.11	UJ	0.22	UJ	0.09	UJ	0.09
TOTAL TCDD		157.93 J		440.62 J		331.74 J		126.46 J		434.74 J		205.69 J	
TOTAL PeCDD		0.47 J		1.97 J		0.68 J		2.79 J		2.50 J		2.23 J	
TOTAL HxCDD		0.43 J		0.24 J		0.41 J		0.21 J		0.64 J		0.27 J	
TOTAL HpCDD		UJ	0.24	UJ	0.23	UJ	0.37	UJ	0.31	UJ	0.52	UJ	0.28
TOTAL TCDF		0.24 J		0.42 J		0.32 J		0.37 J		0.83 J		0.26 J	
TOTAL PeCDF		1.05 J			0.32 *	0.93 J		0.14 J		0.24 J		UJ	0.21
TOTAL HxCDF		UJ	1.08	UJ	0.24	UJ	0.50	UJ	0.30	UJ	0.26	UJ	0.27
TOTAL HpCDF		UJ	0.36	UJ	0.23	UJ	0.14	UJ	0.48	UJ	0.10	UJ	0.26
HCX - Hexachloroxanthene		23.53 J		48.48 J		22.30 J		19.64 J		21.00 J		24.04 J	
TCX - Tetrachloroxanthene		R		R		R		R		R		R	
TOXICITY EQUIVALENCY(1):		160 J		440 J		330 J		130 J		440 J		210 J	
PERCENT SOLIDS:		19.40		21.66		22.71		21.85		23.98		19.96	
PERCENT LIPIDS:		1.05		2.48		4.15		1.63		5.21		2.52	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/21/01		06/21/01		06/21/01		06/21/01		06/26/01		06/26/01	
DATE OF RECEIPT:		06/22/01		06/22/01		06/22/01		06/22/01		06/27/01		06/27/01	
AMPLE EXTRACTION DATE:		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01		08/23/01	
ANALYSIS DATE:		09/03/01		09/01/01		09/01/01		09/01/01		09/01/01		09/01/01	
LAB SAMPLE ID:		48985-74-20		48985-74-02		48985-74-03		48985-74-04		48985-74-05		48985-74-06	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already estimated.
(1) = The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106 (12), December 1998, Table 2, page 780.
<= The expected upper limit of the TEF values for the congener in fish.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.

Steve Stodola
US EPA Approval Signature

4/22/02
Date

April 12, 2002
B-02-04-Y-3
Revised: April 18, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Chelmsford, MA 01863

Re: TO No. 04, Task No. 2, TDF No. 0360
Case No. Offal/Fillet B2OF3, SDG No. 48985-84 D/F
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

Dioxin/Furan, HCX and TCX: 20/Fish Tissue/GMP-LB-5001-0000-01-F, GMP-LB-5002-0000-01-F, GMP-LB-5003-0000-01-F, GMP-LB-5004-0000-01-F, GMP-LB-5005-0000-01-F, GMP-LB-5006-0000-01-F, GMP-LB-5007-0000-01-F, GMP-LB-5008-0000-01-F, GMP-LB-5009-0000-01-F, GMP-LB-5010-0000-01-F, LPX-LB-4001-0000-01-F, LPX-LB-4002-0000-01-F, LPX-LB-4003-0000-01-F, LPX-LB-4004-0000-01-F, LPX-LB-4005-0000-01-F, LPX-LB-4006-0000-01-F, LPX-LB-4007-0000-01-F, LPX-LB-4008-0000-01-F, LPX-LB-4009-0000-01-F, LPX-LB-4010-0000-01-F

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 20 fillet samples collected by Harding ESE, Inc., for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using, first, the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter

to EPA. See the Supporting Documentation section. The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times
- PE Samples/Accuracy Check
- * Window Defining Mix
- Initial and Continuing Calibrations
- Chromatographic Resolution
- * Instrument Sensitivity Check
- Blanks
- Matrix Spike/Matrix Spike Duplicate
- Laboratory Control Sample
- * Laboratory and Field Duplicates
- * Internal/Clean-up Standards
- * Sample Analysis and Identification
- Sample Quantitation
- * Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
- 2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
- * Required Sample Reruns and Second Column Confirmation
- System Performance

* - All criteria were met for this parameter.

<u>The following information was used to generate the Data Validation Memorandum attachments:</u>

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

<u>Overall Evaluation of Data and Potential Usability Issues</u>

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners except for 123789-HxCDD were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all except one of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of biased low results.

The initial calibration % RSD result for TCX was noncompliant. There were no additional

quality control checks, such as MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the non-detected results for TCX are rejected.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the dioxin/furan data. The TCX data were rejected. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to submit a signed and dated Log-In Check List for samples received on 6/27/01.

Item 1 was requested via the TOPO on December 20, 2001. Item 1 was received via the TOPO on January 10, 2002. Item 1 was adequately addressed.

PE Samples/Accuracy Check

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners except for 123789-HxCDD were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of 30 %D from the consensus value.

The following table summarizes the SRM sample (48985-84-25 FISH SRM) results which did not meet criterion and the resulting sample qualifications:

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	2378-TCDD	41	J	UJ
CIL EDF 2526	12378-PeCDD	49	J	UJ
CIL EDF 2526	123478-HxCDD	57	J	UJ
CIL EDF 2526	123678-HxCDD	49	J	UJ
CIL EDF 2526	1234678-HpCDD	48	J	UJ

PE Sample Number	Congener	%D from the consensus value	Action	
			Positive Detects	NDs
CIL EDF 2526	OCDD	42	J	UJ
CIL EDF 2526	2378-TCDF	36	J	UJ
CIL EDF 2526	12378-PeCDF	42	J	UJ
CIL EDF 2526	23478-PeCDF	44	J	UJ
CIL EDF 2526	123478-HxCDF	45	J	UJ
CIL EDF 2526	123678-HxCDF	47	J	UJ
CIL EDF 2526	123789-HxCDF	52	J	UJ
CIL EDF 2526	234678-HxCDF	46	J	UJ
CIL EDF 2526	1234678-HpCDF	43	J	UJ
CIL EDF 2526	1234789-HpCDF	43	J	UJ
CIL EDF 2526	OCDF	43	J	UJ

Since all of the congeners except for 123789-HxCDD had low recoveries as indicated by the large %Ds, the results for dioxin/furans in all samples were estimated (J, UJ) due to the possibility of biased low results.

The laboratory documented in their report that the low recoveries of the congeners in the SRM may be due to the lipid content. The laboratory indicated that for future analyses of associated samples, the SRM preparation procedures will be modified.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) compounds which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD < 25 % and the resulting sample qualifications:

IC Date	Compound	% RSD	Action		Affected Samples
			Positive Detects	NDs	
07/19/01	TCX	30	J	R	All

The data associated with the noncompliant initial calibration are qualified due to the high variability of the standard across the initial calibration curve. The quantitation of the associated analyte in the samples could be biased.

The following table summarizes the Calibration Verification (VER) results which did not meet Method 1613B recovery criterion and the resulting sample qualifications:

VER Date	Compound	Recovery (ng/ml)	Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
09/07/01 (Beginning)	123789-HxCDF	44	45-56	J	UJ	GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5009-F, GMP-LB-5010-F, LPX-LB-4001-F, LPX-LB-4002-F
09/07/01 (Ending)	123789-HxCDF	42	45-56	J	UJ	GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5009-F, GMP-LB-5010-F, LPX-LB-4001-F, LPX-LB-4002-F

The data associated with recoveries of noncompliant calibration verifications are qualified due to the variability in the compound recoveries. The quantitation of the associated analytes in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of HCX. Therefore, professional judgement was used to estimate (J,UJ) all HCX results due to the poor chromatography.

Blanks

All blanks associated with this SDG were evaluated for possible sources of contamination. The following table summarizes the highest concentration of contamination detected in the blanks. The table lists the action levels/actions and the affected samples:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Affected Samples
2378-TCDD	Method Blank (09/08/01)	0.062	0.31	GMP-LB-5002-F, GMP-LB-5003-F, GMP-LB-5004-F, GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5009-F, GMP-LB-5010-F

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Affected Samples
OCDD	Method Blank (09/07/01)	0.48	4.8	GMP-LB-5001-F, GMP-LB-5002-F, GMP-LB-5003-F, GMP-LB-5004-F, GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5009-F, GMP-LB-5010-F, LPX-LB-4001-F, LPX-LB-4002-F, LPX-LB-4003-F, LPX-LB-4004-F, LPX-LB-4005-F, LPX-LB-4006-F, LPX-LB-4007-F, LPX-LB-4008-F, LPX-LB-4009-F, LPX-LB-4010-F
2378-TCDF	Method Blank (09/08/01)	0.036	0.18	GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5010-F, LPX-LB-4008-F, LPX-LB-4009-F
23478-PeCDF	Method Blank (09/08/01)	0.50	2.5	GMP-LB-5010-F
123478-HxCDF	Method Blank (09/07/01)	0.11	0.55	GMP-LB-5001-F, GMP-LB-5002-F, GMP-LB-5003-F, GMP-LB-5004-F, GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5009-F, GMP-LB-5010-F, LPX-LB-4003-F, LPX-LB-4004-F, LPX-LB-4005-F, LPX-LB-4006-F, LPX-LB-4007-F, LPX-LB-4008-F, LPX-LB-4010-F
123678-HxCDF	Method Blank (09/06/01)	0.051	0.26	LPX-LB-4004-F
234678-HxCDF	Method Blank (09/08/01)	0.024	0.12	GMP-LB-5007-F
1234678-HpCDF	Method Blank (09/07/01)	0.041	0.21	GMP-LB-5005-F
OCDF	Method Blank (09/07/01)	0.13	1.3	GMP-LB-5001-F, GMP-LB-5007-F, LPX-LB-4003-F
Total TCDD	Method Blank (09/08/01)	0.062	0.62	GMP-LB-5002-F, GMP-LB-5003-F, GMP-LB-5004-F, GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5009-F, GMP-LB-5010-F

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Affected Samples
Total PeCDD	Method Blank (09/08/01)	0.092	0.92	GMP-LB-5001-F, GMP-LB-5004-F, GMP-LB-5006-F, GMP-LB-5009-F, LPX-LB-4006-F, LPX-LB-4007-F, LPX-LB-4008-F, LPX-LB-4009-F, LPX-LB-4010-F
Total HxCDD	Method Blank (09/08/01)	0.096	0.96	GMP-LB-5001-F, GMP-LB-5009, LPX-LB-4004, LPX-LB-4005
Total HpCDD	Method Blank (09/08/01)	0.083	0.83	GMP-LB-5001-F, GMP-LB-5003-F, LPX-LB-4005-F
Total TCDF	Method Blank (09/08/01)	0.036	0.36	GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5010-F, LPX-LB-4001-F, LPX-LB-4004-F, LPX-LB-4005-F, LPX-LB-4008-F, LPX-LB-4009-F
Total PeCDF	Method Blank (09/08/01)	0.16	1.6	GMP-LB-5008-F, GMP-LB-5010-F
Total HxCDF	Method Blank (09/08/01)	0.14	1.4	GMP-LB-5001-F, GMP-LB-5002-F, GMP-LB-5003-F, GMP-LB-5004-F, GMP-LB-5005-F, GMP-LB-5006-F, GMP-LB-5007-F, GMP-LB-5008-F, GMP-LB-5009-F, GMP-LB-5010-F, LPX-LB-4003-F, LPX-LB-4004-F, LPX-LB-4005-F, LPX-LB-4006-F, LPX-LB-4007-F, LPX-LB-4008-F, LPX-LB-4010-F
Total HpCDF	Method Blank (09/07/01)	0.041	0.41	GMP-LB-5001-F, GMP-LB-5004-F, GMP-LB-5005-F, LPX-LB-4006-F, LPX-LB-4007-F

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

One MS/MSD pair was evaluated for this SDG: GMP-LB-5001-FMS/GMP-LB-5001-FMSD.

The table below summarizes the tissue MS/MSD results which did not meet the recovery criteria of 50-120% and/or Relative Percent Difference (RPD) ≤ 30% as documented in the Centredale Manor Tasks 19-22 QAPP (5/23/01).

GMP-LB-5001-F					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
HCX	126	163	26*	J	UJ

* %RPD was acceptable.

Professional judgement was used to estimate (J,UJ) values for HCX in all samples since percent recoveries and/or precision were outside the required criteria.

Laboratory Control Sample

The laboratory extracted and analyzed one OPR/LCS with this group of samples. The following table summarizes the Ongoing Precision and Recovery (OPR) result which did not meet Centredale Manor Tasks 19-22 QAPP (5/23/01) recovery criterion and the resulting sample qualifications:

OPR Date	Compound	Recovery (ng/ml)	Acceptable Recovery Range (ng/ml)	Action		Affected Samples
				Positive Detects	NDs	
09/06/01	HCX	141	50-120	J	UJ	All

The data associated with recoveries of a noncompliant OPR are qualified due to the high recovery. The quantitation of the associated analytes in the samples could be biased.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

The detection limits for HCX correspond to the concentration in the lowest HCX calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. As a result, the TE values in the Data Summary Table may differ from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are published in Environmental Health Perspectives, volume 106, Number 12, December 1998, "Toxic Equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

System Performance

No trends were noted with the dioxin/furan analysis. However, the results for HCX and TCX indicated analytical problems. The problems included: noncompliant TCX initial calibration, poor HCX chromatography, high LCS HCX recovery, and poor MS/MSD precision for HCX. For TCX no MS/MSD or LCS samples were analyzed.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
PE Scores
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Offal/Fillet B2OF3/SDG No. 48985-84 D/F

Sample Nos.	GMP-LB-5001-0000-01-F	GMP-LB-5002-0000-01-F	GMP-LB-5003-0000-01-F	GMP-LB-5004-0000-01-F	GMP-LB-5005-0000-01-F	GMP-LB-5006-0000-01-F	GMP-LB-5007-0000-01-F	GMP-LB-5008-0000-01-F	GMP-LB-5009-0000-01-F	GMP-LB-5010-0000-01-F
Compound										
2378-TCDD	J[1]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]
12378-PeCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDD	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1]	J[1,6]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,6]
123478-HxCDF	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1]	J[1,6]	J[1,6]
123678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]	J[1,5]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,6]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1,6]	J[1]	J[1]	J[1]	J[1]	J[1]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1,6]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,6]	J[1]	J[1]	J[1]
HCX	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Offal/Fillet B2OF3/SDG No. 48985-84 D/F

Sample Nos.	LPX-LB-4001-0000-01-F	LPX-LB-4002-0000-01-F	LPX-LB-4003-0000-01-F	LPX-LB-4004-0000-01-F	LPX-LB-4005-0000-01-F	LPX-LB-4006-0000-01-F	LPX-LB-4007-0000-01-F	LPX-LB-4008-0000-01-F	LPX-LB-4009-0000-01-F	LPX-LB-4010-0000-01-F
Compound										
2378-TCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
12378-PeCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123678-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDD	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDD	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]
2378-TCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1,6]	J[1,6]	J[1]
12378-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
23478-PeCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123478-HxCDF	J[1]	J[1]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1,6]	J[1]	J[1,6]
123678-HxCDF	J[1]	J[1]	J[1]	J[1,6]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
123789-HxCDF	J[1,5]	J[1,5]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
234678-HxCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234678-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
1234789-HpCDF	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
OCDF	J[1]	J[1]	J[1,6]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]	J[1]
HCX	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]	J[2,3,4]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

04/22/2002 MON 8:55 FAX 01/01

Table I
Recommendation Summary Table for Dioxins/Furans

A	-	Accept results.
J[1]	-	SRM %D outside criterion; J detects, UJ non-detects.
J[2]	-	Chromatographic resolution outside criterion; J detects, UJ non-detects.
J[3]	-	MS/MSD recovery outside criteria; J detects, UJ non-detects.
J[4]	-	OPR/LCS recovery outside criterion; J detects, UJ non-detects.
J[5]	-	VER recoveries outside criterion; J detects, UJ non-detects.
J[6]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
R[1]	-	Non-compliant method detection limits and recovery; R non-detects.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN/HCX/TCX ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: $J^{1,2,3,4,5A}$, R^{1}	Refer to qualification in R/S Key on Table I:	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners except for 123789-HxCDD were outside the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of 30 %D from the consensus value. Since all except one of the congeners had low recoveries, the results for dioxin/furan in all samples were estimated (J, UJ) due to the possibility of biased low results. The initial calibration % RSD result for TCX was noncompliant. There were no additional quality control checks, such as MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the non-detected results for TCX are rejected. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the dioxin/furan data. However, the TCX data were rejected. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.

** Sampling variability is not assessed in data validation.

Validator: _____ Date: 7/18/02

04/22/2002 MON 8:55 FAX 617 918 1810

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
Case No.: OiltalFillet B2OF3 SDG No.: 46985-84 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GMP-LB-5001-0000-01F		GMP-LB-5002-0000-01F		GMP-LB-5003-0000-01F		GMP-LB-5004-0000-01F		GMP-LB-5005-0000-01F		GMP-LB-5006-0000-01F		GMP-LB-5007-0000-01F		GMP-LB-5009-0000-01F	
STATION LOCATION:		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND		GREYSTONE MILL POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*
2,3,7,8-TCDD	1.0	UJ	0.20	UJ	0.10	UJ	0.09	UJ	0.06	UJ	0.04	UJ	0.14	UJ	0.08	UJ	0.07
1,2,3,7,8-PeCDD	1.0	UJ	0.13	UJ	0.14	UJ	0.13	UJ	0.10	UJ	0.13	UJ	0.12	UJ	0.15	UJ	0.35
1,2,3,4,7,8-HxCDD	0.5	UJ	0.08	UJ	0.12	UJ	0.13	UJ	0.10	UJ	0.12	UJ	0.15	UJ	0.14	UJ	0.25
1,2,3,6,7,8-HxCDD	0.01	UJ	0.08	UJ	0.12	UJ	0.14	UJ	0.10	UJ	0.13	UJ	0.15	UJ	0.14	UJ	0.26
1,2,3,7,8,9-HxCDD	0.01	UJ	0.08	UJ	0.11	UJ	0.13	UJ	0.09	UJ	0.12	UJ	0.14	UJ	0.14	UJ	0.24
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.19	UJ	0.13	UJ	0.09	UJ	0.12	UJ	0.35	UJ	0.33	UJ	0.42	UJ	0.50
OCDD	< 0.0001	UJ	0.63	UJ	0.22	UJ	0.21	UJ	0.21	UJ	0.24	UJ	0.16	UJ	0.29	UJ	0.15
2,3,7,8-TCDF	0.05	UJ	0.10	UJ	0.12	UJ	0.13	UJ	0.11	UJ	0.03	UJ	0.04	UJ	0.06	UJ	0.06
1,2,3,7,8-PeCDF	0.05	UJ	0.15	UJ	0.15	UJ	0.15	UJ	0.13	UJ	0.17	UJ	0.12	UJ	0.11	UJ	0.12
2,3,4,7,8-PeCDF	0.5	UJ	0.15	UJ	0.14	UJ	0.14	UJ	0.12	UJ	0.15	UJ	0.15	UJ	0.11	UJ	0.12
1,2,3,4,7,8-HxCDF	0.1	UJ	0.09	UJ	0.05	UJ	0.04	UJ	0.05	UJ	0.05	UJ	0.04	UJ	0.07	UJ	0.11
1,2,3,6,7,8-HxCDF	0.1	UJ	0.01	UJ	0.07	UJ	0.06	UJ	0.06	UJ	0.06	UJ	0.09	UJ	0.11	UJ	0.11
1,2,3,7,8,9-HxCDF	0.1	UJ	0.01	UJ	0.10	UJ	0.07	UJ	0.06	UJ	0.07	UJ	0.12	UJ	0.14	UJ	0.14
2,3,4,6,7,8-HxCDF	0.1	UJ	0.01	UJ	0.09	UJ	0.07	UJ	0.06	UJ	0.06	UJ	0.10	UJ	0.08	UJ	0.11
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.09	UJ	0.08	UJ	0.06	UJ	0.08	UJ	0.03	UJ	0.23	UJ	0.21	UJ	0.30
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.07	UJ	0.11	UJ	0.07	UJ	0.07	UJ	0.13	UJ	0.31	UJ	0.25	UJ	0.36
OCDF	< 0.0001	UJ	0.09	UJ	0.19	UJ	0.16	UJ	0.12	UJ	0.16	UJ	0.13	UJ	0.09	UJ	0.24
TOTAL TCDD		UJ	0.20	UJ	0.10	UJ	0.10	UJ	0.06	UJ	0.04	UJ	0.14	UJ	0.06	UJ	0.07
TOTAL PeCDD		UJ	0.06	UJ	0.14	UJ	0.13	UJ	0.09	1.37 J		UJ	0.06	1.50 J		1.49 J	
TOTAL HxCDD		UJ	0.03	UJ	0.12	UJ	0.13	UJ	0.09	UJ	0.12	UJ	0.15	UJ	0.14	UJ	0.25
TOTAL HpCDD		UJ	0.05	UJ	0.13	UJ	0.04	UJ	0.12	UJ	0.36	UJ	0.33	UJ	0.42	UJ	0.50
TOTAL TCDF		UJ	0.10	UJ	0.12	UJ	0.13	UJ	0.11	UJ	0.03	UJ	0.08	UJ	0.09	UJ	0.06
TOTAL PeCDF		UJ	0.15	UJ	0.15	UJ	0.15	UJ	0.13	UJ	0.16	UJ	0.11	UJ	0.11	UJ	0.01
TOTAL HxCDF		UJ	0.11	UJ	0.05	UJ	0.04	UJ	0.05	UJ	0.05	UJ	0.04	UJ	0.17	UJ	0.11
TOTAL HpCDF		UJ	0.06	UJ	0.10	UJ	0.06	UJ	0.04	UJ	0.08	UJ	0.26	UJ	0.23	UJ	0.32
HCX - Hexachloroxanthene		UJ	39.70	UJ	19.83	UJ	19.89	UJ	19.80	UJ	19.60	UJ	19.86	UJ	19.92	UJ	19.99
TCX - Tetrachloroxanthene		R		R		R		R		R		R		R		R	
TOXIC EQUIVALENT(1):		0.0 UJ		0.0 UJ		0.0 UJ		0.0 UJ		0.0 UJ		0.0 UJ		0.0 UJ		0.0 UJ	
PERCENT SOLIDS:		20.9		20.2		21.6		20.8		23.8		19.9		21.0		21.3	
PERCENT LIPIDS:		0.93		0.39		0.83		0.39		0.73		0.45		0.89		0.89	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/22/01		06/22/01		06/25/01		06/25/01		06/25/01		06/25/01		06/25/01		06/25/01	
DATE OF RECEIPT:		07/31/01		07/31/01		07/31/01		07/31/01		07/31/01		07/31/01		07/31/01		07/31/01	
SAMPLE EXTRACTION DATE:		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01	
ANALYSIS DATE:		09/09/01		09/07/01		09/07/01		09/07/01		09/07/01		09/07/01		09/07/01		09/07/01	
LAB SAMPLE ID:		46985-84-22		46985-84-07		46985-84-05		46985-84-09		46985-84-10		46985-84-11		46985-84-12		46985-84-13	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

04/22/2002 MON 8:56 FAX

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
Case No.: Offal/Fillet B2OF3 SDG No.: 48985-84 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	GMP-LB-5009-0000-01F		GMP-LB-5010-0000-01F		LBX-LB-4001-0000-01F		LBX-LB-4002-0000-01F		LBX-LB-4003-0000-01F		LBX-LB-4004-0000-01F		LBX-LB-4005-0000-01F		LBX-LB-4006-0000-01F	
STATION LOCATION:		GREYSTONE MILL POND		GREYSTONE MILL POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*
2,3,7,8-TCDD	1.0	UJ	0.04	UJ	0.20	14.72 J		43.93 J		9.72 J		10.49 J		15.78 J		23.14 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.19	UJ	0.18	UJ	0.28	UJ	0.30	UJ	0.14	UJ	0.25	UJ	0.18	UJ	0.16
1,2,3,4,7,8-HxCDD	0.5	UJ	0.22	UJ	0.18	UJ	0.18	UJ	0.21	UJ	0.18	UJ	0.13	UJ	0.04	UJ	0.13
1,2,3,6,7,8-HxCDD	0.01	UJ	0.22	UJ	0.16	UJ	0.18	UJ	0.22	UJ	0.19	UJ	0.14	UJ	0.04	UJ	0.14
1,2,3,7,8,9-HxCDD	0.01	UJ	0.21	UJ	0.17	UJ	0.17	UJ	0.20	UJ	0.18	UJ	0.13	UJ	0.04	UJ	0.13
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.75	UJ	0.50	UJ	0.72	UJ	0.74	UJ	0.26	UJ	0.23	UJ	0.28	UJ	0.15
OCDD	< 0.0001	UJ	0.19	UJ	0.29	UJ	0.53	UJ	0.36	UJ	0.62	UJ	0.42	UJ	0.38	UJ	0.26
2,3,7,8-TCDF	0.05	UJ	0.09	UJ	0.04	UJ	0.20	UJ	0.16	UJ	0.13	UJ	0.16	UJ	0.18	UJ	0.14
1,2,3,7,8-PeCDF	0.05	UJ	0.11	UJ	0.12	UJ	0.16	UJ	0.21	UJ	0.18	UJ	0.23	UJ	0.26	UJ	0.17
2,3,4,7,8-PeCDF	0.5	UJ	0.09	UJ	0.02	UJ	0.15	UJ	0.22	UJ	0.18	UJ	0.23	UJ	0.25	UJ	0.17
1,2,3,4,7,8-HxCDF	0.1	UJ	0.05	UJ	0.03	UJ	0.10	UJ	0.05	UJ	0.14	UJ	0.09	UJ	0.09	UJ	0.05
1,2,3,6,7,8-HxCDF	0.1	UJ	0.12	UJ	0.06	UJ	0.09	UJ	0.05	UJ	0.09	UJ	0.01	UJ	0.00	UJ	0.07
1,2,3,7,8,9-HxCDF	0.1	UJ	0.14	UJ	0.10	UJ	0.11	UJ	0.07	UJ	0.10	UJ	0.14	UJ	0.04	UJ	0.05
2,3,4,6,7,8-HxCDF	0.1	UJ	0.12	UJ	0.09	UJ	0.10	UJ	0.06	UJ	0.10	UJ	0.13	UJ	0.09	UJ	0.07
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.23	UJ	0.20	UJ	0.29	UJ	0.26	UJ	0.15	UJ	0.14	UJ	0.14	UJ	0.11
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.25	UJ	0.23	UJ	0.34	UJ	0.31	UJ	0.16	UJ	0.13	UJ	0.13	UJ	0.14
OCDF	< 0.0001	UJ	0.26	UJ	0.19	UJ	0.37	UJ	0.45	UJ	0.11	UJ	0.22	UJ	0.22	UJ	0.20
TOTAL TCDD		UJ	0.04	UJ	0.20	14.72 J		43.93 J		9.72 J		10.49 J		15.78 J		23.14 J	
TOTAL PeCDD		UJ	0.20	UJ	0.18	UJ	0.28	UJ	0.30	UJ	0.14	UJ	0.25	UJ	0.18	UJ	0.35
TOTAL HxCDD		UJ	0.01	UJ	0.18	UJ	0.18	UJ	0.21	UJ	0.18	UJ	0.02	UJ	0.02	UJ	0.14
TOTAL HpCDD		UJ	0.75	UJ	0.50	UJ	0.72	UJ	0.74	UJ	0.26	UJ	0.23	UJ	0.06	UJ	0.15
TOTAL TCDF		UJ	0.09	UJ	0.04	UJ	0.04	UJ	0.16	UJ	0.13	UJ	0.03	UJ	0.16	UJ	0.14
TOTAL PeCDF		UJ	0.10	UJ	0.02	UJ	0.16	UJ	0.21	UJ	0.18	UJ	0.23	UJ	0.25	UJ	0.17
TOTAL HxCDF		UJ	0.05	UJ	0.03	UJ	0.10	UJ	0.05	UJ	0.14	UJ	0.10	UJ	0.09	UJ	0.05
TOTAL HpCDF		UJ	0.24	UJ	0.21	UJ	0.31	UJ	0.28	UJ	0.15	UJ	0.13	UJ	0.13	UJ	0.08
HCX - Hexachloroxanthene		UJ	19.96	UJ	19.97	UJ	39.71	5.00 J		UJ	39.95	UJ	39.93	UJ	39.76	UJ	19.89
TCX - Tetrachloroxanthene		R		R		R		R		R		R		R		R	
TOXIC EQUIVALENT(1):		0.0 UJ		0.0 UJ		15 J		44 J		9.7 J		10 J		16 J		23 J	
PERCENT SOLIDS:		20.3		20.0		21.7		20.8		19.8		19.1		19.3		20.3	
PERCENT LIPIDS:		0.71		0.93		1.14		0.99		0.59		0.45		0.18		0.62	
DILUTION FACTOR:		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/25/01		06/25/01		06/21/01		06/21/01		06/21/01		06/21/01		06/21/01		06/21/01	
DATE OF RECEIPT:		07/31/01		07/31/01		07/19/01		07/19/01		07/19/01		07/20/01		07/20/01		07/20/01	
SAMPLE EXTRACTION DATE:		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01		08/27/01	
ANALYSIS DATE:		09/07/01		09/07/01		09/07/01		09/07/01		09/06/01		09/06/01		09/06/01		09/07/01	
LAB SAMPLE ID:		48985-84-14		48985-84-15		48985-84-16		48985-84-17		48985-84-18		48985-84-19		48985-84-20		48985-84-02	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
Case No.: Offal/Fillet B2OF3 SDG No.: 48985-84 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	LPX-LB-4007-0000-01F		LPX-LB-4008-0000-01F		LPX-LB-4009-0000-01F		LPX-LB-4010-0000-01F	
STATION LOCATION:		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND		LYMANSVILLE POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC	ng/Kg	DL/EMPC	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*
2,3,7,8-TCDD	1.0	22.22 J		29.82 J		31.11 J		14.14 J	
1,2,3,7,8-PeCDD	1.0	UJ	0.20	UJ	0.18	UJ	0.15	UJ	0.22
1,2,3,4,7,8-HxCDD	0.5	UJ	0.15	UJ	0.16	UJ	0.17	UJ	0.22
1,2,3,6,7,8-HxCDD	0.01	UJ	0.18	UJ	0.17	UJ	0.17	UJ	0.24
1,2,3,7,8,9-HxCDD	0.01	UJ	0.14	UJ	0.16	UJ	0.16	UJ	0.22
1,2,3,4,6,7,8-HpCDD	0.001	UJ	0.15	UJ	0.22	UJ	0.27	UJ	0.20
OCDD	< 0.0001	UJ	0.19	UJ	0.30	UJ	0.26	UJ	0.23
2,3,7,8-TCDF	0.05	UJ	0.13	UJ	0.04	UJ	0.04	UJ	0.12
1,2,3,7,8-PeCDF	0.05	UJ	0.17	UJ	0.16	UJ	0.18	UJ	0.18
2,3,4,7,8-PeCDF	0.5	UJ	0.15	UJ	0.16	UJ	0.17	UJ	0.18
1,2,3,4,7,8-HxCDF	0.1	UJ	0.06	UJ	0.06	UJ	0.10	UJ	0.07
1,2,3,6,7,8-HxCDF	0.1	UJ	0.08	UJ	0.06	UJ	0.10	UJ	0.12
1,2,3,7,8,9-HxCDF	0.1	UJ	0.10	UJ	0.08	UJ	0.11	UJ	0.14
2,3,4,6,7,8-HxCDF	0.1	UJ	0.08	UJ	0.07	UJ	0.10	UJ	0.12
1,2,3,4,6,7,8-HpCDF	0.01	UJ	0.08	UJ	0.11	UJ	0.16	UJ	0.11
1,2,3,4,7,8,9-HpCDF	0.01	UJ	0.12	UJ	0.13	UJ	0.19	UJ	0.14
OCDF	< 0.0001	UJ	0.17	UJ	0.20	UJ	0.23	UJ	0.24
TOTAL TCDD		22.22 J		29.82 J		31.11 J		14.14 J	
TOTAL PeCDD		UJ	0.43	UJ	0.36	UJ	0.46	UJ	0.04
TOTAL HxCDD		UJ	0.15	UJ	0.16	UJ	0.16	UJ	0.23
TOTAL HpCDD		UJ	0.15	UJ	0.22	UJ	0.27	UJ	0.20
TOTAL TCDF		UJ	0.13	UJ	0.04	UJ	0.04	UJ	0.12
TOTAL PeCDF		UJ	0.16	UJ	0.16	UJ	0.17	UJ	0.18
TOTAL HxCDF		UJ	0.06	UJ	0.06	UJ	0.10	UJ	0.07
TOTAL HpCDF		UJ	0.02	UJ	0.12	UJ	0.18	UJ	0.12
HCX - Hexachloroxanthene		UJ	19.86	6.49 J		UJ	19.94	UJ	19.97
TCX - Tetrachloroxanthene		R		R		R		R	
TOXIC EQUIVALENT(1):		22 J		30 J		31 J		14 J	
PERCENT SOLIDS:		21.0		19.2		19.6		19.2	
PERCENT LIPIDS:		1.01		0.35		0.73		0.53	
DILUTION FACTOR:		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/21/01		06/21/01		06/26/01		06/26/01	
DATE OF RECEIPT:		07/20/01		07/20/01		07/31/01		07/31/01	
SAMPLE EXTRACTION DATE:		08/27/01		08/27/01		08/27/01		08/27/01	
ANALYSIS DATE:		09/07/01		09/07/01		09/07/01		09/07/01	
LAB SAMPLE ID:		48985-84-03		48985-84-04		48985-84-05		48985-84-06	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked. The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

04/22/2002 MON 8:56 FAX 010/010

Steve Stodola
US EPA Approval Signature

3/21/02
Date

March 08, 2002
B-02-03-Y-1
Revised: March 19, 2002

Ms. Christine Clark
Regional Sample Control Custodian
Office of Environmental Measurement and Evaluation
U.S. EPA Region I
11 Technology Drive
North Cheslmsford, MA 01863

Re: TO No. 04, Task No. 2, TDF No. 0361
Case No. Offal/Fillet B3OF3, SDG No. 49038-12 D/F
Battelle Laboratories - Columbus, OH
Centredale Manor, North Providence, RI

Dioxin/Furan, HCX and TCX: 14/Fish Tissue/MAP-LB-4001-0000-01-F, MAP-LB-4002-0000-01-F, MAP-LB-4003-0000-01-F, MAP-LB-4001-0000-01-O, MAP-LB-4002-0000-01-O, MAP-LB-4003-0000-01-O, RAB-LB-5001-0000-01-F, RAB-LB-5002-0000-01-F, RAB-LB-5003-0000-01-F, RAB-LB-5004-0000-01-F, RAB-LB-5001-0000-01-O, RAB-LB-5002-0000-01-O, RAB-LB-5003-0000-01-O, RAB-LB-5004-0000-01-O

1/Fish Tissue SRM/CIL EDF 2526

Dear Ms. Clark:

A Tier III data validation was performed on the Dioxin/Furan, HCX, and TCX analytical data for 14 offal/fillet fish samples collected by Harding ESE, Inc. for the U.S. EPA at the Centredale Manor Site in North Providence, RI. The samples were analyzed according to EPA Method 1613B, September 15, 1997. The samples were validated using first the criteria in the Centredale Manor Tasks 19-22 QAPP (5/23/01) prepared by Battelle Duxbury Operations which include the criteria in EPA Method 1613B, September 15, 1997, defaulting next to Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and to EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01). The criteria for HCX and TCX are documented in Battelle's December 7, 2001 letter to EPA. The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness (CSF Audit - Tier I)
- * Preservation and Technical Holding Times

*	•	PE Samples/Accuracy Check
*	•	Window Defining Mix
	•	Initial and Continuing Calibrations
	•	Chromatographic Resolution
*	•	Instrument Sensitivity Check
	•	Blanks
	•	Matrix Spike/Matrix Spike Duplicate
*	•	Laboratory Control Sample
	•	Laboratory and Field Duplicates
*	•	Internal/Clean-up Standards
*	•	Sample Analysis and Identification
	•	Sample Quantitation
*	•	Estimated Detection Limits (EDL) and Estimated Maximum Possible Concentration (EMPC)
	•	2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity
*	•	Required Sample Reruns and Second Column Confirmation
	•	System Performance

* - All criteria were met for this parameter.

<u>The following information was used to generate the Data Validation Memorandum attachments:</u>

Table I: Recommendation Summary Table - summarizes validation recommendations

Table II: Overall Evaluation of Data - summarizes site objectives and potential usability issues

Data Summary Tables - summarize accepted, qualified, and rejected data

<u>Overall Evaluation of Data and Potential Usability Issues</u>

The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01):

- To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.

One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were within the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criteria of less than 30 %D from the consensus value.

The initial calibration for TCX was noncompliant. The initial calibration % RSD was exceeded. There were no other additional quality control checks, such as MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected.

The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified

as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination.

Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the discussion below for details. The reported results are usable for the site objectives.

Data Completeness (CSF Audit - Tier I)

The following data or information in the data package had discrepancies and/or were missing:

1. The laboratory was asked to report the detection limits for 12378-PeCDD, 12378-PeCDF, 23478-PeCDF, Total PeCDD, and Total PeCDF and send a corrected page 1463.

2. The laboratory was asked to submit a corrected page 1587, the sample number should be RAB-LB-5003-0000-01-F not GMP-LB-5001-0000-01-F.

Items 1 and 2 were requested via the TOPO on January 14, 2002. Items 1 and 2 were received via the TOPO on February 26, 2002. All items were adequately addressed.

Initial and Continuing Calibrations

The following table summarizes the Initial Calibration (IC) which did not meet the criterion specified in Centredale Manor Tasks 19-22 QAPP (5/23/01) of RSD < 25 % and the resulting sample qualifications:

IC Date	Compound	% RSD	Action		Affected Samples
			Positive Detects	NDs	
07/19/01	TCX	30	J	UJ	All

The data associated with RSD of noncompliant initial calibrations are qualified due to the high variability. The quantitation of the associated analyte in the samples could be biased.

Chromatographic Resolution

The hexachloroxanthene (HCX) peaks exhibit poor chromatography, i.e., broad shape. The broad peak shape created irregularities in the response factors used to calculate the concentrations of HCX. Therefore, professional judgement was used to estimate (J,UJ) all HCX results due to the poor chromatography.

The laboratory flagged the 2378-TCDF value in sample MAP-LB-4003-O with an "E" to indicate chromatographic interference. Estimate (J) the 2378-TCDF value in MAP-LB-4003-O due to chromatographic interference.

Blanks

All of the blanks associated with this SDG were evaluated for possible sources of contamination. The following tables list the highest concentration of contamination that was detected in the blanks. The table lists the action levels/actions and the samples affected:

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Affected Samples
2378-TCDD	Method Blank (9/15/01)	0.14	0.70	RAB-LB-5003-F, RAB-LB-5004-O
12378-PeCDD	Method Blank (9/17/01)	0.082	0.41	MAP-LB-4001-O, MAP-LB-4002-O, RAB-LB-5004-F-, RAB-LB-5001-O
123478-HxCDD	Method Blank (9/15/01)	0.10	0.50	MAP-LB-4001-F, MAP-LB-4001–O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5004-F
123678-HxCDD	Method Blank (9/15/01)	0.31	1.6	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5003-F, RAB-LB-5002-O
123789-HxCDD	Method Blank (9/15/01)	0.14	0.70	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5004-F, RAB-LB-5002-O
1234678-HpCDD	Method Blank (9/15/01)	0.39	2.0	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-F, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5004-O
OCDD	Method Blank (9/15/01)	1.1	11	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-F, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5004-O
2378-TCDF	Method Blank (9/16/01)	0.081	0.40	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, RAB-LB-5003-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5004-O
12378-PeCDF	Method Blank (9/15/01)	0.11	0.55	MAP-LB-4001-F, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-O
123478-HxCDF	Method Blank (915/01)	0.21	1.0	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5003-F, RAB-LB-5001-O, RAB-LB-5003-O
123678-HxCDF	Method Blank (9/15/01)	0.13	0.65	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-O, RAB-LB-5003-O

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Affected Samples
123789-HxCDF	Method Blank (9/15/01)	0.13	0.65	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4003-O
234678-HxCDF	Method Blank (9/15/01)	0.11	0.55	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-O
1234678-HpCDF	Method Blank (9/15/01)	0.16	0.80	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5003-O
1234789-HpCDF	Method Blank (9/15/01)	0.094	0.47	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5003-O
OCDF	Method Blank (9/16/01)	0.47	4.7	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-F, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5003-O
Total TCDD	Method Blank (9/15/01)	0.14	1.4	RAB-LB-5001-F, RAB-LB-5003-F, RAB-LB-5001-O, RAB-LB-5004-O
Total PeCDD	Method Blank (9/17/01)	0.27	2.7	MAP-LB-4001-F, MAP-LB-4003-F, RAB-LB-5001-F, RAB-LB-5004-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5004-O
Total HxCDD	Method Blank (9/15/01)	0.88	8.8	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5002-O
Total HpCDD	Method Blank (9/15/01)	0.62	6.2	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5001-F, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5003-O, RAB-LB-5004-O
Total TCDF	Method Blank (9/16/01)	0.14	1.4	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5003-O, RAB-LB-5004-O
Total PeCDF	Method Blank (9/15/01)	0.11	1.1	MAP-LB-4001-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, RAB-LB-5001-O, RAB-LB-5002-O

Congener	Type of Blank	Blank Concentration ng/Kg	Action Level ng/Kg	Affected Samples
Total HxCDF	Method Blank (9/15/01)	0.59	5.9	MAP-LB-4001-F, MAP-LB-4001-O, MAP-LB-4002-F, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5003-O
Total HpCDF	Method Blank (9/17/01)	0.35	3.5	MAP-LB-4001-F, MAP-LB-4002-F, MAP-LB-4003-F, MAP-LB-4001-O, MAP-LB-4002-O, MAP-LB-4003-O, RAB-LB-5002-F, RAB-LB-5003-F, RAB-LB-5004-F, RAB-LB-5001-O, RAB-LB-5002-O, RAB-LB-5003-O

Blank actions are based on Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 and EPA Region I's Environmental Services Assistance Team Dioxin Data Validation SOP ESAT-01-0007 (01/31/01) criteria. Blank action levels are calculated as ten times the highest concentration of the contaminant determined in any blank for common contaminants (OCDD/OCDF and Total Homologues) and five times the highest concentration for all other analytes. The positive sample results that are less than the blank action level are reported as non-detects (U) at the reported concentration on the Data Summary Table.

Matrix Spike/Matrix Spike Duplicate

Two MS/MSD pairs were evaluated for this SDG: RAB-LB-5003-FMS/RAB-LB-5003-FMSD and RAB-LB-5003-OMS/RAB-LB-5003-OMSD. All criteria were met for RAB-LB-5003-OMS/RAB-LB-5003-OMSD.

The table below summarizes the MS/MSD results which did not meet the recovery criteria of 50-120% and/or Relative Percent Difference (RPD) < 30% for Centredale Manor Tasks 19-22 QAPP (5/23/01).

RAB-LB-5003-F					
Congener	MS % Rec.	MSD % Rec.	% RPD	Action	
				Positive Detects	NDs
2378-TCDD	160	84*	63	J	UJ
HCX	82*	43	63	J	UJ

* Recoveries and/or RPDs were acceptable

2378-TCDD and HCX values were estimated (J,UJ) in sample RAB-LB-5003-F since the percent recoveries and/or precision were outside the required criteria.

Laboratory and Field Duplicates

Two laboratory duplicate pairs were evaluated for this SDG: MAP-LB-4001-F/MAP-LB-4001-FDup and MAP-LB-4001-O/MAP-LB-4001-ODup.

The tables below summarize the duplicate results that did not meet the laboratory duplicate criterion of Relative Percent Difference (RPD) ≤ 30% as specified in Centredale Manor Tasks 19-22 QAPP (5/23/01).

Congener	MAP-LB-4001-F	MAP-LB-4001-FDup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	NDs	
2378-TCDD	30.2	19.0	46	J	UJ	MAP-LB-4001-F

Congener	MAP-LB-4001-O	MAP-LB-4001-ODup	RPD	Action		Affected Samples
	Sample Conc. (ng/Kg)	Duplicate Conc. (ng/Kg)		Positive Detects	NDs	
2378-TCDD	136	227	51	J	UJ	MAP-LB-4001-O
HCX	23.6	44.0	60	J	UJ	MAP-LB-4001-O

2378-TCDD was estimated (J) in samples MAP-LB-4001-F and MAP-LB-4001-O, and HCX was estimated (J,UJ) in sample MAP-LB-4001-O since the duplicate precision was outside criterion.

Sample Quantitation

Concentrations quantitated below the lowest calibration standard are flagged (J) on the Data Summary Tables. Quantitation is not accurate when the reported results are below the lowest calibration standard.

2378-TCDD Toxicity Equivalents (TE) and Isomer Specificity

All TE values reported on the Data Summary Tables have been calculated by the ESAT data validator using the validated data discussed above in this report. As a result, the TE values in the Data Summary Table may differ from the values reported by the laboratory. The validated data accounts for blank contamination and any necessary dilutions. The TE calculations include the reported EMPC values. The Fish TEF values used by ESAT are the ones published in Environmental Health Perspectives, volume 106, Number 12, December 1998, "Toxic Equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife."

System Performance

No trends noted.

Very truly yours,

LOCKHEED ENVIRONMENTAL

Janine Bartels
Principal Scientist

Louis Macri
ESAT Program Manager

cc: Cornell Rosiu, EPA RPM (DV Memorandum, Data Summary Table)

Attachments: Table I: Recommendation Summary Table
Table II: Overall Evaluation of Data
Data Summary Tables
Data Validation Worksheets
Analytical Method
Communication/Phone Logs
Field Sampling Notes

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Offal/Fillet B3OF3/SDG No. 49038-12 D/F

Sample Nos.	MAP-LB-4001-0000-01-F	MAP-LB-4002-0000-01-F	MAP-LB-4003-0000-01-F	MAP-LB-4001-0000-01-O	MAP-LB-4002-0000-01-O	MAP-LB-4003-0000-01-O	RAB-LB-5001-0000-01-F
Compound							
2378-TCDD	J[5]	A	A	J[5]	A	A	A
12378-PeCDD	A	A	A	J[3]	J[3]	A	A
123478-HxCDD	J[3]	A	A	J[3]	J[3]	J[3]	A
123678-HxCDD	J[3]	A	A	J[3]	J[3]	J[3]	A
123789-HxCDD	J[3]	A	A	J[3]	J[3]	J[3]	A
1234678-HpCDD	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]
OCDD	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]
2378-TCDF	J[3]	A	A	J[3]	J[3]	J[1]	A
12378-PeCDF	J[3]	A	A	A	J[3]	J[3]	A
23478-PeCDF	A	A	A	A	A	A	A
123478-HxCDF	J[3]	A	A	J[3]	J[3]	J[3]	A
123678-HxCDF	J[3]	A	A	J[3]	J[3]	J[3]	A
123789-HxCDF	J[3]	A	A	J[3]	A	J[3]	A
234678-HxCDF	J[3]	A	A	J[3]	J[3]	J[3]	A
1234678-HpCDF	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]	A
1234789-HpCDF	J[3]	J[3]	J[3]	A	J[3]	J[3]	A
OCDF	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]
HCX	J[2]	J[2]	J[2]	J[2,5]	J[2]	J[2]	J[2]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans
Centredale Manor Site
Case No.: Offal/Fillet B3OF3/SDG No. 49038-12 D/F

Sample Nos.	RAB-LB-5002-0000-01-F	RAB-LB-5003-0000-01-F	RAB-LB-5004-0000-01-F	RAB-LB-5001-0000-01-O	RAB-LB-5002-0000-01-O	RAB-LB-5003-0000-01-O	RAB-LB-5004-0000-01-O
Compound							
2378-TCDD	A	J[3,4]	A	A	A	A	J[3]
12378-PeCDD	A	A	J[3]	J[3]	A	A	A
123478-HxCDD	A	A	J[3]	A	A	A	A
123678-HxCDD	A	J[3]	A	A	J[3]	A	A
123789-HxCDD	A	A	J[3]	A	J[3]	A	A
1234678-HpCDD	J[3]	J[3]	A	J[3]	J[3]	A	J[3]
OCDD	J[3]	J[3]	J[3]	J[3]	J[3]	A	J[3]
2378-TCDF	A	J[3]	A	J[3]	J[3]	A	J[3]
12378-PeCDF	A	A	A	J[3]	A	A	A
23478-PeCDF	A	A	A	A	A	A	A
123478-HxCDF	A	J[3]	A	J[3]	A	J[3]	A
123678-HxCDF	A	A	A	J[3]	A	J[3]	A
123789-HxCDF	A	A	A	A	A	A	A
234678-HxCDF	A	A	A	J[3]	A	A	A
1234678-HpCDF	J[3]	J[3]	J[3]	J[3]	A	J[3]	A
1234789-HpCDF	A	A	A	A	A	J[3]	A
OCDF	J[3]	J[3]	J[3]	J[3]	J[3]	J[3]	A
HCX	J[2]	J[2,4]	J[2]	J[2]	J[2]	J[2]	J[2]
TCX	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]	R[1]

Table I
Recommendation Summary Table for Dioxins/Furans

A	-	Accept results.
J[1]	-	Chromatographic interference; J detects, UJ non-detects.
J[2]	-	Chromatographic resolution outside criterion; J detects, UJ non-detects.
J[3]	-	Method blank contamination; positive sample results less than the blank action level are reported as non-detects (U) at the concentration reported.
J[4]	-	MS/MSD recovery and/or RPDs outside criteria; J detects, UJ non-detects.
J[5]	-	Laboratory duplicate RPDs outside criterion; J detects, UJ non-detects.
R[1]	-	Non-compliant method detection limits and recovery; R non-detects.

EPA-NE - Data Validation Worksheet

Overall Evaluation of Data - Data Validation Memorandum - Table II

DIOXIN/FURAN ANALYSIS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability	Potential Usability Issues
		Analytical Error	Sampling Error*		
The following is a summary of the site investigation/assessment objectives as found in Centredale Manor Tasks 19-22 QAPP (5/23/01): To generate data of quality sufficient to be used for human health (HHRA) and ecological risk assessments (ERA) at the site.	Yes, Sampling Method appropriate for all samples. Yes, Analytical Method appropriate for all samples.	Refer to qualification in R/S Key on Table I: J[1,2,3,4,5,6]	Refer to qualification in R/S Key on Table I: NA	**	One Cambridge Isotope Laboratories (CIL) Standard Reference Material (SRM) sample was evaluated for this SDG (CIL EDF 2526 for Dioxin/Furan congeners in fish tissue). All congeners were within the Centredale Manor Tasks 19-22 QAPP (5/23/01) specified criterion of less than 30 %D from the consensus value. The initial calibration for TCX was noncompliant. The initial calibration % RSD was exceeded. There were no other additional quality control checks, such as MS/MSD or an LCS, to demonstrate that the method could recover TCX. Therefore, the results for TCX are rejected. The method blanks exhibited low level contamination. This contamination problem does not have an impact on the usability of the data. Contaminants were found in both the blanks and the field samples. When the analyte concentrations in the field samples are less than the corresponding blank action level, the field sample results reported by the laboratory are qualified as non-detected (U) on the Data Summary Table. See Table I for a summary of the qualifiers applied due to blank contamination. Data validation indicated minor data quality problems which do not significantly impact the usability of the data. See the data validation memorandum for details. The reported results are usable for the site objectives.

* The evaluation of "sampling error" cannot be completely assessed in the data validation.
** Sampling variability is not assessed in data validation.

Validator: [signature]

Date: 3/19/02

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Offal/Fillet B3OF3 SDG No. 49038-12 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	MAP-LB-4001-0000-01-F		MAP-LB-4002-0000-01-F		MAP-LB-4003-0000-01-F		MAP-LB-4001-0000-01-O		MAP-LB-4002-0000-01-O		MAP-LB-4003-0000-01-O	
STATION LOCATION:		MANTON POND		MANTON POND		MANTON POND		MANTON POND		MANTON POND		MANTON POND	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*
2,3,7,8-TCDD	1.0	30.21 J		5.43		17.47		135.64 J		27.91		207.29	
1,2,3,7,8-PeCDD	1.0	0.41 J		U	2.06	U	0.38	U	0.30	U	0.23	0.51 J	
1,2,3,4,7,8-HxCDD	0.5	U	0.32	U	0.63	U	0.22	U	0.16	U	0.06	U	0.29
1,2,3,6,7,8-HxCDD	0.01	U	0.28	U	0.64	U	0.23	U	0.28	U	0.18	U	0.42
1,2,3,7,8,9-HxCDD	0.01	U	0.28	U	0.60	U	0.21	U	0.23	U	0.12	U	0.31
1,2,3,4,6,7,8-HpCDD	0.001	U	0.60	U	0.70	U	0.29	U	1.12	U	0.42	U	0.97
OCDD	< 0.0001	U	4.29	U	1.79	U	2.16	U	8.77	U	1.89	U	3.87
2,3,7,8-TCDF	0.05	U	0.22	U	1.10	U	0.18	U	0.16	U	0.32	0.95 J	
1,2,3,7,8-PeCDF	0.05	U	0.39	U	1.21	U	0.23	U	0.16	U	0.25	U	0.48
2,3,4,7,8-PeCDF	0.5	0.45 J		U	1.04	U	0.23	0.23 J		0.20 J		0.52 J	
1,2,3,4,7,8-HxCDF	0.1	U	0.41	U	0.23	U	0.15	U	0.16	U	0.20	U	0.40
1,2,3,6,7,8-HxCDF	0.1	U	0.39	U	0.23	U	0.14	U	0.13	U	0.19	U	0.32
1,2,3,7,8,9-HxCDF	0.1	U	0.25	U	0.27	U	0.16	U	0.17	U	0.06	U	0.28
2,3,4,6,7,8-HxCDF	0.1	U	0.28	U	0.24	U	0.14	U	0.21	U	0.11	U	0.34
1,2,3,4,6,7,8-HpCDF	0.01	U	0.40	U	0.59	U	0.15	U	0.42	U	0.18	U	0.59
1,2,3,4,7,8,9-HpCDF	0.01	U	0.23	U	0.16	U	0.24	0.72 J		U	0.06	U	0.42
OCDF	< 0.0001	U	0.83	U	0.70	U	1.21	U	3.68	U	0.24	U	0.97
TOTAL TCDD		30.21 J		5.43 J		17.47 J		135.64 J		27.91 J		207.29 J	
TOTAL PeCDD		UJ	0.76	UJ	2.06	UJ	0.58	UJ	0.30	UJ	0.23	UJ	0.51
TOTAL HxCDD		UJ	0.88	UJ	0.62	UJ	0.22	UJ	0.67	UJ	0.36	UJ	1.02
TOTAL HpCDD		UJ	0.60	UJ	1.49	UJ	0.29	UJ	1.91	UJ	0.64	UJ	1.36
TOTAL TCDF		UJ	0.22	UJ	1.10	UJ	0.18	UJ	0.27	UJ	0.70	UJ	1.27
TOTAL PeCDF		UJ	0.84	2.14 J		UJ	0.01	UJ	0.62	UJ	1.00	2.28 J	
TOTAL HxCDF		UJ	1.43	UJ	3.49	UJ	0.15	UJ	0.68	UJ	0.60	UJ	1.66
TOTAL HpCDF		UJ	0.90	UJ	2.35	UJ	0.39	UJ	1.26	UJ	0.72	UJ	2.75
HCX - Hexachloroxanthene		3.45 J		UJ	79.88	5.36 J		23.63 J		20.54 J		36.07 J	
TCX - Tetrachloroxanthene		R		R		R		R		R		R	
TOXIC EQUIVALENT(1):		31 J		5.4 J		17 J		140 J		28 J		210 J	
PERCENT SOLIDS:		17.5		18.4		18.6		24.9		22.9		26.5	
PERCENT LIPIDS:		0.46		0.41		0.78		1.39		1.94		3.27	
DILUTION FACTOR:		1.0		4.0		1.0		1.0		1.0		1.0	
DATE SAMPLED:		06/27/01		06/27/01		06/27/01		06/27/01		06/27/01		06/27/01	
DATE OF RECEIPT:		06/29/01		06/29/01		06/29/01		06/29/01		06/29/01		06/29/01	
SAMPLE EXTRACTION DATE:		09/04/01		09/04/01		09/04/01		09/04/01		09/04/01		09/04/01	
ANALYSIS DATE:		09/15/01		09/17/01		09/16/01		09/16/01		09/16/01		09/16/01	
LAB SAMPLE ID:		49038-12-02		49038-12-04		49038-12-05		49038-12-12		49038-12-14		49038-12-15	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Offal/Fillet B3OF3 SDG No. 49038-12 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	RAB-LB-5001-0000-01-F		RAB-LB-5002-0000-01-F		RAB-LB-5003-0000-01-F		RAB-LB-5004-0000-01-F		RAB-LB-5001-0000-01-O		RAB-LB-5002-0000-01-O	
STATION LOCATION:		ASSAPUMPSETT BROOK		ASSAPUMPSETT BROOK		ASSAPUMPSETT BROOK		ASSAPUMPSETT BROOK		ASSAPUMPSETT BROOK		ASSAPUMPSETT BROOK	
MATRIX:		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
TCDD/TCDF CONC.:		ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*	ng/Kg	DL/EMPC*
2,3,7,8-TCDD	1.0	0.95		U	0.87	UJ	0.53	1.91 J		1.29		23.38	
1,2,3,7,8-PeCDD	1.0	U	0.15	U	1.71	U	1.38	U	0.33	U	0.17	U	0.25
1,2,3,4,7,8-HxCDD	0.5	U	0.19	U	0.57	U	0.37	U	0.37	U	0.12	U	0.14
1,2,3,6,7,8-HxCDD	0.01	U	0.20	U	0.57	U	0.13	2.04 J		U	0.13	U	0.07
1,2,3,7,8,9-HxCDD	0.01	U	0.18	U	0.54	U	0.35	U	0.51	U	0.12	U	0.04
1,2,3,4,6,7,8-HpCDD	0.001	U	0.16	U	0.44	U	0.31	3.42 J		U	0.32	U	0.17
OCDD	< 0.0001	U	1.58	U	3.34	U	2.34	U	2.32	U	3.39	U	0.88
2,3,7,8-TCDF	0.05	U	0.12	U	0.92	U	0.19	1.01 J		U	0.18	U	0.32
1,2,3,7,8-PeCDF	0.05	U	0.17	U	0.82	U	0.43	U	0.56	U	0.06	U	0.20
2,3,4,7,8-PeCDF	0.5	U	0.16	U	2.53	U	0.44	U	0.98	0.10 J		U	0.19
1,2,3,4,7,8-HxCDF	0.1	U	0.17	U	0.47	U	0.16	U	0.26	U	0.12	U	0.07
1,2,3,6,7,8-HxCDF	0.1	U	0.16	U	0.44	U	0.18	U	0.26	U	0.06	U	0.07
1,2,3,7,8,9-HxCDF	0.1	U	0.17	U	0.52	U	0.23	U	0.29	U	0.08	U	0.09
2,3,4,6,7,8-HxCDF	0.1	U	0.17	U	0.46	U	0.20	U	0.32	U	0.05	U	0.08
1,2,3,4,6,7,8-HpCDF	0.01	U	0.17	U	0.28	U	0.12	U	0.35	U	0.09	U	0.13
1,2,3,4,7,8,9-HpCDF	0.01	U	0.20	U	0.36	U	0.19	U	0.37	U	0.11	U	0.15
OCDF	< 0.0001	U	0.14	U	0.55	U	0.41	U	2.76	U	0.32	U	0.15
TOTAL TCDD		UJ	0.95	UJ	0.87	UJ	0.56	1.95 J		UJ	1.28	23.38 J	
TOTAL PeCDD		UJ	0.06	UJ	1.71	UJ	1.38	UJ	0.33	UJ	0.39	UJ	0.51
TOTAL HxCDD		UJ	0.19	UJ	0.56	UJ	0.13	UJ	7.37	UJ	0.12	UJ	0.11
TOTAL HpCDD		UJ	0.16	UJ	0.44	UJ	0.55	UJ	5.56	UJ	0.51	UJ	0.27
TOTAL TCDF		UJ	0.12	UJ	0.92	UJ	0.19	UJ	1.01	UJ	0.18	UJ	0.32
TOTAL PeCDF		UJ	0.16	UJ	1.51	UJ	0.43	UJ	0.75	UJ	0.15	UJ	0.15
TOTAL HxCDF		UJ	0.17	UJ	0.19	UJ	0.16	UJ	1.50	UJ	0.23	UJ	0.67
TOTAL HpCDF		UJ	0.18	UJ	0.28	UJ	0.42	UJ	0.59	UJ	0.20	UJ	0.05
HCX - Hexachloroxanthene		5.35 J		UJ	80.31	UJ	39.82	UJ	80.59	2.87 J		19.06 J	
TCX - Tetrachloroxanthene		R		R		R		R		R		R	
TOXIC EQUIVALENT(1):		0.95 J		0.0 U		0.0 UJ		2.0 J		1.3 J		23 J	
PERCENT SOLIDS:		21.1		18.3		18.6		17.9		28.8		23.8	
PERCENT LIPIDS:		0.90		0.74		0.84		0.57		2.59		4.12	
DILUTION FACTOR:		1.0		4.0		2.0		4.0		1.0		1.0	
DATE SAMPLED:		06/26/01		06/26/01		06/27/01		06/27/01		06/26/01		06/26/01	
DATE OF RECEIPT:		06/29/01		06/29/01		06/29/01		06/29/01		06/29/01		06/29/01	
SAMPLE EXTRACTION DATE:		09/04/01		09/04/01		09/04/01		09/04/01		09/04/01		09/04/01	
ANALYSIS DATE:		09/16/01		09/17/01		09/18/01		09/18/01		09/16/01		09/16/01	
LAB SAMPLE ID:		49038-12-06		49038-12-07		49038-12-08		49038-12-11		49038-12-16		49038-12-17	

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Data Summary Table
Dioxin/Furan Analysis - Fish Tissue Samples

SITE: Centredale Manor - N. Providence, RI
CASE NO. Offal/Fillet B3OF3 SDG No. 49038-12 D/F
LABORATORY: BATTELLE

SAMPLE NUMBER:	Toxicity Equivalency Factors (1)	RAB-LB-5003-0000-01-O			RAB-LB-5004-0000-01-O		
STATION LOCATION:		ASSAPUMPSETT BROOK			ASSAPUMPSETT BROOK		
MATRIX:		TISSUE			TISSUE		
TCDD/TCDF CONC.:		ng/Kg		DL/EMPC*	ng/Kg		DL/EMPC*
2,3,7,8-TCDD	1.0	1.74				U	0.59
1,2,3,7,8-PeCDD	1.0		U	0.14		U	0.19
1,2,3,4,7,8-HxCDD	0.5		U	0.31		U	0.15
1,2,3,6,7,8-HxCDD	0.01		U	0.32		U	0.15
1,2,3,7,8,9-HxCDD	0.01		U	0.30		U	0.14
1,2,3,4,6,7,8-HpCDD	0.001	2.55	J			U	0.09
OCDD	< 0.0001	68.42				U	0.30
2,3,7,8-TCDF	0.05	0.44	J			U	0.08
1,2,3,7,8-PeCDF	0.05		U	0.44		U	0.20
2,3,4,7,8-PeCDF	0.5		U	3.64		U	0.19
1,2,3,4,7,8-HxCDF	0.1		U	0.56		U	0.09
1,2,3,6,7,8-HxCDF	0.1		U	0.13		U	0.09
1,2,3,7,8,9-HxCDF	0.1		U	0.32		U	0.11
2,3,4,6,7,8-HxCDF	0.1		U	0.27		U	0.10
1,2,3,4,6,7,8-HpCDF	0.01		U	0.62		U	0.11
1,2,3,4,7,8,9-HpCDF	0.01		U	0.36		U	0.12
OCDF	< 0.0001		U	1.62		U	0.07
TOTAL TCDD		1.74	J			UJ	0.59
TOTAL PeCDD			UJ	0.14		UJ	0.05
TOTAL HxCDD			UJ	0.31		UJ	0.15
TOTAL HpCDD			UJ	4.28		UJ	0.09
TOTAL TCDF			UJ	0.44		UJ	0.11
TOTAL PeCDF			UJ	2.04		UJ	0.20
TOTAL HxCDF			UJ	1.13		UJ	0.10
TOTAL HpCDF			UJ	2.78		UJ	0.11
HCX - Hexachloroxanthene			UJ	59.58		UJ	20.13
TCX - Tetrachloroxanthene			R			R	
TOXIC EQUIVALENT(1):		1.8	J		0.0	U	
PERCENT SOLIDS:		22.5			28.6		
PERCENT LIPIDS:		2.05			2.14		
DILUTION FACTOR:		3.0			1.0		
DATE SAMPLED:		06/27/01			06/27/01		
DATE OF RECEIPT:		06/29/01			06/29/01		
SAMPLE EXTRACTION DATE:		09/04/01			09/04/01		
ANALYSIS DATE:		09/18/01			09/16/01		
LAB SAMPLE ID:		49038-12-18			49038-12-21		

* = The values in this column are either the Detection Limits (DL) or the Estimated Maximum Possible Concentration (EMPC). The EMPC results are marked with a "*". The DL values are unmarked.
The EMPC values are not qualified with a "J", since they are already estimated.
(1) The Toxic Equivalent concentration is calculated with the Toxicity Equivalency Factors (TEFs) found in "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife", Environmental Health Perspectives, Volume 106, Number (12), December 1998, Table 2, page 780.
Concentrations reported by the laboratory below the lowest standard are flagged (J) on the Data Summary Table as estimated values. All other necessary qualifications are defined in Table I.
< = The expected upper limit of the TEF values for the congener in fish.

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 15 aqueous samples (including QC samples), 11 sediment samples (including QC samples), and 23 tissue samples (including QC samples) were performed by Battelle Laboratories of Duxbury, Massachusetts. The samples were collectively analyzed for polyaromatic hydrocarbon (PAH) compounds by Battelle Standard Operating Procedure (SOP) 5-157 and for pesticide and PCB compounds by Battelle SOP 5-128. These analyses are specified on Table 1. The laboratory organized the samples into the three sample delivery groups (SDGs 01-350, 01-364, and 01-373).

The findings in this report are based upon a rigorous review of holding times, condition of samples upon laboratory receipt, blank analysis results, laboratory control sample (LCS) recoveries, matrix spike (MS)/matrix spike duplicate (MSD) recoveries and precision, surrogate recoveries, internal standard response, instrument sensitivity, analytical sequence, gas chromatography/mass spectroscopy (GC/MS) decafluorotriphenylphosphine (DFTPP) instrument performance checks, calibrations, overall system performance, laboratory duplicate precision, field duplicate precision, and quantitation of positive results.

Overall, the organic data quality appears to be good. The data reviewer has edited the QC forms based on the deficiencies and comments listed in this QC review. Analytical and reporting requirements specified in the QAPP were met for this data set, with the exception of the items identified in the following sections of this QA review; it should be emphasized that these items do not necessarily impact data usability. Based upon a Tier II review of the data provided, the organic data qualifiers associated with the samples that underwent data validation are presented in the subsequent Organic Data Qualifiers section. These qualifiers should not be applied to any organic results that did not undergo data validation. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the data usability issues that follow should not necessarily be construed as an indication of laboratory performance.

Correctable Deficiencies

1. In the PAH fraction, the laboratory reported an extraction date of "19-Jul-01" for SDG 01-350 sample RB-071001 on the Field Sample Data summary form. The correct extraction date for this sample is 7/17/01. ①

2. In the PAH fraction, the laboratory reported a collection date of "06-Jul-01" for SDG 01-364 sample APB-SD-4008-0000-01 on the Field Sample Data summary form. The correct collection date for this sample is 7/9/01.

① Not relevent to fish data packages.
BL 6-6-02

Noncorrectable Deficiencies

1. In SDG 01-350, high levels of naphthalene (greater than the quantitation limit) were observed in the method blank samples and naphthalene results in the associated project samples were less than 10-times the blank level. According to the QAPP (Worksheet #24a), the laboratory should have reextracted and/or reanalyzed the samples. The laboratory did not reextract and/or reanalyze the samples. The impact on data usability due to the blank contamination is addressed in the subsequent Organic Data Qualifiers section.

2. In SDG 01-350, samples 90-002 and PR582 were received at the laboratory with a cooler temperature of 22.6°C. According to the QAPP (Worksheet #22a), the cooler temperature should be less than 6°C. The impact on data usability due to the elevated temperature is addressed in the subsequent Organic Data Qualifiers section.

3. In SDG 01-350, high percent differences (%Ds) were observed for endosulfan I and endrin aldehyde in the Pest/PCB continuing calibration standards analyzed on 8/27/01 and 8/28/01. According to the QAPP (Worksheet #21), the continuing calibration %D for each compound must be ≤25% or the standards must be reanalyzed or the system recalibrated. The laboratory did not reanalyze the standards or recalibrate the system. The impact on data usability due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

4. In the method detection limit (MDL) determination for PAH compounds in SDGs 01-350 and 01-364, the laboratory reported replicate concentrations less than the proposed MDL. According to the Federal Register (40 CFR, Part 136, Appendix B), the laboratory should not report an MDL value if the level of analyte is below the MDL in one or more replicates. The MDL study is not considered valid because the calculated MDL may not reflect method variance at lower analyte concentrations. The actual MDLs for PAH compounds are lower than the laboratory reporting limits; therefore, data were not qualified due to this deficiency.

5. In the method detection limit (MDL) determination for Pest/PCB compounds in SDGs 01-350 and 01-373, the laboratory reported replicate concentrations greater than 10-times the proposed MDL. According to the Federal Register (40 CFR, Part 136, Appendix B), the laboratory should not report an MDL value if the level of analyte exceeds 10-times the MDL in one or more replicates. The MDL study is not considered valid because the calculated MDL may not reflect method variance at lower analyte concentrations. The actual MDLs for Pest/PCB compounds are lower than the laboratory reporting limits; therefore, data were not qualified due to this deficiency.

① Not relavent to fish data packages. BL 6-6-02

6. In SDG 01-373, high %Ds were observed for one or more Pest/PCB compounds in the initial and continuing calibration standards analyzed on 9/11/01, 9/12/01, 9/13/01, and 9/16/01. According to the QAPP (Worksheet #21), the %D for each compound must be ≤25% or the standards must be reanalyzed or the system recalibrated. The laboratory did not reanalyze the standards or recalibrate the system. The impact on data usability due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

Comments

1. In SDG 01-350, the MS/MSD samples were inadvertently not spiked ~~with PAH~~ or Pest/PCB compounds. As a result, the data reviewer ~~could not evaluate~~ the accuracy and precision of the analytical methods ~~relative to~~ the specific sample matrix for this SDG. The associated LCS ~~results~~ were within the acceptance limits. Data were not qualified due to ~~this issue~~. (1)

2. In SDG 01-373, surrogate recoveries outside of the acceptance limits (40-125%) were observed in several samples. In the Pest/PCB QA/QC Summary, the laboratory attributed the low recoveries to the extensive sample processing required due to high lipid content. In addition, the laboratory stated that samples with both surrogate recoveries outside of the acceptance limits would be reextracted. Samples APC-AE-4001-0000-01, APC-AE-4006-0000-01, and LPX-AE-4010-0000-01 had both surrogates outside of the acceptance limits and were not reextracted. The impact on data usability due to the surrogate results is addressed in the subsequent Organic Data Qualifiers section.

Sample APC-AE-4001-0000-01 was not re-extracted because sufficient tissue material was not available. Sample APC-AE-4006-0001-01 was re-extracted with 01-672. DDahlen 6/7/02

With respect to data usability, the principal areas of concern are blank contamination, elevated sample temperatures, high continuing calibration %Ds, high and low MS/MSD recoveries, very low percent solids results, a low LCS recovery, high and low surrogate recoveries, and quantitation of results below the project-required reporting limit. Based on a rigorous review of the data provided, the following organic data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

(1) Not relevent to fish data packages.

BL 6-6-02

Organic Data Qualifiers

- Due to the trace-level presence of PAH compounds in the associated laboratory and/or field blanks, the reported positive results for PAH compounds in SDG 01-350 samples RAB-SW-5004, WRC-SW-4003-01, WRC-SW-4004-01, WRC-SW-4001-01, WRC-SW-4002-02, RWR-SW-5001, RWR-SW-5002, WRL-SW-4004, WRL-DU-071701-A, and WRL-SW-4005, with the exception of the results for acenaphthylene in samples WRL-SW-4004, WRL-DU-071701-A, and WRL-SW-4005, should be considered "not-detected" and have been flagged "U" on the data tables. In addition, reported results below the sample-specific quantitation limits have been replaced with the quantitation limit and the appropriate "U" qualifier. It should be noted that sample volumes and dilution factors were taken into consideration when evaluating blank contamination. ①

- Due to the trace-level presence of biphenyl and 2-methylnaphthalene in the associated method blank, the reported positive results for these compounds in SDG 01-350 sample 90-002 should be considered "not-detected" and have been flagged "U" on the data tables. In addition, reported results below the sample-specific quantitation limits have been replaced with the quantitation limit and the appropriate "U" qualifier. It should be noted that sample volumes and dilution factors were taken into consideration when evaluating blank contamination.

- The quantitation limits for PAH compounds in SDG 01-350 sample 90-002 and for Pest/PCB compounds in SDG 01-350 sample PR582 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for PAH or Pest/PCB compounds in these samples should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. The temperature of these samples upon receipt at the laboratory (22.6°C) was above the acceptance limit (<6°C).

- The quantitation limits for endosulfan I and endrin aldehyde in SDG 01-350 samples RAB-SW-5004, RWR-SW-5001, RWR-SW-5002, WRL-SW-4004, WRL-DU-071701-A, and WRL-SW-4005 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. High %Ds (>25%) were observed for these compounds in the associated continuing calibration standards.

- The reported positive result for acenaphthene in SDG 01-364 sample RAB-SD-5008-0000-01 should be considered estimated and has been flagged "J" on the data tables. High recoveries (>120%) were observed for this compound in the associated MS/MSD analyses.

- The reported positive results for PAH compounds in SDG 01-364 samples LPX-SD-4011-0000-01, GMP-SD-5007-0000-01, APB-SD-4008-0000-01, and LPX-SD-4013-0000-01 should be considered estimated and have been flagged "J" on the data tables. Very low percent solids results (<30%) were obtained for these sediment samples.

① Not relevant to fish data packs
BL 6-6-02

- The quantitation limits for the compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for these compounds in the samples listed below should be considered estimated and have been flagged "J" on the data tables. High %Ds (>25%) were observed for these compounds in the associated continuing calibration standards.

Compound(s)	SDG	Samples With Qualified Quantitation Limits ("UJ") or Estimated Positive Results ("J")
alpha-BHC, dieldrin, and endrin	01-373	APC-AE-4001-0000-01 and APC-AE-4002-0000-01
methoxychlor	01-373	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, and APC-AE-4009-0000-01
gamma-BHC, *delta*-BHC, heptachlor, dieldrin, and endrin aldehyde	01-373	LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, and LPX-AE-4010-0000-01

- The quantitation limits for aldrin, *alpha*-BHC, *beta*-BHC, *delta*-BHC, endosulfan I, endosulfan II, endrin, endrin aldehyde, endrin ketone, heptachlor, and methoxychlor in SDG 01-373 sample LPX-AE-4001-0000-01 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for *gamma*-BHC; 4,4'-DDD; dieldrin; *gamma*-chlordane; and heptachlor epoxide in this sample should be considered estimated and have been flagged "J" on the data tables. Low recoveries (<40%) were observed for these compounds in the associated MS/MSD analyses. In addition, high RPDs (>30%) were observed for 4,4'-DDD and dieldrin in the associated MS/MSD analyses.

- The quantitation limits for endrin aldehyde in all SDG 01-373 samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. A low recovery (<40%) was observed for this compound in the associated LCS analysis.

- The quantitation limits for Pest/PCB compounds in SDG 01-373 samples APC-AE-4001-0000-01, APC-AE-4002-0000-01, and (1) APC-AE-4006-0000-01 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for Pest/PCB compounds in these samples should be considered estimated and have been flagged "J" on the data tables. Low recoveries (<40%) were observed for one or both surrogate compounds in the analysis of these samples.

(1) Sample 1C - extracted w/ SDG 01-672. DTDahler 6/7/02

- Any reported positive results for Pest/PCB compounds in SDG 01-373 samples LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-AE-4009-0000-01, and LPX-AE-4010-0000-01 should be considered estimated and have been flagged "J" on the data tables. High recoveries (>125%) were observed for one or both surrogate compounds in these samples.

- One field duplicate pair (SDG 01-350 sample WRL-SW-4004 and its field duplicate, sample WRL-DU-071701-A) was submitted to the laboratory with this data set and analyzed for PAH and Pest/PCB compounds. Acceptable precision and sample representativeness were demonstrated by all reported positive results in these field QC samples. A complete comparison of the reported positive results has been included in Section 3A. ①

- Based on the project-specific reporting requirements, all reported positive results with concentrations between the laboratory method detection limit and the project reporting limit should be considered estimated and have been flagged "J" on the data tables.

Complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the methods and examined in this data review.

~~B. Wet Chemistry Data~~ ①

The wet chemistry analyses of 15 aqueous samples (including QC samples) were performed by Chesapeake Biological Laboratory (CBL) of Solomons, Maryland. The samples were analyzed for nutrients (specifically, nitrite, ammonium, phosphate, nitrate, dissolved organic carbon [DOC], total organic carbon [TOC], total suspended solids [TSS], total dissolved phosphorus, total dissolved nitrogen, total phosphorus, and total nitrogen) by CBL SOP L-62. These analyses are specified on Table 1. The laboratory organized the samples into CBL #01. ①

The findings in this report are based upon a rigorous review of sample holding times, condition of samples upon laboratory receipt, blank analysis results, MS recoveries, laboratory duplicate precision, instrument sensitivity, instrument detection limits (IDLs), sample preparation, and the quantitation of positive results.

Overall, the wet chemistry data quality appears to be good. The data reviewer has edited the QC forms based on the deficiencies and comments listed in this QC review. Analytical and reporting requirements specified in the QAPP were met for this data set, with the exception of the items identified in the following sections of this QA review; it should be emphasized that these items do not necessarily impact data usability. Based upon a rigorous review of the data provided, the wet chemistry qualifiers associated with the samples that underwent data validation are presented in the subsequent Wet Chemistry Data Qualifiers Section. These qualifiers should not be applied to

① Not relevant to fish data packages. BL 6-6-02

any wet chemistry results that did not undergo data validation. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the data usability issues that follow should not necessarily be construed as an indication of laboratory performance.

Comment

- The laboratory only performed matrix spike analyses for total dissolved nitrogen and total dissolved phosphorus. As a result, the data reviewer could not evaluate the accuracy of the analytical method relative to the specific sample matrix for all target parameters.

With respect to data usability, the principal area of concern is high laboratory duplicate relative percent differences. Based on a Tier II review of the data provided, the following wet chemistry data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Wet Chemistry Data Qualifiers

- The reported positive results for ammonium and total dissolved phosphorus in all CBL #01 samples should be considered estimated and have been flagged "J" on the data tables. High relative percent differences (>10%) were observed for these parameters in the associated laboratory duplicate analyses.

- One field duplicate pair (CBL #01 sample WRL-SW-4004 and its field duplicate, sample WRL-DU-071701-A) was submitted to the laboratory with this data set and analyzed for nutrient parameters. Acceptable precision and sample representativeness were demonstrated by all reported positive results in these field QC samples.

Complete support documentation for this wet chemistry QA review is presented in Section 4 of this report. The cover sheet for this section is a checklist of all QA procedures required by the methods and examined in this data review.

① Not relevant to fish/biota packages. B

C. Conclusions

Overall, the data quality is good. Based on this QA review, several positive organic results were qualified as "not-detected" due to blank contamination. In addition, several organic results were qualified as estimated due to elevated sample temperatures, high continuing calibration %Ds, high and low MS/MSD recoveries, very low percent solids results, a low LCS recovery, high and low surrogate recoveries, and quantitation of results below the project-required reporting limit. A few wet chemistry results were qualified as estimated due to high laboratory duplicate relative percent differences. Overall, the data are acceptable for use, provided the data user understands the limitations and qualifications stated in this QA review. The Laboratory Case Narratives and Chain-of-Custody Records are presented in Sections 5 and 6, respectively.

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 22 sediment samples (including QC samples) and 46 tissue samples (including QC samples) were performed by Battelle Laboratories (Battelle) of Duxbury, Massachusetts. The samples were collectively analyzed for select polynuclear aromatic hydrocarbons (PAH) by selective ion monitoring by Battelle Method SOP 5-157 and for pesticide/PCB compounds by Battelle Method SOP 5-128. These analyses are specified on Table 1. The laboratory organized the samples into three sample delivery groups (SDGs 01-373, 01-374, and 01-498).

The findings in this report are based upon a rigorous review of holding times, condition of samples upon laboratory receipt, blank analysis results, laboratory control sample (LCS) recoveries, matrix spike (MS)/matrix spike duplicate (MSD) recoveries and precision, laboratory duplicate precision, surrogate recoveries, internal standard response, instrument sensitivity, field and laboratory duplicate precision, analytical sequence, and calibrations.

Overall, the organic data quality appears to be acceptable. The data reviewer has edited the QC forms based on the deficiencies and comments listed in this QC review. Analytical and reporting requirements defined in the QAPP were met for this data set, with the exception of the items identified in the following sections of this QA review; it should be emphasized that these items do not necessarily impact data usability. Based upon a Tier II review of the data provided, the organic data qualifiers associated with the samples that underwent limited data validation are presented in the subsequent Organic Data Qualifiers section. These qualifiers should not be applied to any organic results that did not undergo data validation. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the data usability issues that follow should not necessarily be construed as an indication of laboratory performance.

Noncorrectable Deficiencies

1. High percent differences (>25%) were observed for many pesticide compounds in the associated continuing calibration verifications (CCVs). According to the QAPP (Worksheet #21), the laboratory should reanalyze the Check Standard Solution if any percent difference is greater than 25%. The laboratory did not reanalyze these CCVs and the impact on data usability due to the high percent difference is addressed in the subsequent Organic Data Qualifiers section. (1)

2. For the PAH fraction of SDG 01-373, the laboratory did not reextract the project samples that were associated with a method blank with reported results above the quantitation limits for several compounds. According to the QAPP (Worksheet #24a), if any results are (2)

(1) not relevant to fish tissue data. DTD 6/5/02
(2) Blank contamination discussed in QA/QC summary prepared by laboratory. DTD 6/5/02

observed in the method blank above the quantitation limits, all associated samples must be reextracted. Qualification of data due to this issue is addressed in the subsequent Organic Data Qualifiers section.

3. For the pest/PCB fraction of SDG 01-498, the laboratory did not reanalyze the project samples that were associated with a pesticide LCS that used more than 10% of the target analytes with recoveries outside of QC performance criteria. According to the QAPP (Worksheet #24a), if less than 90% of the target analytes meet the QC performance criteria (40%-120%R), the samples must be reanalyzed. Qualification of data due to low LCS recoveries is addressed in the subsequent Organic Data Qualifiers section. ①

4. For the pesticide/PCB fraction of SDG 01-498, the laboratory quantitated several samples for pesticides using response factors generated from an initial calibration that was analyzed after the samples had been analyzed. According to the Battelle Duxbury Method 5-128 (Section 3.1), a valid multi-point initial calibration should be analyzed at the beginning of each set of continuous sample analyses. The laboratory did analyze an initial calibration at the beginning of the analytical sequence. The laboratory, however, indicated that due to the nature of the sample matrix, a loss of instrument sensitivity was observed in the associated pesticide CCV standards (See Non-Correctable Deficiency #1). The laboratory recalibrated the instrument (as required, due to the non-compliant CCV standards), but did not reanalyze the samples analyzed prior to the recalibration because the laboratory concluded that the sample matrix negatively impacted the instrument's column condition (as evidenced by the non-compliant pesticide CCV standards that followed the second initial calibration in the sequence). Battelle laboratory personnel indicated to the data reviewer that these sample analyses already represented reextractions and that the initial extractions and analyses exhibited similar matrix problems that impacted calibration stability. Reanalysis of project samples, therefore, was not warranted because similar conditions would likely be encountered. Based on an evaluation of both initial calibrations and all CCV standards in the analytical sequence, the laboratory determined that the second initial calibration was the "better" of the two calibrations. The results for all samples and standards in the analytical sequence were processed against the response factors generated from this calibration. Qualification of data due to loss of instrument sensitivity is addressed in the subsequent Organic Data Qualifiers section.

With respect to data usability, the principal areas of concern include blank contamination, calibration issues, MS/MSD and LCS results, laboratory and field duplicate imprecision, and quantitation of results below the project-required reporting limit. Based on a Tier II review of the data provided, the following organic data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should <u>not</u> be construed as an indication of laboratory performance.

① Not relavant to fish tissue data packages. BL 3-28-02

Organic Data Qualifiers

- Due to the trace-level presence of the following compounds in the associated method blanks, the reported positive results for the following compounds in the samples listed below should be considered "not-detected" and have been flagged "U" on the data tables. Furthermore, results that were reported below the sample-specific quantitation limit were replaced with the quantitation limit and the appropriate "U" qualifier. It should be noted that sample weights were taken into consideration when evaluating blank contamination.

Compound(s)	SDG	Sample(s) With Results Qualified as "Not-Detected" ("U")
benzo(g,h,i)perylene	01-373	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, LPX-AE-4001-0000-01, APC-AE-4007-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, and LPX-AE-4010-0000-01
	01-374	APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4009-0000-01, APC-WS-4010-0000-01, LPX-WS-4003-0000-01, and LPX-WS-4005-0000-01
biphenyl	01-373	APC-AE-4006-0000-01, APC-AE-4007-0000-01, and APC-AE-4001-0000-01
benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene	01-373	APC-AE-4007-0000-01, APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4005-0000-01, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, and LPX-AE-4010-0000-01

Compound(s)	SDG	Sample(s) With Results Qualified as "Not-Detected" ("U")
dibenzo(a,h)anthracene	01-373	LPX-AE-4001-0000-01, APC-AE-4007-0000-01, APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, LPX-AE-4002-0000-01, LPX-AE-4005-0000-01, LPX-AE-4006-0000-01, and LPX-AE-4007-0000-01
fluoranthene	01-373	APC-AE-4001-0000-01
indeno(1,2,3-c,d)pyrene	01-373	LPX-AE-4001-0000-01, APC-AE-4007-0000-01, APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4005-0000-01, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, and LPX-AE-4010-0000-01
pyrene	01-373	LPX-AE-4001-0000-01, APC-AE-4007-0000-01, APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-AE-4006-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, LPX-AE-4003-0000-01, LPX-AE-4005-0000-01, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, and LPX-AE-4010-0000-01

- The reported positive result for pyrene in SDG 01-374 sample APC-WS-4008-0000-01 should be considered estimated and has been flagged "J" on the data tables. Low recoveries (<40%) were observed for pyrene in the associated MS/MSD analyses.

- The quantitation limits for endrin aldehyde, heptachlor, heptachlor epoxide, and methyoxychlor in the all SDG 01-498 samples may be higher than reported, and the "~~not-~~detected" results have been flagged "UJ" on the data tables. Low recoveries ~~(<40%)~~ were observed for these compounds in the associated LCS analyses. ①

- The quantitation limits for endrin ~~aldehyde and~~ heptachlor in SDG-01-498 sample RAB-SD-5008-0000-01 ~~may be higher~~ than reported, and the "not-detected" results have been flagged ~~"UJ" on~~ the data tables. In addition, the reported positive results for 4,4'-~~DDD,~~ 4,4'-DDE; 4,4'-DDT; and dieldrin in SDG 01-498 sample RAB-SD-5008-0000-

① Not relavant to fish tissue data packages.

01 should be considered estimated and have been flagged "J" on the data tables. Low (<40%) recoveries and high RPDs (>30%) were observed for these compounds in the associated MS/MSD analyses. ①

- The reported positive result for 4,4′-DDT in SDG 01-498 sample LPX-SD-4011-0000-01 should be considered estimated and has been flagged "J" on the data tables. A high RPD (>30%) was observed for 4,4′-DDT in the associated laboratory duplicate analysis of the sample.

- The quantitation limits for the following pesticide compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for the following pesticide compounds in these samples should be considered estimated and have been flagged "J" on the data tables. High percent differences (>25%), coupled with decreases in instrument sensitivity, were observed for these compounds in the associated continuing calibration standards.

Compound(s)	SDG	Samples With Qualified Quantitation Limits "UJ" or Estimated Positive Results ("J")
All pesticides	01-498	GMP-SD-5007-0000-01 and RAB-SD-5008-0000-01
alpha-BHC; *gamma*-BHC, *delta*-BHC, heptachlor; heptachlor epoxide; *beta*-BHC; endosulfan I; dieldrin; endrin; endosufan II; 4,4′-DDD; 4,4′-DDT; and endrin ketone	01-498	APB-SD-4008-0000-01, APB-SD-4009-0000-01, APB-SD-4010-0000-01, LPX-SD-4011-0000-01, LPX-SD-4012-0000-01, LPX-SD-4013-0000-01, and GMP-SD-5002-0000-01
heptachlor, endrin aldehyde, and methoxychlor	01-498	RWR-SD-5003-0000-01, RWR-SD-5005-0000-01, RAB-SD-5004-0000-01, CMS-SD-4006-0000-01, CMS-SD-4003-0000-01, CMS-SD-4007-0000-01, LPX-SD-4004-0000-01, WRL-SD-4005-0000-01, LPX-SD-4001-0000-01, and LPX-SD-4002-0000-01
endrin; 4,4′-DDD; and endrin ketone	01-498	LPX-SD-4001-0000-01 and LPX-SD-4002-0000-01

- One field duplicate pair (SDG 01-498 sample LPX-SD-4013-0000-01 and its field duplicate, SDG 01-499 sample LPX-SD-071601-A) was analyzed for pesticide/PCB compounds only. Acceptable precision and sample representativeness were demonstrated by the correlation observed between the results in the field duplicate pair (*i.e.*, when both results were ≥ 3× the PRDL, the RPD was ≤ 50% or when one of the results was < 3× the PRDL, the difference between the results was ≤ 2× the PRDL) with the exception of the

① Not relevant to fish tissue data packages. BL 3-28-02

① results for 4,4'-DDD; *alpha*-chlordane; ~~*gamma*-~~chlordane; Aroclor-1254; and Aroclor-1268. The quantitation limits ~~for~~ these pesticides in the field duplicate pair may be higher than reported, and ~~the~~ "not-diluted" results have been flagged "UJ" on the data tables. In addition, ~~any~~ reported positive results for these pesticides in the field duplicate pair should be considered estimated and have been flagged "J" on the data tables. A complete comparison of the quantitatively confident positive results in the field duplicate pair has been included in Section 3.

- Based on the project-specific reporting requirements, all reported positive results with concentrations between the laboratory method detection limit and the project reporting limit should be considered estimated and have been flagged "J" on the data tables.

Complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the methods and examined in this data review.

① Not relavant to fish tissue data packages. BL 3-28-02

B. Conclusions

Overall, the data quality is acceptable. Based on this QA review, several PAH results were qualified as "not-detected" due to blank contamination. In addition, several PAH and pesticide/PCB results were qualified as estimated due to calibration issues, MS/MSD and LCS results, laboratory and field duplicate imprecision, and quantitation of results below the project-required reporting limit. Overall, the data are acceptable for use, provided the data user understands the limitations and qualifications stated in this QA review. The Laboratory Case Narratives, Chain-of-Custody Records, and Project Correspondence are presented in Sections 4, 5, and 6, respectively.

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 133 tissue samples (including QC samples) were performed by Battelle Laboratories of Duxbury, Massachusetts. The samples were analyzed for polyaromatic hydrocarbon (PAH) compounds by Battelle SOP 5-157-05 and for pesticide/PCB compounds by Battelle SOP 5-128-05. These analyses are specified on Table 1. The laboratory organized the samples into the six sample delivery groups (SDGs 01-374, 01-375, 01-376, 01-377, 01-378, and 01-379).

The findings in this report are based upon a US EPA Region I Tier II (Tier II) review of holding times, condition of samples upon laboratory receipt, blank analysis results, laboratory control sample (LCS) recoveries, matrix spike (MS)/matrix spike duplicate (MSD) recoveries and precision, surrogate recoveries, internal standard response, instrument sensitivity, laboratory duplicate precision, analytical sequence, and calibrations.

Overall, the organic data quality is satisfactory. The data reviewer has edited the QC forms based on the deficiencies and comments listed in this QC review. Analytical and reporting requirements defined in the QAPP were met for this data set, with the exception of the items identified in the following sections of this QA review; it should be emphasized that these items do not necessarily impact data usability. Based upon a Tier II review of the data provided, the organic data qualifiers associated with the samples that underwent data validation are presented in the subsequent Organic Data Qualifiers section. These qualifiers should not be applied to any organic results that did not undergo data validation. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the data usability issues that follow should not necessarily be construed as an indication of laboratory performance.

Noncorrectable Deficiencies

1. In SDG 01-374, all samples were analyzed 4-40 days beyond the extraction holding time. According to the QAPP (Worksheet #9a), the holding time from extraction to analysis of pesticide/PCB extracts is 40 days. The impact on data usability due to the exceeded holding time is addressed in the subsequent Organic Data Qualifiers section.

2. In SDG 01-375, the dilution analyses for 4,4'-DDE and Aroclor-1254 in several samples were analyzed 34-35 days beyond the extraction holding time. According to the QAPP (Worksheet #9a), the holding time for analysis of pesticide/PCB extracts is 40 days. The impact on data usability due to the exceeded holding time is addressed in the subsequent Organic Data Qualifiers section.

3. In SDG 01-376, all samples were analyzed 35 days beyond the extraction holding time. According to the QAPP (Worksheet #9a), the holding time for analysis of pesticide/PCB extracts is 40 days. The impact on data usability due to the exceeded holding time is addressed in the subsequent Organic Data Qualifiers section.

Holding time issues were discussed in the PCB/Pest QA/QC summaries prepared by the laboratory. DDDaBle 6/5/02

4. In SDG 01-377, the dilution analyses for 4,4'-DDE; Aroclor-1254; and Aroclor-1268 in several samples were performed 23-25 days beyond the extraction holding time. According to the QAPP (Worksheet #9a), the holding time for analysis of pesticide/PCB extracts is 40 days. The impact on data usability due to the exceeded holding time is addressed in the subsequent Organic Data Qualifiers section.

5. In SDGs 01-374, 01-376, 01-378, and 01-379, the laboratory did not reanalyze the independent check standard (ICS) in which several target analytes did not meet QC acceptance criteria (*i.e.*, percent difference [%D] <15%). Although stipulated in the QAPP (Worksheet #24a) that the ICS is an internal QC check, the failure of the majority of target analytes to meet QC acceptance criteria demonstrates that the instrument conditions were not optimized prior to sample analyses. The laboratory performed a continuing calibration standard after the ICS; consequently, no samples were bracketed by the ICS. Data were not qualified due to this deficiency.

6. In SDG 01-374, high %Ds were observed for alpha-BHC and the surrogate compound cl5(112) in the pesticide/PCB continuing calibration verification (CCV) standards analyzed for methods MC0117a and MC0117b. According to the QAPP (Worksheet #21), the continuing calibration %D for each compound must be ≤25% or the standards must be reanalyzed or the system recalibrated. The laboratory did not reanalyze the standards or recalibrate the system. The impact on data usability due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

7. In SDG 01-374, high %Ds were observed for 4,4'-DDE and the surrogate compound cl5(112) in the pesticide/PCB CCV standards analyzed for method mc0518b. According to the QAPP (Worksheet #21), the continuing calibration %D for each compound must be ≤25% or the standards must be reanalyzed or the system recalibrated. The laboratory did not reanalyze the standards or recalibrate the system. The impact on data usability due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

8. In SDG 01-374, a low correlation coefficient (<0.995) was observed for the surrogate compound cl5(112) in the initial calibration files sc0117a,62,1,1 performed on instrument (1) chanl_01 and sc0518,22,1,1 performed on instrument chanl_05. According to the Battelle SOP 5-128 (Section 3.4), if the correlation coefficient criteria are not met, the laboratory is required to perform corrective measures, recalibrate the instrument, and reanalyze associated samples. Data were not qualified due to this deficiency.

9. In SDG 01-375, a low correlation coefficient (<0.995) was observed for the surrogate compound cl5(112) in the initial calibration file sc0518,22,1,1 performed on instrument (1) chanl_05. According to the Battelle SOP 5-128 (Section 3.4), if the correlation coefficient criteria are not met, the laboratory is required to perform corrective measures, recalibrate the instrument, and reanalyze associated samples. Data were not qualified due to this deficiency.

Correlation coefficient criteria are not applicable to surrogate cmpds. This has been communicated to the laboratory such that the SOP can be updated accordingly.
DTD 6/5/02 Sample data not affected.

The laboratory discussed this exceedence in the QA/QC summary. The exceedence appeared to be sample related (not method) and as a result the affected 2 samples were not reprepped. DTD 6/6/02

10. In the pesticide/PCB fraction of SDG 01-374, the surrogate compound cl5(112) recoveries (i) in samples APC-WS-4003-0000-01 and LPX-WS-4005-0000-01 were outside of the QC limits specified in the QAPP (Worksheet #24b). According to the QAPP (Worksheet #24a), the laboratory must reanalyze, reprepare, or qualify the data when surrogates are outside of QC limits. The laboratory should have re-prepped the samples based on the surrogate recoveries. The impact on data usability due to the surrogate recoveries outside of the QC limits is addressed in the subsequent Organic Data Qualifiers section.

11. For the pesticide/PCB fraction of all SDGs included in this QA review, the laboratory quantitated several samples for pesticides using response factors generated from an initial calibration that was analyzed after the samples had been analyzed. According to the Battelle Duxbury Method 5-128-05 (Section 3.1), a valid multi-point initial calibration should be analyzed at the beginning of each set of continuous sample analyses. The laboratory did analyze an initial calibration at the beginning of the analytical sequence. The laboratory, however, indicated that due to the nature of the sample matrix, a loss of instrument sensitivity was observed in the associated pesticide CCV standards. The laboratory recalibrated the instrument (as required, due to the non-compliant CCV standards) but did not reanalyze the samples analyzed prior to the recalibration because the laboratory concluded that the sample matrix negatively impacted the instrument's column condition (as evidenced by the non-compliant pesticide CCV standards that followed the second initial calibration in the sequence). Battelle laboratory personnel indicated to the data reviewer that these sample analyses already represented reextractions and that the initial extractions and analyses exhibited similar matrix problems that impacted calibration stability. Reanalysis of project samples, therefore, was not warranted because similar conditions would likely be encountered. Based on an evaluation of both initial calibrations and all CCV standards in the analytical sequence, the laboratory determined that the second initial calibration was the "better" of the two calibrations. The results for all samples and standards in the analytical sequence were processed against the response factors generated from this calibration.

12. For the PAH and pesticide/PCB fractions of SDG 01-375, the laboratory did not reextract and reanalyze all samples associated with preparation blank ZF01PB (for both PAH and pesticide/PCB fractions), which exhibited zero percent surrogate recoveries. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries outside of performance criteria is to reextract and/or reanalyze associated samples. The laboratory stated in the Case Narrative that it appeared that the aforementioned preparation blank had not been fortified with surrogate compounds and that target pesticide/PCB compound contamination is rare in preparation blanks; thus, no further corrective action was taken. Qualification of data was not warranted due to this deficiency.

13. For the pesticide/PCB fraction of SDG 01-375, surrogate recoveries outside of the acceptance limits (40-125%) were observed in all samples except one offal sample. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries outside of performance criteria is to reextract and/or reanalyze associated samples. The laboratory did not reextract and/or reanalyze the samples. In the pesticide/PCB Case Narrative, the laboratory attributed the low recoveries to the extensive sample processing

required due to high lipid content. The impact on data usability due to the surrogate results is addressed in the subsequent Organic Data Qualifiers section.

14. For the PAH fraction of SDG 01-375, surrogate recoveries outside of the acceptance limits (40-125%) were observed in samples LPX-LB-4003-0000-01F and LPX-LB-4004-0000-01F. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries outside of performance criteria is to reextract and/or reanalyze associated samples. The laboratory did not reextract and/or reanalyze these samples. The impact on data usability due to the surrogate recoveries is addressed in the subsequent Organic Data Qualifiers section. The laboratory did re-extract these 2 samples w/ SDG 01-672. DDDahle 6/5/02

15. For the PAH fraction of SDG 01-376, the laboratory did not reextract and reanalyze all samples associated with preparation blank ZF16PB, which exhibited positive results greater than the quantitation limit (QL) for benzo(g,h,i)perylene and pyrene. According to the QAPP (Worksheet #24a), the method blank must have compound results less than the QL or the associated samples must have results greater than 10-times the blank values. The corrective action for blank contamination is to reextract and/or reanalyze the blank and associated samples. The laboratory did not reextract and/or reanalyze the blank or samples. The Environmental Standards data reviewer used the method blank results as reported to evaluate sample results. The impact on data usability due to the blank contamination is addressed in the subsequent Organic Data Qualifiers section.

16. For the PAH fraction of SDG 01-377, low surrogate recoveries (<40%) were observed for naphthalene-d_8, phenanthrene-d_{10}, and chrysene-d_{12} in sample GMP-LB-5005-0000-01O. According to the QAPP (Worksheet #24a), the laboratory should reextract and reanalyze a sample if any surrogate fails the QC performance criteria. The laboratory did not reextract and/or reanalyze the sample. The impact on data usability due to the surrogate recoveries is addressed in the subsequent Organic Data Qualifiers section. The laboratory did re-extract this sample w/ SDG 01-672. DDD 6/5/02

17. For the PAH fraction of SDG 01-377, high %Ds (>30%) were observed for benzo(g,h,i)perylene and pyrene in the Standard Reference Material (SRM) sample ZG23SRM. According to the QAPP (Worksheet #24a), the corrective action for SRM %Ds outside of QC performance criteria is to reextract and/or reanalyze associated samples. The laboratory did not reextract and/or reanalyze these samples. The impact on data usability due to the SRM results is addressed in the subsequent Organic Data Qualifiers section. Suspected cause for exceedence was discussed in QA/QC summary prepared by lab DDD 6/5/02

18. For the pesticide/PCB fraction of SDG 01-376, surrogate recoveries outside of the acceptance limits (40-125%) were observed in sample RAB-AE-5003-0000-01. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries outside of performance criteria is to reextract and/or reanalyze associated samples. The laboratory did not reextract and/or reanalyze the samples. The impact on data usability due to the surrogate recoveries is addressed in the subsequent Organic Data Qualifiers section.

19. For the PAH fraction of SDG 01-376, the laboratory did not reanalyze the project sample associated with the PAH MS/MSD analyses in which more than 10% of the target analytes had recoveries outside of QC performance criteria. According to the QAPP, if less than 90% of the target analytes meets the QC performance criteria (40-120%), the associated sample must be reanalyzed. Qualification of data due to this issue is addressed in the subsequent Organic Data Qualifiers section. Disagree - only 1 PAH cmpd (representing <10% of cmpds) had a %R outside the MPC. DTD 6/5/02 see GAGE summary

20. For the pesticide/PCB fractions of SDGs 01-375, 01-377, and 01-379, the laboratory did not reanalyze the project samples associated with the pesticide/PCB MS/MSD analyses in which more than 10% of the target analytes had recoveries outside of QC performance criteria. According to the QAPP, if less than 90% of the target analytes meets the QC performance criteria (40-120%), the associated samples must be reanalyzed. Qualification of data due to this issue is addressed in the subsequent Organic Data Qualifiers section.

21. For the pesticide/PCB fractions of SDGs 01-375 and 01-377, the laboratory did not reanalyze the project samples associated with the pesticide/PCB laboratory duplicate analyses in which more than 10% of the target analytes had recoveries outside of QC performance criteria. According to the QAPP, if less than 90% of the target analytes meets the QC performance criteria (relative percent difference [RPD] ≤30%), the associated samples must be reanalyzed. Qualification of data due to this issue is addressed in the subsequent Organic Data Qualifiers section.

22. In SDG 01-377, a low correlation coefficient (<0.995) was observed for the surrogate compound cl3(34) in the initial calibration file sc0118,43,1,1 performed on instrument chanl_01. According to Battelle SOP 5-128 (Section 3.4), if the correlation coefficient criteria are not met, the laboratory is required to perform corrective measures, recalibrate the instrument, and reanalyze associated samples. Data were not qualified due to this deficiency. (1) (1) Correlation coefficient criteria not applicable to surrogates. The laboratory has been informed to make sure this is reflected in the next SOP update. DTD 6/5/02

23. In SDG 01-377, a low correlation coefficient (<0.995) was observed for the surrogate compound cl5(112) in the initial calibration file sc0518,22,1,1 performed on instrument chanl_05. According to Battelle SOP 5-128 (Section 3.4), if the correlation coefficient criteria is not met the laboratory is required to perform corrective measures, recalibrate the instrument, and reanalyze associated samples. Data were not qualified due to this deficiency. (1)

24. For the PAH fraction of SDG 01-378, low surrogate recoveries (<40%) were observed for naphthalene-d_8, phenanthrene-d_{10}, and chrysene-d_{12} in sample MAP-LB-4001-0000-01F. According to the QAPP (Worksheet #24a), the laboratory should reextract and reanalyze a sample if any surrogate fails QC performance criteria. The laboratory did not reextract and/or reanalyze the sample. The impact on data usability due to the surrogate recoveries is addressed in the subsequent Organic Data Qualifiers section. (2)

25. In the pesticide/PCB fraction of SDG 01-378, surrogate recoveries outside of the acceptance limits (40-125%) were observed in sample MAP-LB-4001-0000-01F. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries (2)

(2) This sample was re-extracted w/ SDG 01-672. DTD 6/5/02

outside of QC performance criteria is to reextract and/or reanalyze associated samples. The laboratory did not reextract and/or reanalyze these samples. The impact on data usability due to the surrogate results is addressed in the subsequent Organic Data Qualifiers section.

26. In the pesticide/PCB fraction of SDG 01-379, high surrogate recoveries (>125%) were observed in samples GMP-WS-5001-0000-01 and GMP-WS-5006-0000-01. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries outside of QC performance criteria is to reextract and/or reanalyze associated samples. The laboratory did not reextract and/or reanalyze these samples. The impact on data usability due to the surrogate recoveries is addressed in the subsequent Organic Data Qualifiers section.

(1) Samples were not reprepped because the over-recovery appeared to be sample related. See QA/QC summary. DJD 6/5/02

27. In SDG 01-379, a low correlation coefficient (<0.995) was observed for the surrogate compound cl5(112) in the initial calibration file sc0124,46,1,1 performed on instrument chanl_01. According to Battelle SOP 5-128 (Section 3.4), if the correlation coefficient criteria are not met, the laboratory is required to perform corrective measures, recalibrate the instrument, and reanalyze associated samples. Data were not qualified due to this deficiency. Correlation coefficient criteria not applicable to surrogates. The laboratory has been asked to reflect this in the next SOP update. DJD 6/5/02

28. In SDG 01-379, high %Ds were observed for alpha-BHC and dieldrin in the pesticide/PCB CCV standard file sc0124,22,1. According to the QAPP (Worksheet #21), the continuing calibration %D for each compound must be ≤25% or the standards must be reanalyzed or the system recalibrated. The laboratory did not reanalyze the standards or recalibrate the system. The impact on data usability due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

29. For the pesticide/PCB fraction of SDG 01-377, surrogate recoveries outside of the acceptance limits (40-125%) were observed in samples GMP-LB-5001-0000-01, GMP-LB-5002-0000-01O, GMP-5003-0000-01O, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-010, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01O. According to the QAPP (Worksheet #24a), the corrective action for surrogate recoveries outside of QC performance criteria is to reextract and/or reanalyze associated samples. The impact on data usability due to the surrogate results is addressed in the subsequent Organic Data Qualifiers section. Sample GMP-LB-5005-0000-01 (offal) was re-extracted w/ SDG-01-672. Other samples were not reprepped given that the surrogate exceedences appeared to be sample (not method) related. See QA/QC summary. DJD 6/5/02

Comments

1. The results for several pesticide/PCB compounds in several samples in SDGs 01-374, 01-375, 01-377, and 01-378, were reported from dilutions due to high levels of target compounds in the original analyses.

2. According to the Sample Custody Corrective Action Form, container sample IDs DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, and DYP-AE-4003-0000-01 were listed on the Chain-of-Custody form as "DYP-AE-5001-0000-01", "DYP-AE-5002-0000-01", and "DYP-AE-5003-0000-01", respectively. A copy of email correspondence between Dierdre Dahlen and Norman Richardson clarified that the Dyerville Pond samples (*i.e.,* the

samples in question) should be 4000 series. Therefore, the laboratory utilized the sample container IDs. Data were not qualified due to this issue.

3. Field duplicates were not collected for the SDGs included in this QA review; therefore, the data reviewer could not evaluate the precision of the analytical methods relative to a field duplicate pair. Field duplicates were not required for tissue. DiDable 6/5/02

With respect to data usability, the principal areas of concern include blank contamination; very low, low, and high surrogate recoveries; exceeded holding times; laboratory duplicate imprecision; continuing calibration issues; very low, low, and high MS/MSD recoveries; MS/MSD imprecision; low LCS recoveries; SRM sample imprecision; and quantitation of results below the project-required quantitation limits. Based on the Tier II review of the data provided, the following organic data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Organic Data Qualifiers

- Due to the trace-level presence of the compounds listed below in the associated laboratory and/or field blanks, the reported positive results for these compounds in the following samples should be considered "not-detected" and have been flagged "U" on the data tables. In addition, reported results below the sample-specific quantitation limits have been replaced with the quantitation limit and the appropriate "U" qualifier. It should be noted that sample volumes and dilution factors were taken into consideration when evaluating blank contamination.

Compound(s)	SDG	Samples With Results Qualified as "Not-Detected" ("U")
acenaphthylene	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5003-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, and RAB-AE-5005-0000-01
anthracene	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5003-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, and RAB-AE-5005-0000-01

Compound(s)	SDG	Samples With Results Qualified as "Not-Detected" ("U")
benzo(a)anthracene	01-376	All samples except RAB-AE-5006-0000-01
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, and MAP-LB-4003-0000-01F
	01-379	GMP-WS-5006-0000-01, GMP-WS-5009-0000-01, RAB-BB-5001-0000-01, RAB-BB-5003-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, and DYP-AE-4003-0000-01
benzo(a)pyrene	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5009-0000-01, and RAB-AE-5001-0000-01
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, and MAP-LB-4003-0000-01F
	01-379	All samples except GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, and RAB-BB-5002-0000-01
benzo(b)fluoranthene	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5009-0000-01, RAB-AE-5001-0000-01, and RAB-AE-5003-0000-01
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, and MAP-LB-4003-0000-01F
	01-379	All samples except GMP-WS-5007-0000-01, GMP-WS-5001-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, and RAB-BB-5002-0000-01

Compound(s)	SDG	Samples With Results Qualified as "Not-Detected" ("U")
benzo(g,h,i)perylene	01-375	LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4005-0000-01F, LPX-LB-4006-0000-01F, LPX-LB-4007-0000-01F, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-LB-4009-0000-01F, LPX-LB-4010-0000-01F, and LPX-LB-4010-0000-01O
	01-376	All samples
	01-377	GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, and GMP-LB-5010-0000-01O
	01-378	All samples except MAP-LB-4002-0000-01O and MAP-LB-4003-0000-01O
	01-379	All samples except GMP-WS-5005-0000-01, and RAB-BB-5002-0000-01
benzo(k)fluoranthene	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5009-0000-01, and RAB-AE-5001-0000-01
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5003-0000-01F, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, and MAP-LB-4003-0000-01F
	01-379	All samples except GMP-WS-5007-0000-01, GMP-WS-5001-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, and RAB-BB-5002-0000-01
biphenyl	01-376	All samples
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, MAP-LB-4002-0000-01F, and MAP-LB-4003-0000-01F

Compound(s)	SDG	Samples With Results Qualified as "Not-Detected" ("U")
chrysene	01-376	All samples except GMP-AE-5008-0000-01 and RAB-AE-5006-0000-01
	01-378	All samples except RAB-5003-0000-01O, MAP-4002-0000-01O, and MAP-4003-0000-01O
	01-379	GMP-WS-5006-0000-01, GMP-WS-5009-0000-01, RAB-BB-5001-0000-01, RAB-BB-5003-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, and DYP-AE-4003-0000-01
dibenz(a,h)anthracene	01-376	GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5009-0000-01, and RAB-AE-5001-0000-01
dibenzofuran	01-376	All samples
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, and MAP-LB-4003-0000-01F
fluoranthene	01-375	LPX-LB-4003-0000-01F and LPX-LB-4004-0000-01F
	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5009-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, and RAB-AE-5006-0000-01
	01-377	GMP-LB-5001-0000-01F, GMP-LB-5009-0000-01F, and GMP-LB-5010-0000-01F
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5003-0000-01O, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, and MAP-LB-4002-0000-01F

Compound(s)	SDG	Samples With Results Qualified as "Not-Detected" ("U")
indeno(1,2,3-cd)pyrene	01-376	All samples except GMP-AE-5008-0000-01, RAB-AE-5004-0000-01, and RAB-AE-5006-0000-01
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, and MAP-LB-4003-0000-01F
	01-379	All samples except RAB-BB-5002-0000-01, RAB-BB-5003-0000-01, and DYP-AE-4001-0000-01
2-methylnaphthalene	01-377	GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, and GMP-LB-5009-0000-01F
	01-379	DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, and DYP-AE-4003-0000-01
naphthalene	01-375	LPX-LB-4001-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4006-0000-01F, and LPX-LB-4007-0000-01F
	01-376	GMP-AE-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, and GMP-AE-5007-0000-01
	01-377	GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5007-0000-01F, GMP-LB-5008-0000-01F, GMP-LB-5009-0000-01F, and GMP-LB-5010-0000-01F
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, MAP-LB-4001-0000-01F, and MAP-LB-4003-0000-01F
	01-379	All samples except GMP-WS-5008-0000-01, RAB-BB-5001-0000-01, and RAB-BB-5003-0000-01

Compound(s)	SDG	Samples With Results Qualified as "Not-Detected" ("U")
phenanthrene	01-375	LPX-LB-4004-0000-01F
	01-376	All samples except GMP-AE-5004-0000-01, GMP-AE-5008-0000-01, and RAB-AE-5001-0000-01
	01-377	GMP-LB-5001-0000-01F, GMP-LB-5009-0000-01F, and GMP-LB-5010-0000-01F
	01-378	RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, and MAP-LB-4001-0000-01F
pyrene	01-375	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F, LPX-LB-4006-0000-01F, LPX-LB-4007-0000-01F, LPX-LB-4008-0000-01F, LPX-LB-4009-0000-01F, and LPX-LB-4010-0000-01F
	01-376	All samples
	01-377	GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, and GMP-LB-5010-0000-01F
	01-378	All samples except MAP-4001-0000-01O, MAP-4002-0000-01O, MAP-4003-0000-01F, and MAP-4003-0000-01O
	01-379	GMP-WS-5001-0000-01, GMP-WS-5004-0000-01, GMP-WS-5006-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, RAB-BB-5001-0000-01, RAB-BB-5003-0000-01, DYP-AE-4001-0000-01, DYP-AE-4002-0000-01, and DYP-AE-4003-0000-01

- The analyses for pesticide/PCB compounds in the samples listed below should be considered unusable, and the "not-detected" results have been flagged "R" on the data tables. In addition, any reported positive results (not previously flagged "U") for pesticide/PCB compounds in these samples should be considered estimated and have been flagged "J" on the data tables. Very low recoveries (<10%) were observed for one or more of the pesticide/PCB surrogate compounds.

Note that the QA/QC summary prepared by the laboratory discussed this issue and attributed the very low PCB112 recoveries to sample issue(s), not method, given that the other PCB surrogate (PCB34) was acceptable. As a result the samples were not reprepped. DTD 6/5/02

(1) Samples LPX-LB-4003-0000-01 (fillet) and LPX-LB-4004-0000-01 (fillet) were re-extracted w/ SDG #01-672. DTD 6/5/02

SDG	Samples with Unusable Detection Limits ("R") and Estimated Positive Results ("J") for Pest/PCB Compounds
01-375	LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, (1)LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F(1) LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01O, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, and LPX-LB-4010-0000-01O

- The analyses for endosulfan I in SDG 01-375 sample LPX-LB-4009-0000-01O should be considered unusable, and the "not-detected" result has been flagged "R" on the data tables. A very low recovery (<10%) was observed for this compound in the associated MS analysis.

- The quantitation limits for pesticde/PCB compounds in all SDG 01-374 samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positives for pesticide/PCB compounds in these samples should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed 4-40 days beyond the QAPP holding time of 40 days from sample extraction.

- The reported positive results for the following compounds in the samples listed below should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed at dilutions 34-35 days beyond the QAPP holding time of 40 days from sample extraction.

Compounds	SDG	Samples With Estimated Positive Results ("J")
4,4'-DDE and Aroclor-1254	01-375	LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01O, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01O, and LPX-LB-4010-0000-01O

- The quantitation limits for pesticide/PCB compounds in all SDG 01-376 samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positives for pesticide/PCB compounds in these samples should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed 35 days beyond the QAPP holding time of 40 days from sample extraction.

- The reported positive results for the following compounds in the samples listed below should be considered estimated and have been flagged "J" on the data tables. These samples were analyzed at dilutions 23-25 days beyond the QAPP holding time of 40 days from sample extraction.

Compound(s)	SDG	Samples With Estimated Positive Results ("J")
4,4'-DDE; Aroclor-1254; and Aroclor-1268	01-377	GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01O, GMP-LB-5004-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01O
4,4'-DDE and Aroclor-1254	01-377	GMP-LB-5003-0000-01O
4,4'-DDE	01-377	GMP-LB-5008-0000-01F and GMP-LB-5010-0000-01O

- The reported positive result for dieldrin in SDG 01-374 sample APC-WS-4008-0000-01 should be considered estimated and has been flagged "J" on the data tables. A high RPD (>30%) was observed for this compound in associated laboratory duplicate analyses.

- The reported positive results for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, *alpha*-chlordane, dieldrin, *gamma*-chlordane, heptachlor epoxide, technical chlordane, Aroclor-1254, Aroclor-1268, and total Aroclor in SDG 01-374 sample LPX-WS-4005-0000-01 should be considered estimated and have been flagged "J" on the data tables. A high recovery (>125%) was observed for one of the surrogate compounds in this sample.

- The quantitation limits of all pesticide/PCB compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for pesticide/PCB compounds in the samples listed below should be considered estimated and have been flagged "J" on the data tables. Low recoveries (<40%) were observed for one or more of the surrogate compounds in these samples.

SDG	Sample(s) With Qualified Quantitation Limits ("UJ") or Estimated Positive Results ("J") For Pest/PCB Compounds
01-374	APC-WS-4003-0000-01
01-375	LPX-LB-4001-0000-01F, LPX-LB-4004-0000-01O, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4007-0000-01F, LPX-LB-4008-0000-01F, and LPX-LB-4009-0000-01F
01-376	RAB-AE-5003-0000-01
01-377	GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01O, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01O
01-378	MAP-4001-0000-01F

- The quantitation limits for the compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for these compounds in the samples listed below should be considered estimated and have been flagged "J" on the data tables. High %Ds

(>25%) were observed for these compounds in the associated continuing calibration standards.

Compound(s)	SDG	Samples With Qualified Quantitation Limits ("UJ") or Estimated Positive Results ("J")
alpha-BHC	01-374	APC-WS-4008-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, and APC-WS-4009-0000-01
	01-379	GMP-WS-5001-0000-01 and GMP-WS-5002-0000-01
dieldrin	01-379	GMP-WS-5001-0000-01 and GMP-WS-5002-0000-01
4,4'DDE; endosulfan II; 4,4'-DDD; endrin aldehyde; endosulfan sulfate; 4,4'-DDT; endrin ketone; and methoxychlor	01-375	LPX-LB-4004-0000-01F, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-LB-4009-0000-01F, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, and LPX-LB-4010-0000-01O
4,4'DDE	01-375	LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01O, and LPX-LB-4005-0000-01O

- The quantitation limits for PAH compounds in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" (unless previously flagged "U") on the data tables. In addition, any reported positive results for PAH compounds in the samples listed below should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Low recoveries (<40%) were observed for all of the surrogate compounds in these samples.

SDG	Sample(s) With Qualified Quantitation Limits ("UJ") or Estimated Positive Results ("J") For PAH Compounds
01-375	LPX-LB-4003-0000-01F and LPX-LB-4004-0000-01F
01-377	GMP-LB-5005-0000-01O
01-378	MAP-LB-4001-0000-01F

all samples re-extracted with SDG # 01-67. DDahl 6/5/02

- The quantitation limits for endrin aldehyde and heptachlor epoxide in SDG 01-375 sample LPX-LB-4007-0000-01F may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (<40%) were observed for these compounds in the associated MS/MSD analyses.

- The quantitation limits for *beta*-BHC, *delta*-BHC, endosulfan II, endrin aldehyde, endrin ketone, and heptachlor in SDG 01-375 sample LPX-LB-4009-0000-01O may be higher than reported, and the "not-detected" results have been flagged "UJ" (unless previously flagged "R") on the data tables. In addition, the reported positive results for 4,4′-DDD; 4,4′-DDT; *alpha*-chlordane, and *gamma*-chlordane in this sample should be considered estimated and have been flagged "J" on the data tables. Low recoveries (<40%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive results for benzo(g,h,i)perylene; fluoranthene; indeno(1,2,3-cd)pyrene; and pyrene in SDG 01-376 sample GMP-AE-5010-0000-01 should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. A low recovery (<40%) was observed for pyrene in the associated MSD analysis. In addition, high RPDs (>30%) were observed for benzo(g,h,i)perylene; fluoranthene; and indeno(1,2,3-cd)pyrene in the associated MS/MSD analyses.

- The reported positive results for 4,4′-DDD; 4,4′-DDE; 4,4′-DDT; *alpha*-chlordane; Aroclor-1254; Aroclor-1268; and total Aroclor in SDG 01-375 sample LPX-LB-4004-0000-01O should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed between the results for these compounds in the associated laboratory duplicate analyses.

- The reported positive results for 4,4′-DDD; 4,4′-DDE; 4,4′-DDT; *alpha*-chlordane; dieldrin; and *gamma*-chlordane in SDG 01-375 sample LPX-LB-4009-0000-01O should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed for these compounds in the associated MS/MSD analyses.

- The quantitation limits for endosulfan II in all SDG 01-376 samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. A low recovery (<40%) was observed for endosulfan II in the associated LCS analysis.

- The quantitation limits for *delta*-BHC, endosulfan I, endosulfan II, and endrin aldehyde in SDG 01-376 sample GMP-AE-5010-0000-01 may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, the reported positive results for dieldrin, *gamma*-chlordane, *gamma*-BHC, and heptachlor epoxide in this sample should be considered estimated and have been flagged "J" on the data tables. Low recoveries (<40%) were observed for these compounds, except *gamma*-BHC, in the associated MS/MSD analyses. In addition, high RPDs (>30%) were observed for dieldrin, *gamma*-chlordane, *gamma*-BHC, and heptachlor epoxide in the associated MS/MSD analyses.

- The reported positive results for benzo(g,h,i)perylene and pyrene in all SDG 01-377 samples should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. High %Ds (>30%) were observed for these compounds in the associated SRM sample.

- The quantitation limits for endosulfan I, endosulfan II, endrin aldehyde, heptachlor, and methoxychlor in SDG 01-377 sample GMP-LB-5007-0000-01O may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (<40%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive results for 4,4'-DDD; 4,4'DDE; and *alpha*-chlordane in SDG 01-377 sample GMP-LB-5007-0000-01O should be considered estimated and have been flagged "J" on the data tables. High recoveries (>120%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive results for 4,4'-DDD; 4,4'-DDE; and dieldrin in SDG 01-377 sample GMP-LB-5007-0000-01O should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive results for 4,4'-DDD and 4,4'-DDT in SDG 01-578 sample RAB-LB-5003-0000-01O should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed for these compounds in the associated MS/MSD analyses.

- The quantitation limits for endosulfan II and endrin aldehyde in SDG 01-377 sample GMP-LB-5006-0000-01F may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. Low recoveries (<40%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive results for 4,4'-DDE; dieldrin; *gamma*-chlordane; Aroclor-1254; Aroclor-1268; and total Aroclor in SDG 01-377 sample GMP-LB-5005-0000-01O should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed between the results for these compounds in the associated laboratory duplicate analyses.

- The reported positive results benzo(b)fluoranthene and benzo(k)fluoranthene in SDG 01-378 sample MAP-LB-4003-0000-01O should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. High RPDs (>30%) were observed between the results for these compounds in the associated laboratory duplicate analyses.

- The reported positive result for benzo(g,h,i)perylene in SDG 01-379 sample GMP-WS-5002-0000-01 should be considered estimated and has been flagged "J" (unless previously flagged "U") on the data tables. Low recoveries (<40%) were observed for this compound in the associated MS/MSD analyses.

- Any reported positive results for pesticide/PCB compounds in SDG 01-379 samples GMP-WS-5001-0000-01 and GMP-WS-5006-0000-01 should be considered estimated and have been flagged "J" on the data tables. High recoveries (>125%) were observed for one of the surrogate compounds in these samples.

- The quantitation limits for endosulfan I in SDG 01-379 sample GMP-WS-5002-0000-01 may be higher than reported, and the "not-detected" result has been flagged "UJ" on the data tables. The reported positive results for 4,4′-DDD and 4,4′-DDE in SDG 01-379 sample GMP-WS-5002-0000-01 should be considered estimated and have been flagged "J" on the data tables. Low recoveries (<40%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive results for 4,4′-DDE and *alpha*-chlordane in SDG 01-379 sample GMP-WS-5002-0000-01 should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed for these compounds in the associated MS/MSD analyses.

- The reported positive result for Aroclor-1254 in SDG 01-379 sample GMP-WS-5002-0000-01 should be considered estimated and has been flagged "J" on the data tables. A high RPD (>30%) was observed between the results for this compound in the associated laboratory duplicate analyses.

- The reported positive results for Total Aroclor in all samples with estimated positive results (flagged "J"), for Aroclor-1254, and/or for Aroclor-1268 should be considered estimated and have been flagged "J" on the data tables. The laboratory-reported results for Total Aroclor represent the sum of the observed positive results for all Aroclor compounds.

- The reported positive results for Total PAHs in all samples with estimated positive results (flagged "J") for any PAH compound should be considered estimated and have been flagged "J" on the data tables. The laboratory-reported results for Total PAHs represent the sum of the observed positive results for all PAH compounds.

- Based on the project-specific reporting requirements, all reported positive results with concentrations between the laboratory method detection limit and the project reporting limit should be considered estimated and have been flagged "J" on the data tables.

Complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the methods and examined in this data review.

B. Conclusions

Overall, the data quality is satisfactory. Based on this QA review, several pesticide/PCB compound results were qualified as unusable due to very low surrogate recoveries and very low MS/MSD recoveries. In addition, several PAH compound results were qualified as "not-detected" due to blank contamination. Furthermore, several pesticide/PCB and PAH compound results were qualified as estimated due to exceeded holding times, high and low surrogate recoveries, a low LCS recovery, high and low MS/MSD recoveries, MS/MSD imprecision, laboratory duplicate imprecision, SRM sample imprecision, calibration issues, and quantitation of positive results below the project-required quantitation limits. Overall, the data are acceptable for use, provided the data user understands the limitations and qualifications stated in this QA review. The Laboratory Case Narratives and Chain-of-Custody Records are presented in Sections 4 and 5, respectively.

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Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 20 tissue samples (including QC samples) were performed by Battelle Laboratories (Battelle) of Duxbury, Massachusetts. The samples were collectively analyzed for select polynuclear aromatic hydrocarbons (PAH) by selective ion monitoring by Battelle Method SOP 5-157-05 and for pesticide/PCB compounds by Battelle Method SOP 5-128-05. These analyses are specified on Table 1. The laboratory organized the samples into one sample delivery group (SDG 01-672).

The findings in this report are based upon a rigorous review of holding times, condition of samples upon laboratory receipt, blank analysis results, laboratory control sample (LCS) recoveries, matrix spike (MS)/matrix spike duplicate (MSD) recoveries and precision, laboratory duplicate precision, surrogate recoveries, instrument sensitivity, analytical sequence, and calibrations.

Overall, the organic data quality appears to be acceptable. Analytical and reporting requirements defined in the QAPP were met for this data set, with the exception of the items identified in the following sections of this QA review; it should be emphasized that these items do not necessarily impact data usability. Based upon a Tier II review of the data provided, the organic data qualifiers associated with the samples that underwent limited data validation are presented in the subsequent Organic Data Qualifiers section. These qualifiers should not be applied to any organic results that did not undergo data validation. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the data usability issues that follow should not necessarily be construed as an indication of laboratory performance.

Noncorrectable Deficiencies

1. High percent differences (%Ds>25%) were observed for *gamma*-BHC and *delta*-BHC in continuing calibration verifications (CCVs) associated with project samples. According to the QAPP (Worksheet #21), the laboratory should reanalyze the Check Standard Solution or recalibrate the system if any percent difference is greater than 25%. The laboratory did not reanalyze the standards or recalibrate the system. The impact on data usability due to the high %Ds is addressed in the subsequent Organic Data Qualifiers section.

2. The reported sample cooler temperature upon laboratory receipt for the sample cooler containing samples A-TS-35-N, A-TS-57-N, G-TS-02-N, and L-TS-63-N was 19.7°C. According to the QAPP (Worksheet #22A), samples must be frozen when shipped. Due to the stability of the target compounds at temperatures less than 20°C, qualification of data was not warranted due to the elevated sample temperature upon receipt.

not relevant to fish tissue data. DrDahl 6/5/02

Comments

1. For the PAH fraction, the tentatively identified compounds (TICs) reported for the project samples were evaluated for the presence of target compounds or surrogate standards. Target compounds and surrogate standards were not reported as TICs for the project samples.

2. The laboratory did not provide sample receipt information (sample custody records, Sample Receipt Forms, and sample login reports) for samples LPX-LB-4004-0000-01, GMP-LB-5005-0000-01, and MAP-LB-4001-0000-01. The data reviewer was able to obtain these data from other project data packages.

With respect to data usability, the principal areas of concern include blank contamination, MS/MSD results, laboratory duplicate imprecision, a continuing calibration issue, and quantitation of results below the project-required quantitation limit. Based on a Tier II review of the data provided, the following organic data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Organic Data Qualifiers

- Due to the trace-level presence of the following compounds in the associated method blanks, the reported positive results for the following compounds in the samples listed below should be considered "not-detected" and have been flagged "U" on the data tables. Furthermore, results that were reported below the sample-specific quantitation limit were replaced with the quantitation limit and the appropriate "U" qualifier. It should be noted that sample weights were taken into consideration when evaluating blank contamination.

Compound(s)	Sample(s) With Results Qualified as "Not-Detected" ("U")
biphenyl and naphthalene	all samples
2-methylnaphthalene	GMP-LB-5005-0000-01 and LPX-LB-4004-0000-01
anthracene and fluoranthene	LPX-LB-4004-0000-01 and MAP-LB-4001-0000-01
chrysene and pyrene	GMP-LB-5005-0000-01, LPX-LB-4004-0000-01, and MAP-LB-4001-0000-01
phenanthrene	LPX-LB-4004-0000-01

- The quantitation limits for endrin aldehyde in sample LPX-LB-4003-0000-01; for endosulfan I, endosulfan II, and endrin aldehyde in sample GMP-LB-5005-0000-01; and for endosulfan I and endrin aldehyde in sample CMS-EW-4003-0000-01 may be higher

than reported and have been flagged "UJ" on the data tables. Low recoveries (<40%) were observed for endosulfan I, endosulfan II, and endrin aldehyde in the associated MS/MSD analyses.

- The reported positive result for 4,4′-DDE in sample GMP-LB-5005-0000-01 should be considered estimated and has been flagged "J" on the data tables. High recoveries (>125%) was observed for 4,4′-DDE in the associated MS/MSD analyses.

- The reported positive result for *alpha*-chlordane in sample GMP-LB-5005-0000-01 should be considered estimated and has been flagged "J" on the data tables. A high relative percent difference (RPD>30%) was observed for *alpha*-chlordane in the associated MS/MSD analyses.

- The reported positive results for fluoranthene, phenanthrene, and Total PAHs in sample GMP-LB-5005-0000-01 and for phenanthrene in sample LPX-LB-4003-0000-01 should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed for these compounds in the associated laboratory duplicate analyses.

- The reported positive results for Aroclor-1254, Aroclor-1268, Total Aroclor, and technical chlordane in sample LPX-LB-4003-0000-01; for 4,4′-DDT; *alpha*-chlordane, dieldrin, Aroclor-1254, Aroclor-1268, Total Aroclor; and technical chlordane in sample GMP-LB-5005-0000-01; and for *alpha*-chlordane, *gamma*-chlordane, technical chlordane, Aroclor-1254, and Total Aroclor in sample CMS-EW-4005-0000-01 should be considered estimated and have been flagged "J" on the data tables. High RPDs (>30%) were observed for these compounds in the associated laboratory duplicate analyses.

- The quantitation limits for *gamma*-BHC and *delta*-BHC in all samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. High percent differences (%Ds>25%) were observed for these compounds in associated continuing calibration standards.

- The reported positive results for Total Aroclor in all samples with estimated positive results (flagged "J"), for Aroclor-1254, and/or for Aroclor-1268 should be considered estimated and have been flagged "J" on the data tables. The laboratory-reported results for Total Aroclor represent the sum of the observed positive results for all Aroclor compounds.

- The reported positive results for Total PAHs in all samples with estimated positive results (flagged "J") for any PAH compound should be considered estimated and have been flagged "J" on the data tables. The laboratory-reported results for Total PAHs represent the sum of the observed positive results for all PAH compounds.

- Based on the project-specific reporting requirements, all reported positive results with concentrations between the laboratory method detection limit and the project quantitation limit should be considered estimated and have been flagged "J" on the data tables.

Complete support documentation for this organic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the methods and examined in this data review.

B. Conclusions

Overall, the data quality is acceptable. Based on this QA review, several PAH results were qualified as "not-detected" due to blank contamination. In addition, several PAH and pesticide/PCB results were qualified as estimated due to MS/MSD results, a continuing calibration issue, laboratory duplicate imprecision, and quantitation of results below the project-required reporting limit. Overall, the data are acceptable for use, provided the data user understands the limitations and qualifications stated in this QA review. The Laboratory Case Narratives, and Chain-of-Custody Records are presented in Sections 4 and 5 respectively.

Report prepared by:

Glenn S. Esler
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Date: 3/6/02

ENVIRONMENTAL STANDARDS

Setting the Standards for Innovative Environmental Solutions

March 1, 2002

Ms. Deirdre Dahlen
Battelle Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Dear Ms. Dahlen:

Environmental Standards, Inc. performed a quality assurance (QA) review of the tentatively identified compound (TIC) results generated from the analysis of the investigative tissue samples for polyaromatic hydrocarbons (PAHs) by Battelle SOP 5-157-05. The samples were collected from the Centredale Manor Restoration Project Superfund Site in North Providence, Rhode Island. The investigative samples were grouped into Sample Delivery Groups 01-373, 01-374, 01-375, 01-376, 01-377, 01-378, and 01-379 by Battelle Laboratories of Duxbury, Massachusetts.

This QA review was performed in accordance with the "Region I, EPA New England Data Validation Functional Guidelines for Evaluating Environmental Analyses" (US EPA, 12/96) and the "Centerdale Manor Restoration Project, Tasks 19-22 Quality Assurance Project Plan (QAPP)" (Battelle, 5/01).

This QA review was based upon a Region I Tier II limited data validation (Tier II) of the TIC results. The Tier II QA review of the TIC data includes verification that reported TIC peaks were not surrogate compounds or internal standards and that target compounds from other organic fractions had not been reported as TICs.

Based on the data evaluated, the TIC data are acceptable as reported. It should be noted that while no surrogate or internal standard compounds were identified by name, several samples included a peak with an identical peak area as the internal standard peak area; however, the retention times were slightly different. The Tentatively Identified Compound Summaries for the samples with potential Internal Standard Identifications are enclosed.

If you have any questions/comments, please do not hesitate to call.

Sincerely,

Thomas M. Roberts III
Quality Assurance Chemist

Concurred by:

David R. Blye, CEAC
Quality Assurance Specialist/
Principal

TMR/DRB:hm
Enc.

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SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 7 Sep 2001 12:47 pm
Data File: H:\A\DATA\SQA176\A6502.D
Name: W5496
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
unknown	21.88	1002.2	ng	4387480	1	25.86	4382430	1001.0
Pentadecane	25.76	1001.0	ng	4382430	1	25.86	4382430	1001.0
Pentadecane	27.61	646.5	ng	2830640	1	25.86	4382430	1001.0
Heptadecane	29.65	1146.2	ng	5017930	1	25.86	4382430	1001.0
9-Hexadecenoic ac...	33.27	928.8	ng	4066330	1	25.86	4382430	1001.0
Hexadecanoic acid...	33.58	1961.1	ng	8585960	1	25.86	4382430	1001.0
14-Octadecenoic a...	36.41	2396.8	ng	10493200	1	25.86	4382430	1001.0
13-Octadecenoic a...	36.47	619.9	ng	2714080	1	25.86	4382430	1001.0
Octadecanoic acid...	36.73	738.5	ng	3233420	1	25.86	4382430	1001.0
Squalene	46.73	3010.8	ng	13181700	1	25.86	4382430	1001.0

SAMPLE_NO LPX AE 4004
LAB_ID W5496 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 4:23 pm
Data File: H:\A\DATA\SQA176\A6499.D
Name: W5494
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Octadienal, (...	21.89	1553.2	ng	3911650	1	25.86	2521020	1001.0
Hexadecane	25.76	1001.0	ng	2521020	1	25.86	2521020	1001.0
Heptadecane	29.65	1981.6	ng	4990610	1	25.86	2521020	1001.0
Methyl tetradecan...	30.09	1120.8	ng	2822650	1	25.86	2521020	1001.0
9-Hexadecenoic ac...	33.27	2293.1	ng	5775100	1	25.86	2521020	1001.0
Hexadecanoic acid...	33.59	3940.3	ng	9923610	1	25.86	2521020	1001.0
10-Octadecenoic a...	36.41	4737.3	ng	11931000	1	25.86	2521020	1001.0
10-Octadecenoic a...	36.48	1121.1	ng	2823570	1	25.86	2521020	1001.0
Octadecanoic acid...	36.74	1217.9	ng	3067260	1	25.86	2521020	1001.0
Squalene	46.73	4499.7	ng	11332500	1	25.86	2521020	1001.0

SAMPLE_NO LPX AE 4002
LAB_ID W5494 01
LABORATORY BATD
S06 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 6 Sep 2001 11:13 am
Data File: H:\A\DATA\SQA176\A6541.D
Name: W5415DUP
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Heptadecane	25.74	1001.0	ng	3212570	1	25.83	3212570	1001.0
Heptadecane	29.62	2084.7	ng	6690650	1	25.83	3212570	1001.0
unknown	32.87	851.6	ng	2733070	1	25.83	3212570	1001.0
1-Heptadecene	33.03	2150.7	ng	6902500	1	25.83	3212570	1001.0
9-Hexadecenoic ac...	33.25	2259.0	ng	7249900	1	25.83	3212570	1001.0
Hexadecanoic acid...	33.56	2985.0	ng	9580030	1	25.83	3212570	1001.0
9,12-Octadecadien...	36.29	993.8	ng	3189460	1	25.83	3212570	1001.0
10-Octadecenoic a...	36.38	2553.7	ng	8195720	1	25.83	3212570	1001.0
Squalene	46.69	3927.9	ng	12605900	1	25.83	3212570	1001.0
unknown	61.32	9078.4	ng	29135900	1	25.83	3212570	1001.0

SAMPLE_NO APC AE 4007
LAB_ID W5415DUP 01
LABORATORY BATD
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 5:35 pm
Data File: H:\A\DATA\SQA176\A6494.D
Name: W5415
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Pentadecane	25.74	1001.0	ng	2925610	1	25.84	2925610	1001.0
Heptadecane	29.63	2159.7	ng	6312030	1	25.84	2925610	1001.0
1-Heptadecanol	32.85	2372.0	ng	6932620	1	25.84	2925610	1001.0
1-Heptadecene	33.04	2435.4	ng	7117950	1	25.84	2925610	1001.0
9-Hexadecenoic ac...	33.26	2523.5	ng	7375460	1	25.84	2925610	1001.0
Hexadecanoic acid...	33.57	3195.5	ng	9339540	1	25.84	2925610	1001.0
9,12-Octadecadien...	36.30	1533.1	ng	4480610	1	25.84	2925610	1001.0
14-Octadecenoic a...	36.39	4564.4	ng	13340400	1	25.84	2925610	1001.0
Squalene	46.71	3846.8	ng	11243100	1	25.84	2925610	1001.0
unknown	53.86	899.0	ng	2627590	1	25.84	2925610	1001.0

SAMPLE_NO APC AE 4007
LAB_ID W5415 01
LABORATORY, BATO
SDG 01373 FRACTION W

SQA176FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 5 Sep 2001 1:40 pm
Data File: H:\A\DATA\SQA176\A6492.D
Name: W5413
Misc:
Method: H:\A\DATA\SQA176FX.M (RTE Integrator)
Title: Sull Scan TIC analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Pentadecane	25.74	1001.0	ng	1693270	1	25.84	1693270	1001.0
Heptadecane	29.63	1292.9	ng	2187060	1	25.84	1693270	1001.0
Methyl tetradecan...	30.08	2062.7	ng	3489140	1	25.84	1693270	1001.0
9-Hexadecenoic ac...	33.26	3212.4	ng	5434020	1	25.84	1693270	1001.0
Hexadecanoic acid...	33.57	5786.9	ng	9788970	1	25.84	1693270	1001.0
10-Octadecenoic a...	36.39	8125.1	ng	13744300	1	25.84	1693270	1001.0
12-Octadecenoic a...	36.46	1679.7	ng	2841410	1	25.84	1693270	1001.0
Octadecanoic acid...	36.72	1779.7	ng	3010530	1	25.84	1693270	1001.0
Squalene	46.70	5657.1	ng	9569430	1	25.84	1693270	1001.0

SAMPLE_NO APC AE 4005
LAB_ID W5413 01
LABORATORY BATO
SDG 01373 FRACTION W

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 12:01 pm
Data File: H:\E\DATA\SQE032\E1217.D
Name: W5632
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Indole	22.02	737.4	ng	5416620	1	26.39	7352980	1001.0
Cyclohexasiloxane...	22.45	2070.1	ng	15206300	1	26.39	7352980	1001.0
Cycloheptasiloxan...	26.20	1001.0	ng	7352980	1	26.39	7352980	1001.0
Hexadecanoic acid...	34.15	1174.7	ng	8629060	1	26.39	7352980	1001.0
Ethyl 9-hexadecen...	34.96	1661.7	ng	12206000	1	26.39	7352980	1001.0
9,12-Octadecadien...	36.89	700.5	ng	5145320	1	26.39	7352980	1001.0
9-Octadecenoic ac...	36.98	1131.4	ng	8311070	1	26.39	7352980	1001.0
Triolein	39.38	717.0	ng	5266850	1	26.39	7352980	1001.0
5,8,11,14-Eicosat...	40.28	1768.4	ng	12990200	1	26.39	7352980	1001.0
2,6,10,14,18-Pent...	47.60	1087.9	ng	7991540	1	26.39	7352980	1001.0

SAMPLE_NO LPX LB 4010
LAB_ID W5532 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 9:26 am
Data File: H:\E\DATA\SQE032\E1215.D
Name: W5630
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.43	2100.7	ng	29340700	1	26.38	13981300	1001.0
Cycloheptasiloxan...	26.21	1001.0	ng	13981300	1	26.38	13981300	1001.0
unknown	29.55	478.7	ng	6686120	1	26.38	13981300	1001.0
Hexadecanoic acid...	34.15	884.1	ng	12348500	1	26.38	13981300	1001.0
Ethyl 9-hexadecen...	34.95	692.4	ng	9671260	1	26.38	13981300	1001.0
9-Octadecenoic ac...	36.98	904.6	ng	12634800	1	26.38	13981300	1001.0
5,8,11,14-Eicosat...	40.27	851.7	ng	11896400	1	26.38	13981300	1001.0
column bleed	43.26	556.3	ng	7769800	1	26.38	13981300	1001.0
Cyclononasiloxane...	47.56	657.5	ng	9183470	1	26.38	13981300	1001.0
Cholest-5-en-3-ol...	49.93	917.0	ng	12808600	1	26.38	13981300	1001.0

SAMPLE_NO LPX LB 4009
LAB_ID W5530 01
LABORATORY BATD
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 4:15 am
Data File: H:\E\DATA\SQE032\E1211.D
Name: W5516
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
2,4-Decadienal, (...	22.40	1247.0	ng	5933990	1	26.36	4763460	1001.0
unknown	26.90	1001.0	ng	4763460	1	26.36	4763460	1001.0
9-Hexadecenoic ac...	33.80	650.3	ng	3094700	1	26.36	4763460	1001.0
Hexadecanoic acid...	34.11	1504.4	ng	7159160	1	26.36	4763460	1001.0
9,12-Octadecadien...	36.86	964.3	ng	4588890	1	26.36	4763460	1001.0
9-Octadecenoic ac...	36.95	1857.4	ng	8838920	1	26.36	4763460	1001.0
Linoleic acid eth...	37.86	622.2	ng	2960810	1	26.36	4763460	1001.0
5,8,11,14-Eicosat...	40.22	699.4	ng	3328130	1	26.36	4763460	1001.0
2,6,10,14,18,22-T...	47.57	2341.2	ng	11141100	1	26.36	4763460	1001.0
Cholesta-3,5-diene	49.83	827.3	ng	3936960	1	26.36	4763460	1001.0

SAMPLE_NO LPX LB 4907
LAB_ID W5516 01
LABORATORY BATO
SDG 01375 FRACTION 0

SQE032FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: DPB Date Acquired: 23 Sep 2001 1:40 am
Data File: H:\E\DATA\SQE032\E1209.D
Name: W5514
Misc: SOP 5-157 B#01-375
Method: H:\E\DATA\SQE032FX.M (RTE Integrator)
Title: GC/MS TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	22.37	508.5	ng	2988350	1	26.35	5882320	1001.0
Cyclohexasiloxane...	22.44	1769.0	ng	10395500	1	26.35	5882320	1001.0
column bleed	26.19	1001.0	ng	5882320	1	26.35	5882320	1001.0
unknown	29.54	573.3	ng	3369200	1	26.35	5882320	1001.0
Hexadecanoic acid...	38.16	527.8	ng	3101590	1	26.35	5882320	1001.0
Octadecanoic acid...	40.98	505.1	ng	2968120	1	26.35	5882320	1001.0
column bleed	43.25	633.9	ng	3725170	1	26.35	5882320	1001.0
column bleed	45.22	610.1	ng	3585350	1	26.35	5882320	1001.0
column bleed	47.54	1288.0	ng	7568690	1	26.35	5882320	1001.0
column bleed	50.36	629.6	ng	3699850	1	26.35	5882320	1001.0

SAMPLE_NO LPX LB 4006
LAB_ID W5514 01
LABORATORY BATO
SOG 01375 FRACTION 0

SQA181FX.lsc
Tentatively Identified Compound (LSC) summary

Operator ID: Date Acquired: 24 Sep 2001 2:24 pm
Data File: H:\A\DATA\SQA181\A6755.D
Name: W5640
Misc: SOP 5-157
Method: H:\A\DATA\SQA181FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Tridecane	21.12	109.6	ng	2267560	1	25.54	10355600	500.5
Hexadecane	25.49	500.5	ng	10355600	1	25.54	10355600	500.5
Methyl tetradecan...	29.80	123.4	ng	2554000	1	25.54	10355600	500.5
9-Hexadecenoic ac...	32.97	317.6	ng	6571990	1	25.54	10355600	500.5
Hexadecanoic acid...	33.29	381.9	ng	7902470	1	25.54	10355600	500.5
Ethyl 9-hexadecen...	34.07	150.5	ng	3113770	1	25.54	10355600	500.5
9,12-Octadecadien...	36.01	108.6	ng	2247240	1	25.54	10355600	500.5
10-Octadecenoic a...	36.10	482.8	ng	9990230	1	25.54	10355600	500.5
Ethyl Oleate	37.08	128.3	ng	2654140	1	25.54	10355600	500.5
2,6,10,14,18,22-T...	46.27	120.9	ng	2501880	1	25.54	10355600	500.5

SAMPLE_NO RAB AE 5002
LAB_ID W5640 01
LABORATORY BATD
SDG 01376 FRACTION W

SQA189FX.lsc
Tentatively Identified Compound (LSC) summary

)perator ID: DPB Date Acquired: 24 Oct 2001 1:25 am
)ata File: H:\A\DATA\SQA189\A7026.D
Name: W5653DUP
Misc: SOP 5-157 B#01-378
Method: H:\A\DATA\SQA189FX.M (RTE Integrator)
Title: Centredale TIC Analysis
Library Searched: C:_PUBLIC\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexasiloxane...	21.45	2083.2	ng	16805100	1	25.32	8075100	1001.0
Cycloheptasiloxan...	25.18	1001.0	ng	8075100	1	25.32	8075100	1001.0
Unknown	28.51	538.8	ng	4346680	1	25.32	8075100	1001.0
Ethyl 9-hexadecen...	33.88	538.7	ng	4345610	1	25.32	8075100	1001.0
Octadecanoic acid...	39.92	591.2	ng	4769560	1	25.32	8075100	1001.0
Column bleed	42.14	519.5	ng	4190800	1	25.32	8075100	1001.0
Column bleed	43.92	594.2	ng	4793280	1	25.32	8075100	1001.0
Column bleed	45.94	682.5	ng	5506070	1	25.32	8075100	1001.0
Column bleed	48.37	586.3	ng	4729800	1	25.32	8075100	1001.0
Cholesterol	53.23	14720.1	ng	118748000	1	25.32	8075100	1001.0

SAMPLE_NO MAP LB 4003
LAB_ID W5653DUP 01
LABORATORY BATD
SOG 01378 FRACTION 0

Section 1 Quality Assurance Review

A. Inorganic Data

The inorganic analyses of 19 tissue samples (including QC samples) 16 crayfish samples (including QC samples), 18 worm samples (including QC samples), and 204 fish samples (Including QC samples) were performed by Battelle Marine Sciences Laboratory (MSL) of Sequim, Washington. The samples were collectively analyzed for beryllium, aluminum, vanadium, chromium, manganese, iron, zinc, and silver by Battelle-MSL Method MSL-I-027-03; for cobalt, nickel, arsenic, molybdenum, copper, cadmium, antimony, thallium, barium, and lead by Battelle-MSL Method MSL-I-022-04; for methylmercury by Battelle Method MSL-I-015-05; for selenium by Battelle-MSL Method MSL-I-029-03; and for mercury by Battelle-MSL Method MSL-I-016-03. These analyses are specified on Table 1. The laboratory organized the samples into one SDG (SDG 1678).

The findings in this report are based upon a Tier II review of sample holding times, condition of samples upon laboratory receipt, blank analysis results, laboratory and field duplicate precision, blank spike recoveries, matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision, standard reference material (SRM) results, instrument sensitivity, method detection limits (MDLs), and calibrations.

Overall, the inorganic appears to be acceptable. The data reviewer has edited the QC forms based on the deficiencies listed in this QA review. Analytical and reporting requirements defined in the QAPP were met for this data set, with the exception of the items identified in the following sections of this QA review; it should be emphasized that these items do not necessarily impact data usability. Based upon a Tier II review of the data provided, the inorganic data qualifiers associated with the samples that underwent a Tier II review are presented in the subsequent Inorganic Data Qualifiers Section. These qualifiers should not be applied to any inorganic results that did not undergo a Tier II review. Data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the data usability issues that follow should not necessarily be construed as an indication of laboratory performance.

Correctable Deficiencies

1. The laboratory-reported sequence numbers on the ICP/MS Sample Entry Report and on the Data Set summary for data set 1678-3 do not correspond. The data reviewer was able to determine the sequence numbers are "off" by six.

2. The laboratory did not report all of the samples analyzed on 11/10/01 on the associated ICP Analytical Sequence form.

3. The laboratory did not summarize the results of the initial calibrations for the majority of the analyses in this data set. The data reviewer was unable to evaluate the linearity of the calibrations for these analyses. All continuing calibration verification (CCV) standard recoveries were within the acceptance limits; therefore, data were not qualified due to this issue.

4. The laboratory did not summarize calibration blank results for any of the analyses in this data set. The data reviewer used the procedural blank results to evaluate the usability of the project sample data.

5. The laboratory did not summarize the internal standard responses for the ICPMS analyses performed by Battelle-MSL Method MSL-I-022-04. According to the method (Section 6.8), the internal standard responses should be within 60-125% of the original response in the calibration blank. The data reviewer could not evaluate the internal standard responses for compliance.

6. The laboratory flagged the lead results with a "U" on the sample results summary form for several fish tissue samples analyzed on 9/10/01. The levels of lead in these samples were above the MDL and the results should not have been flagged "U". The data reviewer deleted the "U" flags from the data tables.

7. The laboratory reported sample IDs of "LPX-LB-4009-0000-00" and "LPX-LB-4010-0000-00" on the sample results summary form for samples LPX-LB-4009-0000-01 and LPX-LB-4010-0000-01.

8. The laboratory did not summarize the calibration verification standard, calibration blank, interference check sample, and/or serial dilution results for the ICP analyses performed on 9/12/01 and 9/25/01. The data reviewer was able to evaluate these QC samples only on a pass/fail basis using the results reported on the analytical sequence lists.

9. The laboratory reported a collection date of "6/23/01" on the Sample Login form for samples GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, and GMP-AE-5010-0000-01. According to the Chain-of-Custody record, these samples were collected on 6/25/01.

Noncorrectable Deficiencies

1. The laboratory analyzed more than 10 samples between calibration verification standards for the methylmercury sequences analyzed on 8/8/01 and 9/4/01. According to Battelle Method MSL-I-015-05 (Table 1), methylmercury calibration verification standards must be analyzed every 10 samples. The associated project samples were bracketed by QC-compliant verification standards; therefore, qualification of data was not warranted due to this issue.

2. The laboratory did not perform serial dilution analyses in association with the ICP samples analyzed on 9/20/01, 9/25/01, 11/10/01, 11/11/01, and 11/12/01. According to Battelle-MSL Method MSL-I-027-03 (Section 7.2.1), a serial dilution analysis must be performed with each batch of samples. The Environmental Standards data reviewer was

① Serial dilutions were run if instrument problems (e.g., interferences) were suspected; serial dilutions, if any, were identified with an L in the Laboratory ID. the Laboratory SOP will be reviewed and modified, as appropriate, to ensure that this procedure is accurately described. BL for DTD 6-26-02

unable to assess chemical or physical interferences that would be demonstrated by serial dilution results.

3. The temperatures of the coolers received by the laboratory on 6/22/01 were 14.5°C and 8.3°C. In addition, laboratory comments on the Chain-of-Custody records indicated that the samples received on 6/29/01 were frozen. According to the QAPP (Worksheet #22a), the cooler temperature for tissue samples must be < 6°C and the samples must be visually inspected upon receipt to determine if the samples are frozen. Data were not qualified due to this deficiency.

Comments

1. The laboratory reported all observed detections as positive results. Battelle project management indicated to the Environmental Standards data reviewer that this reporting convention was consistent with project requirements. US EPA reporting conventions typically dictate that results with concentrations less than the MDL or the instrument detection limit (IDL) are reported as "not-detected" results. As part of this Tier II review, the Environmental Standards data reviewer did not alter the laboratory-reported results. The impact of this reporting issue on data quality is addressed in the Inorganic Data Qualifiers section.

2. Samples DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, and DYP-AE-5003-0000-01 were reported with 4000-series ID numbers on the data tables. The 5000-series ID numbers were used to refer to these samples in this QA review. As instructed by Battelle personnel, the Environmental Standards data reviewer did not edit the sample identifications on the electronic data deliverables or data tables. Good – 4000 series IDs are correct for DYP samples. DD 6/5/0

3. The laboratory noted on the Chain-of-Custody record that the samples received on 6/26/01 were mislabeled with 4000-series ID numbers and that the samples should have been labeled with 5000-series IDs. The 5000-series IDs were used to refer to the samples in question in this QA review. As instructed by Battelle personnel, the Environmental Standards data reviewer did not edit the sample identifications on the electronic data deliverables or data tables.

With respect to data usability, the principal areas of concern are blank contamination, laboratory and field duplicate imprecision, low and high MS/MSD recoveries, MS/MSD imprecision, SRM imprecision, low and high blank spike recoveries, and results below the MDL. Based on a rigorous review of the data provided, the following inorganic and wet chemistry data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis may not require corrective action by the laboratory. Accordingly, the following data usability issues should <u>not</u> be construed as an indication of laboratory performance.

Inorganic Data Qualifiers

- Due to the trace-level presence of the following compounds in the associated method blanks and/or calibration blanks, the reported positive results for the following compounds in the samples listed below should be considered "not-detected" and have been flagged "U" on the data tables. Furthermore, results that were reported below the sample specific detection limits were replaced with the detection limit and the appropriate "U" qualifier. It should be noted that sample weights were taken into consideration when evaluating blank contamination.

Analyte	Samples With Positive Results Qualified as "Not-Detected" ("U")
aluminum	MAP-LB-4001-0000-01F, MAP-LB-4002-0000-01F, LPX-DU-062101-0000-DF, GMP-CF-5001-0000-01, GMP-CF-5002-0000-01, RWR-CF-5004-0000-01, CMS-CF-4003-0000-01, LPX-CF-4001-0000-01, LPX-CF-4002-0000-01, LPX-CF-4004-0000-01, WRL-CF-4005-0000-01, GMP-LB-5006-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5004-0000-01F, GMP-LB-5007-0000-01F, GMP-LB-5010-0000-01F, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, RAB-LB-5003-0000-01O, RAB-AE-5004-0000-01, RAB-LB-5004-0000-01O, RAB-AE-5006-0000-01, LPX-LB-4009-0000-01F, MAP-LB-4003-0000-01F, GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5004-0000-01F, GMP-LB-5005-0000-01F, GMP-LB-5009-0000-01F, RAB-LB-5001-0000-01F, and LPX-LB-4006-0000-01O
arsenic	All fish samples, except LPX-WS-4009-0000-01 All crayfish samples
antimony	GMP-CF-5001-0000-01, RAB-CF-5004-0000-01, CMS-CF-4003-0000-01, LPX-CF-4004-0000-01, all fish samples except LPX-WS-4001-0000-01, LPX-WS-4002-0000-01, LPX-WS-4005-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01, LPX-WS-4009-0000-01, LPX-AE-4004-0000-01, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, and GMP-AE-5006-0000-01
barium	LPX-LB-4006-0000-01F, MAP-LB-4002-0000-01F, MAP-LB-4003-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5005-0000-01F, GMP-LB-5006-0000-01F, GMP-LB-5007-0000-01F, GMP-LB-5010-0000-01F, LPX-LB-4009-0000-01F, RAB-LB-5001-0000-01F, RAB-LB-5003-0000-01F, and RAB-LB-5004-0000-01F

① Note that a total of 8 blanks (procedural) were analyzed for all metals. With very few exceptions, the concentration of metals found in the blanks were either un-detected or detected @ level ≤ 5xMDL. DTD 6/5/02 which meets MPC criteria.

Analyte	Samples With Positive Results Qualified as "Not-Detected" ("U")
beryllium	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-DU-062001-0000-4, APC-WS-4009-0000-01, APC-WS-4010-0000-01, LPX-WS-4003-0000-01, LPX-WS-4004-0000-01, LPX-WS-4005-0000-01, LPX-DU-062101-A, LPX-WS-4006-0000-01, LPX-WS-4010-0000-01, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-DU-062101-B, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LBX-LB-4001-0000-01O, LBX-LB-4002-0000-01O, LBX-LB-4004-0000-01O, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01O, RAB-LB-5004-0000-01O, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01O, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, A-TS-49-L, G-TS-02-L, G-TS-22-L, G-TS-29-L, L-TS-62-L, LTS-84-L, L-TS-89-L, and all cray fish samples
chromium	APC-WS-4009-0000-01, APC-WS-4010-0000-01, LPX-WS-4003-0000-01, LPX-WS-4004-0000-01, LPX-DU-062101-A, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-1O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, LPX-AE-4005-0000-01, LPX-DU-062101-B, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01F, LPX-DU-062101-0000-DF, GMP-WS-5003-0000-01, GMP-WS-5005-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5007-0000-010, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-010, GMP-LB-5009-0000-01F, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4002-0000-01F, RAB-AE-5006-0000-01, GMP-CF-5001-0000-01, RAB-CF-5004-0000-01, and LPX-CF-4004-0000-01
iron	GMP-LB-5010-0000-01F, RAB-LB-5001-0000-01F, RAB-LB-5003-0000-01F, and RAB-LB-5004-0000-01F

Analyte	Samples With Positive Results Qualified as "Not-Detected" ("U")
lead	APC-AE-4008-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4007-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5004-0000-01F, GMP-LB-5006-0000-01F, GMP-LB-5007-0000-01F, GMP-LB-5008-0000-01F, GMP-LB-5009-0000-01F, GMP-LB-5010-0000-01F, LPX-LB-4009-0000-01F, RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5003-0000-01O, RAB-LB-5004-0000-01F, MAP-LB-4002-0000-01F, MAP-LB-4003-0000-01F, RAB-AE-5006-0000-01, and GMP-LB-5005-0000-01F
nickel	GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, GMP-LB-5010-0000-01F, LPX-LB-4009-0000-01F, RAB-LB-5003-0000-01F, and MAP-LB-4003-0000-01F
selenium	LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DF, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, RAB-LB-5004-0000-01O, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, MAP-LB-4002-0000-010, MAP-LB-4003-0000-01F, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, DYP-AE-5003-0000-01, GMP-LB-5003-0000-01F, GMP-LB-5006-0000-01F, and GMP-LB-5007-0000-01F
cadmium	LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-DU-062101-0000-CF, LPX-LB-4005-0000-01F, LPX-LB-4006-0000-01F, LPX-LB-4007-0000-01F, GMP-LB-5001-0000-01F, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5004-0000-01F, GMP-LB-5005-0000-01F, GMP-LB-5006-0000-01F, GMP-LB-5007-0000-01F, GMP-LB-5009-0000-01F, GMP-LB-5010-0000-01F, LPX-LB-4009-0000-01F, RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, MAP-LB-4001-0000-01F, and MAP-LB-4003-0000-01F

Analyte	Samples With Positive Results Qualified as "Not-Detected" ("U")
mercury	LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4007-0000-01O, GMP-AE-5002-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, and GMP-AE-5006-0000-01
molybdenum	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-DU-062101-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-0000-01F, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, LPX-LB-4010-0000-01O, RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5002-0000-01O, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-DU-062101-B, LPX-AE-4006-0000-01, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4002-0000-01F, LPX-LB-4003-0000-01F, LPX-LB-4004-0000-01F, LPX-DU-062101-0000-CF, LPX-LB-4005-0000-01F, LPX-LB-4006-0000-01F, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, RAB-BB-5001-0000-01, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-LB-5003-0000-01F, RAB-LB-5003-000-01O, RAB-LB-5004-0000-01F, RAB-AE-5004-0000-01, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4002-0000-01F, MAP-LB-4003-0000-01F, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, and DYP-AE-5003-0000-01

Analyte	Samples With Positive Results Qualified as "Not-Detected" ("U")
thallium	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062101-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-DU-062101-0000-4, APC-WS-4009-0000-01, APC-WS-4010-0000-01, LPX-WS-4001-0000-01, LPX-WS-4002-0000-01, LPX-WS-4003-0000-01, LPX-WS-4004-0000-01, LPX-WS-4005-0000-01, LPX-DU-062101-A, LPX-WS-4006-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01, LPX-WS-4009-0000-01, LPX-WS-4010-0000-01, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-DU-062101-B, LPX-AE-4006-0000-01, GMP-AE-5010-0000-01, RAB-BB-5001-0000-01, RAB-AE-5003-0000-01, RAB-AE-5005-0000-01, MAP-LB-4002-0000-01F, MAP-LB-4003-0000-01F, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, DYP-AE-5003-0000-01, GMP-WS-5001-0000-01, GMP-WS-5006-0000-01, GMP-WS-5010-0000-01, CMS-CF-4006-0000-01, CMS-CF-4006-0000-01, and LPX-CF-4002-0000-01
silver	APC-DU-062101-0000-B, APC-AE-4005-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4008-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, GMP-LB-5009-0000-01F, MAP-LB-4003-0000-01F, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, DYP-AE-5003-0000-01, RAB-LB-5004-0000-01O, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, MAP-LB-4002-0000-01O, LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01,

Analyte	Samples With Positive Results Qualified as "Not-Detected" ("U")
	GMP-WS-5010-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, A-TS-35-L, A-TS-46-L, A-TS-48-L, A-TS-57-L, G-TS-02-L, G-TS-07-L, G-TS-22-L, G-TS-29-L, L-TS-63-L, L-TS-70-L, and L-TS-89-L
vanadium	APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, LPX-AE-4009-0000-01, APC-WS-4009-0000-01, LPX-AE-4007-0000-01, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-DU-062101-B, LPX-WS-4004-0000-01, LPX-WS-4005-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01O, RAB-CF-5004-0000-01, LPX-LB-4004-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4008-0000-01F, LPX-DU-062101-0000-DF, GMP-WS-5001-0000-01, GMP-WS-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5006-0000-01, GMP-AE-5008-0000-01O, GMP-LB-5009-0000-01F, A-TS-35-L, A-TS-48-L, A-TS-49-L, G-TS-04-L, G-TS-29-L, L-TS-63-L, L-TS-70-L, L-TS-89-L, and A-TS-57-L
zinc	RAB-LB-5004-0000-01O, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, MAP-LB-4002-0000-01O, MAP-LB-4003-0000-01F, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, and DYP-AE-5003-0000-01
aluminum, cobalt, nickel, arsenic, antimony, barium, thallium, and lead	All tissue samples
chromium, selenium, and cadmium	All tissue samples except A-TS-57-L

- The detection limits for the following analytes in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for these analytes in the samples listed below should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. High %Ds (>25%), coupled with a bias towards lower recoveries, were obtained between the observed and true concentrations of these analytes in the associated SRM analyses.

Analyte	Samples With Qualified Detection Limits ("UJ") or Estimated Positive Results ("J")
aluminum	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-DU-062001-0000-4, all crayfish samples, and all worm samples
selenium	LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4007-0000-01O, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-0000-01F, LPX-LB-4009-0000-01O, LPX-4010-0000-01F, LPX-4010-0000-01O, RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5002-0000-01O, RAB-BB-5001-0000-01, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-LB-5003-0000-01F, RAB-LB-5003-0000-01O, and RAB-LB-5004-0000-01F

- The reported positive results for the following analytes in the samples listed below should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. High %Ds (>25%), couple with a bias towards higher recoveries, were obtained between the observed and true concentrations of these analytes in the associated SRM analyses.

Analyte(s)	Samples With Estimated Positive Results ("J")
~~aluminum, selenium, and lead~~	~~All crayfish samples and all worm samples~~
lead	APC-WS-4009-0000-01, APC-WS-4010-0000-01, LPX-WS-4001-0000-01, LPX-WS-4002-0000-01, LPX-WS-4003-0000-01, LPX-WS-4004-0000-01, LPX-WS-4005-0000-01, LPX-DU-062101-A, LPX-WS-4006-0000-01, LPX-WS-4007-0000-01, LPX-WS-4008-0000-01, LPX-WS-4009-0000-01, LPX-WS-4010-0000-01, LPX-AE-4001-0000-01, LPX-AE-4002-0000-01, LPX-AE-4003-0000-01, LPX-AE-4004-0000-01, LPX-AE-4005-0000-01, LPX-DU-062101-B, LPX-AE-4006-0000-01, GMP-LB-5010-0000-01F, LMP-LB-4009-0000-01F, RAB-LB-5001-0000-01F, RAB-LB-5002-0000-01F, RAB-LB-5003-0000-01F, RAB-LB-5004-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, LPX-LB-4010-0000-01O, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01O, RAB-BB-5001-0000-01, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, and RAB-LB-5003-0000-01O
~~lead, iron, and zinc~~	~~LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, and LPX-LB-4007-0000-01O~~
aluminum and chromium	All tissue samples

not relevant to fish data DM 6/5/02

- The detection limits for the following analytes in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for these analytes in the samples listed below should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Low recoveries (<70%) and/or high RPDs (>30%) were observed for these analytes in the associated MS/MSD analyses.

Analyte	Samples With Biased Detection Limits ("UJ") or Estimated Positive Results ("J")
manganese	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-WS-4008-0000-01, and APC-DU-062101-0000-4
mercury	GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-0000-01F, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, LPX-LB-4010-0000-01O, RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5002-0000-01O, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-LB-5003-0000-01F, and RAB-LB-5004-0000-01F
zinc	LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, and LPX-LB-4007-0000-01O
~~beryllium, aluminum, vanadium, barium, chromium, and selenium~~	~~All crayfish samples~~ not relevant to fish tissue data. DTD 6/5/02

Analyte	Samples With Biased Detection Limits ("UJ") or Estimated Positive Results ("J")
selenium	LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, RAB-LB-5004-0000-01O, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, MAP-LB-4002-0000-01O, MAP-LB-4003-0000-01F, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, and DYP-AE-50003-0000-01
vanadium	GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-0000-01F, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, LPX-LB-4010-0000-01O, RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5002-0000-01O, RAB-BB-5001-0000-01, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-LB-5003-0000-01O, and RAB-LB-5004-0000-01F

- The reported positive results for the following analytes in the samples listed below should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. High recoveries (>130%) and/or high RPDs (>30%) were observed for these analytes in the associated MS/MSD analyses.

Analyte	Samples With Estimated Positive Results ("J")
nickel	GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01F, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01F
copper	LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-40061-0000-01O, LPX-LB-4007-0000-01F, and LPX-LB-4007-0000-01O

Analyte	Samples With Estimated Positive Results ("J")
iron	GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-000-01F, LPX-LB-4009-000-01O, LPX-LB-4010-000-01F, LPX-LB-4010-000-01O, RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, RAB-LB-5002-0000-01O, RAB-BB-5001-0000-01, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-02, RAB-AE-5003-0000-01, RAB-LB-5003-0000-01O, and RAB-LB-5004-0000-01F
manganese	RAB-LB-5004-0000-01O, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4001-00001-01O, MAP-LB-4002-0000-01F, MAP-LB-4002-0000-01O, MAP-LB-4003-0000-01F, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, and DYP-AE-5003-0000-01
zinc	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-DU-062001-0000-4, LPX-LB-4008-0000-01F, LPX-LB-4008-0000-01O, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01F

- The detection limits for silver and/or mercury in the following samples may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for silver and/or mercury in these samples should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Low recoveries (<70%) were observed for silver in the associated blank spike analyses.

Analyte(s)	Samples With Qualified Detection Limits ("UJ") or Estimated Positive Results ("J")
silver	LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-LB-4004-0000-01F, LPX-LB-4004-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, and LPX-LB-4007-0000-01O
silver and mercury	GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01F

- The reported positive results for the following analytes in the samples listed below should be considered estimated and have been flagged "J" on the data tables. Large discrepancies were obtained for these analytes in the associated laboratory duplicate analyses.

Analyte	Sample(s) With Estimated Positive Results ("J")
barium	All fish samples except LPX-LB-4004-0000-01O, LPX-LB-4006-0000-01F, LPX-LB-4010-0000-01O, RAB-LB-5004-0000-01O, RAB-AE-5004-0000-01, RAB-AE-5005-0000-01, MAP-LB-4001-0000-01F, MAP-LB-4001-0000-01O, MAP-LB-4002-0000-01F, MAP-LB-4002-0000-01O, MAP-LB-4003-0000-01F, MAP-LB-4003-0000-01O, RAB-BB-5003-0000-01, RAB-AE-5006-0000-01, DYP-AE-5001-0000-01, DYP-AE-5002-0000-01, and DYP-AE-5003-0000-01
~~beryllium~~	~~All worm samples~~ not relevant to fish data DJD 6/5/02
copper	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-DU-062001-0000-4, LPX-LB-4008-0000-01-F, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, and GMP-AE-5006-0000-01

Analyte	Sample(s) With Estimated Positive Results ("J")
~~iron~~	~~All crayfish samples~~ not relevant to fish tissue data. DTD 6/5/02
lead	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-DU-062001-0000-4, and LPX-LB-4008-0000-010
manganese	APC-AE-4001-0000-01, APC-AE-4002-0000-01, APC-AE-4003-0000-01, APC-AE-4004-0000-01, APC-DU-062001-0000-B, APC-AE-4005-0000-01, APC-AE-4006-0000-01, APC-AE-4007-0000-01, APC-AE-4008-0000-01, APC-AE-4009-0000-01, APC-AE-4010-0000-01, APC-WS-4001-0000-01, APC-WS-4002-0000-01, APC-WS-4003-0000-01, APC-WS-4004-0000-01, APC-WS-4005-0000-01, APC-WS-4006-0000-01, APC-WS-4007-0000-01, APC-WS-4008-0000-01, APC-DU-062001-0000-4, LPX-LB-4008-0000-01F, LPX-DU-062101-0000-DF, LPX-DU-062101-0000-DO, GMP-WS-5001-0000-01, GMP-WS-5002-0000-01, GMP-WS-5003-0000-01, GMP-WS-5004-0000-01, GMP-WS-5005-0000-01, GMP-WS-5006-0000-01, GMP-WS-5007-0000-01, GMP-WS-5008-0000-01, GMP-WS-5009-0000-01, GMP-WS-5010-0000-01, GMP-AE-5001-0000-01, GMP-AE-5002-0000-01, GMP-AE-5003-0000-01, GMP-AE-5004-0000-01, GMP-AE-5005-0000-01, GMP-AE-5006-0000-01, GMP-LB-5009-0000-01F, GMP-LB-5009-0000-01O, GMP-LB-5010-0000-01F, GMP-LB-5010-0000-01O, GMP-AE-5010-0000-01, LPX-LB-4009-0000-01F, LPX-LB-4009-0000-01O, LPX-LB-4010-0000-01F, RAB-LB-5001-0000-01F, RAB-LB-5001-0000-01O, RAB-LB-5002-0000-01F, , RAB-LB-5002-0000-01O, RAB-BB-5001-0000-01, RAB-BB-5002-0000-01, RAB-AE-5001-0000-01, RAB-AE-5002-0000-01, RAB-AE-5003-0000-01, RAB-LB-5003-0000-01F, RAB-LB-5003-0000-01O, and RAB-LB-5004-0000-01F
zinc	LPX-AE-4007-0000-01, LPX-AE-4008-0000-01, LPX-AE-4009-0000-01, LPX-AE-4010-0000-01, LPX-LB-4001-0000-01F, LPX-LB-4001-0000-01O, LPX-LB-4002-0000-01F, LPX-LB-4002-0000-01O, LPX-LB-4003-0000-01F, LPX-LB-4003-0000-01O, LPX-DU-062101-0000-CF, LPX-DU-062101-0000-CO, LPX-LB-4005-0000-01F, LPX-LB-4005-0000-01O, LPX-LB-4006-0000-01O, LPX-LB-4007-0000-01F, LPX-LB-4007-0000-01O, GMP-AE-5007-0000-01, GMP-AE-5008-0000-01, GMP-AE-5009-0000-01, GMP-LB-5001-0000-01F, GMP-LB-5001-0000-01O, GMP-LB-5002-0000-01F, GMP-LB-5002-0000-01O, GMP-LB-5003-0000-01F, GMP-LB-5003-0000-01O, GMP-LB-5004-0000-01F, GMP-LB-5004-0000-01O, GMP-LB-5005-0000-01F, GMP-LB-5005-0000-01O, GMP-LB-5006-0000-01F, GMP-LB-5006-0000-01O, GMP-LB-5007-0000-01F, GMP-LB-5007-0000-01O, GMP-LB-5008-0000-01F, GMP-LB-5008-0000-01O, and GMP-LB-5009-0000-01F

- The reported positive results for zinc in all tissue samples should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Low recoveries (<70%) were observed for these analytes in the associated MS/MSD analyses.

- The reported positive results for iron in all tissue samples should be considered estimated and have been flagged "J" on the data tables. High recoveries (>125%) were observed for these analytes in the associated blank spike analyses.

- Nine field duplicate pairs (sample APC-AE-4004-0000-01 and its field duplicate, sample APC-DU-062001-0000-B; sample APC-WS-4008-0000-01 and its field duplicate, sample APC-DU-062001-0000-4; sample LPX-WS-4005-0000-01 and its field duplicate, sample LPX-DU-062101-A; sample LPX-AE-4005-0000-01 and its field duplicate, sample LPX-DU-062101-B; sample LPX-LB-4004-0000-01F and its field duplicate, sample LPX-DU-062101-0000-CF; sample LPX-LB-4004-0000-01O and its field duplicate, sample LPX-DU-062101-0000-CO; sample LPX-LB-4008-0000-01F and its field duplicate sample LPX-DU-062101-0000-DF; sample LPX-LB-4008-0000-01O and its field duplicate sample LPX-DU-062101-0000-DO; and sample CMS-EW-4001-0000-01 and its field duplicate, sample CMS-DU-072001-A) were submitted to the laboratory with this data set. Acceptable precision and sample representativeness were demonstrated by the reported positive results in these field QC samples with the following exceptions. The detection limits for the following analytes in the samples listed below may be higher than reported, and the "not-detected" results have been flagged "UJ" on the data tables. In addition, any reported positive results for these analytes in the samples listed below should be considered estimated and have been flagged "J" (unless previously flagged "U") on the data tables. Large discrepancies (RPD>40% when both results were ≥5× the MDL or difference >2× the MDL when one or both results was <5× the MDL) were observed between the results for these analytes in the field duplicate analyses. A complete comparison of the field duplicate results is included in Section 3.

Analyte(s)	Samples With Qualified Detection Limits ("UJ") or Estimated Positive Results ("J")
methylmercury and lead	LPX-LB-4008-0000-01O and LPX-DU-062101-0000-DO
aluminum, copper, manganese, and zinc	LPX-LB-4008-0000-01F and LPX-DU-062101-0000-DF

- Based on standard project reporting requirements, all positive results reported with concentrations below the project-required quantitation limits have been flagged "J" (unless previously flagged "U") on the data tables.

Complete support documentation for this inorganic QA review is presented in Section 3 of this report. The cover sheet for this section is a checklist of all QA procedures required by the methods and examined in this data review.

B. Conclusions

Overall, the data quality is satisfactory. Based on this QA review, several inorganic results were qualified due to blank contamination, laboratory and field duplicate imprecision, low and high MS/MSD recoveries, MS/MSD imprecision, SRM imprecision, low and high blank spike recoveries, and results below the MDL. Overall, the data are acceptable for use, provided the data user understands the limitations and qualifications stated in this QA review. The Laboratory Case Narratives and Chain-of-Custody Records are presented in Sections 4 and 5, respectively.

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