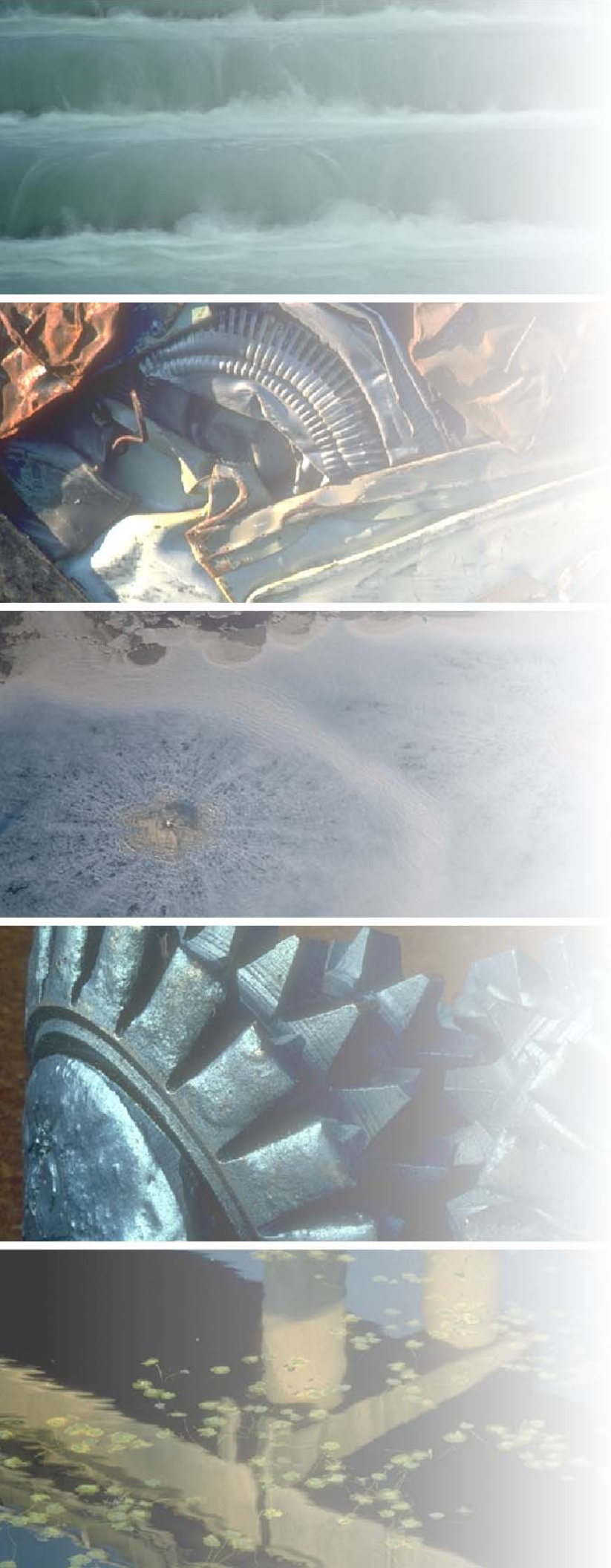
APPENDIX L
DATA VALIDATION REPORT

FIELD AND DATA REPORT

DOWNTOWN PORTLAND SEDIMENT CHARACTERIZATION PHASE II

WILLAMETTE RIVER
PORTLAND, OREGON

JUNE 2010



Data Validation Report

Downtown Portland Sediment Characterization Phase II

Willamette River

Portland, Oregon

June 1, 2010

15697-00

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DATA VALIDATION REPORT

This report documents the results of a quality assurance (QA) review of the analytical data for the Downtown Portland Sediment Characterization Phase II project. Sediment samples were collected on February 22, 23, 24, 25, and 26, 2010, and March 2, 3, 24, and 25, 2010. Rinsate blank samples were collected on February 26, 2010, and March 3 and 25, 2010. Two archived samples collected by Anchor QEA on August 20, 2009, during the sediment characterization of the Portland Gas Manufacturing Site sediment characterization were also analyzed as part of this project (Anchor QEA, 2009). The samples were submitted to Columbia Analytical Services, Inc. (CAS) of Kelso, Washington for chemical analysis. Samples for dioxin/furan analysis were subcontracted to CAS of Houston, Texas. The results were reported as Service Request Numbers K1001653, K1001769, K1001808, K1001980, K1001998, K1002065, K1002553, K1002878, and K1003619.

Additional archived samples from the Downtown Portland Sediment Characterization Phase I project were analyzed and the data validated and included in this report. Twenty-two samples collected on May 13, 14, 15, 22, 23, 30, 31, and June 2 and 4, 2008, were removed from archive and analyzed. These samples were reported in CAS Service Request Numbers K0906416 and K0912317.

Level II summary reports and Level IV data deliverable packages were provided for review. Copies of the analytical laboratory reports are included in Appendix J.

The following criteria were evaluated:

- Sample receiving condition;
- Holding times;
- Method blanks;
- Surrogate recoveries;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries;
- Matrix spike and matrix spike duplicate (MS/MSD) recoveries;
- Laboratory duplicate relative percent difference (RPD) or laboratory triplicate relative standard deviations (RSD);
- Field duplicate RPDs;
- Internal standard (IS) recoveries (where applicable);
- Calibration criteria; and
- Reporting limits (RL).

With one exception, the data were determined to be acceptable for use, as qualified. The one rejected result (R) was the sulfide analysis of DPSC-C099-A. This sample was unpreserved and prepared past its seven day holding time.

1.0 QUALITY ASSURANCE REVIEW

The laboratory provided full Level IV data deliverable packages, which underwent a QA review. Quality control (QC) samples were consistent with those referenced in the SAP Addendum (GSI Water Solutions/Hart Crowser, 2010) to evaluate precision, accuracy, representativeness, comparability, and completeness. Field duplicates were collected for sediment grab samples on February 23 and 26, 2010, and for sediment core samples on March 2, 2010. Extra volume was collected for MS/MSD samples for sediment grab samples on February 25, 2010 and for sediment core samples on March 3, 2010. Rinsate blanks were collected on February 26, March 3 and 25, 2010.

1.1 Detection and Reporting Limits

Method detection limits (MDLs) are the minimum concentration of a chemical compound that can be measured and reported that the compound is present, and is based on instrumentation abilities and sample matrix. RLs are set by the laboratory and are based on the low standard of the initial calibration curve or low-level calibration check standard, and represent the concentration that can be accurately quantified. In some cases, the RL is raised due to dilutions or matrix interferences. The laboratory reported the samples to the MDL.

1.2 QA Review Results

Upon review, the sample data and laboratory QC data were generally found to be suitable for their intended use with qualifications. The only rejected result (R) was the sulfide analysis of DPSC-C099-A due to analysis of the unpreserved sample past its holding time. The following sections summarize the results of our QA review of the analytical data.

2.0 SAMPLE RECEIVING ISSUES

Sample/Cooler Temperatures. The receiving temperatures of the coolers were within the 2 to 6°C acceptance criteria, or were below 2°C with the following exception:

- DPSC-G115: The sample was received at CAS-Houston at 23°C, outside the method acceptance criteria of <4°C. Due to stability of dioxins at room temperature, sample results were not qualified.

Sample Preservation. The samples were properly preserved with the following exceptions:

- DPSC-C099-A, DPSC-C100-A, and DPSC-G999: Sample volumes for total sulfides were not preserved with zinc acetate. Samples DPSC-C099-A and DPSC-C100-A were removed from archive and results were qualified due to preservation and holding time issues. Sample DPSC-G999 was not analyzed for sulfide.

Discrepancies. The following discrepancies were noted.

- Nickel was not requested as a target metal for this project. Nickel was reported by the laboratory in samples DPSC-C087-A, DPSC-C090-A, DPSC-C099-A, DPSC-C102-A, DPSC-G091, DPSC-G092, DPSC-G093, DPSC-G094, DPSC-G095, DPSC-G097, DPSC-G100, DPSC-G104, DPSC-G106, DPSC-G108, DPSC-G112, DPSC-G115, DPSC-G5112, and DPSC-G994.
- K1001653 and K1001769: Alkylated PAHs were not requested for this project. Alkylated PAHs were reported by the laboratory in the associated samples DPSC-G086, DPSC-G088, DPSC-G089, DPSC-G095, DPSC-G096, DPSC-G098, DPSC-G101, DPSC-G102, DPSC-G102-2, DPSC-G104, DPSC-G108, DPSC-G109, DPSC-G112, DPSC-G113, DPSC-G114, DPSC-G116, DPSC-G598, DPSC-G5112, and DPSC-G999.
- K1001769: Sample DPSC-G115 was sieved at the laboratory. Sample volume was logged in for analysis under K1002553.
- K1001808: Sample DPSC-G099 was placed on hold. Analyses for sample DPSC-G9102 were cancelled. The COC was not updated, but email confirmation of these requests is included with the Summary Report.
- K1001808: Sample DPSC-G102-2 was incorrectly identified on the COC and bottle labels as DPSC-G100. The sample identification was updated in the EDDs.
- K1001808: Sulfide was requested for sample DPSC-G999. No sample bottles were received with correct preservation, and the analysis was not performed. The laboratory did not note the discrepancy on the sample receipt form.
- K1001808, K1001980, and K1002878: TPH-DX with Silica Gel Treatment was requested for all water samples. Silica gel treatment was not performed on samples DPSC-C990, DPSC-G994, or DPSC-G999.
- K1001980: Samples DPSC-C100-A through DPSC-C100-F and DPSC-C5100-F were incorrectly identified on the COC and bottle labels as DPSC-C102-A through DPSC-C102-F and DPSC-C5102-F. The sample identification was updated in the EDDs.
- K1001980: PAHs were requested on sample DPSC-C099-D but not extracted and analyzed with the other samples in the sample delivery group (SDG). The sample was extracted and analyzed within holding time and reported in K1003619.

- K1001980: Dioxin/furans were requested on sample DPSC-C990. Insufficient sample volume was provided and the analysis was cancelled.
- K1002065: Samples RM11E-C041-A and RM11E-C041-B were removed from archive for analysis. The samples were re-identified as DPSC-C041-A and DPSC-C041-B for this project. The sample identification was updated in the EDDs.
- K1002553: Samples DPSC-C087-A, DPSC-C090-A, DPSC-C099-A, DPSC-C100-A, DPSC-G106, and DPSC-G115 were removed from archive for analysis under this service request number.
- K1002553: TOC was requested on sample DPSC-G115, but not prepared and analyzed with the other samples in the SDG. The sample was prepared and analyzed separately within method holding time, but included as part of the original sample batch. Sufficient additional batch QC was prepared, and no results were qualified. The data was submitted as K1002553.02.
- K0906416: Samples DPSC-C001-C, DPSC-C001-D, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B, DPSC-C029-A, DPSC-C029-B, DPSC-C031-A, DPSC-C031-B, DPSC-C031-C, DPSC-G017, DPSC-G048, DPSC-G054, DPSC-G055, and DPSC-G058 were removed from archive for analysis under this service request number.
- K0912317: Samples DPSC-C007-A, DPSC-C035-A, DPSC-C036-A, DPSC-G017, and DPSC-G046 were removed from archive for analysis under this service request number.

3.0 CHEMICAL ANALYSES ON SEDIMENT

3.1 Analytical Methods

A total of 28 sediment grab samples (including one field replicate) and 25 sediment core samples (from nine core stations) were collected and submitted to the laboratory. Four field duplicates, three rinsate blank samples, and one investigation-derived waste (IDW) sediment sample were also collected. Additionally, 7 sediment grab samples and 15 sediment core samples collected as part of the Phase I sampling event were removed from archive and analyzed. The sediment samples were analyzed for one or more of the following:

- Total solids by PSEP protocols 1986;
- Grain size by PSEP protocols 1986;
- Ammonia by EPA Method 350.1M;
- Total sulfides by PSEP protocols 1986;
- Total organic carbon by PSEP protocols 1986;
- Total metals by EPA methods 6010B/6020/7471A/7742;

- Butyltins by Krone et al 1989;
- Diesel and residual-range total petroleum hydrocarbons (TPH) by Ecology method NWTPH-Dx with silica-gel treatment;
- Organochlorine Pesticides by EPA method 8081A;
- Organochlorine Pesticides by EPA method 1699M;
- Polychlorinated biphenyls (PCBs) by EPA method 8082;
- Polynuclear aromatic hydrocarbon (PAHs) by EPA Method 8270C-SIM; and
- Dioxins/furans by EPA Method 1613B.

3.2 QA Review by Analysis Type

3.2.1 Total Solids

Holding Times and Reporting Limits. RL were acceptable. Holding times of six months for frozen samples were met for all samples with the following exceptions:

- DPSC-C001-C, DPSC-C001-D, DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B, DPSC-C029-A, DPSC-C029-B, DPSC-C031-A, DPSC-C031-B, DPSC-C031-C, DPSC-C035-A, DPSC-C036-A, DPSC-C041-A, DPSC-C041-B, DPSC-G017, DPSC-G046, DPSC-G048, DPSC-G054, DPSC-G055, DPSC-G058, and DPSC-G076. The results for total solids were qualified as estimated (J).

Laboratory Triplicates. The RSDs were within laboratory control limits.

Field Duplicates. The RPDs were within 50 percent.

3.2.2 Grain Size

Holding Times. Holding times of six months were met.

Laboratory Triplicates. The RSDs were within laboratory control limits with the following exception:

- DPSC-C099-A: The RSD for Gravel and Very Coarse Sand exceeded 50 percent. The results for Gravel and Very Coarse Sand in DPSC-C099-A were qualified as estimated (J).
- DPSC-G100: The RSD for Coarse Sand exceeded 50 percent. The results for Coarse Sand in DPSC-G100 were qualified as estimated (J).

Field Duplicates. The RPDs were within 50 percent with the following exception:

- DPSC-G098/DPSC-G598: The RPD for Gravel exceeded 50 percent. The results for Gravel in DPSC-G098 and DPSC-G598 were qualified as estimated (J).

3.2.3 Ammonia

Holding Times and Reporting Limits. RL were acceptable. Holding times of seven days were met for all samples with the following exceptions:

- DPSC-C099-A and DPSC-C102-A. The results for ammonia were qualified as estimated (J).

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits.

Laboratory Triplicates. The RSDs were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory control limits.

Field Duplicates. The RPDs were within 50 percent.

Calibrations. The continuing calibration checks (CCV) were within control limits of 90 to 110 percent.

3.2.4 Total Sulfides

Holding Times and Reporting Limits. Results between the MDL and RL were qualified as estimated (J). Holding times of seven days were met for all samples with the following exceptions:

- DPSC-C099-A and DPSC-C102-A. Sample volume was not preserved with zinc acetate, but samples were frozen. The result for DPSC-C099-A was non-detect and rejected (R). The result for DPSC-C102-A was below the RL and qualified as estimated (J). RL were generally acceptable.
- DPSC-C102-F and DPSC-C5102-F: The RL was elevated due to 25-fold sample dilution. The results fell between the MDL and RL and were reported as estimated (J). The samples were not reanalyzed at a proper dilution.

- DPSC-G102: The RL was elevated due to sample dilution. The result fell between the MDL and RL and was reported as estimated (J). The sample was not reanalyzed at a proper dilution.

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits.

Laboratory Triplicates. The RSDs were within laboratory control limits or not applicable.

Field Duplicates. The RPDs were within 50 percent.

Calibrations. The CCVs were within control limits.

3.2.5 Total Organic Carbon

Holding Times and Reporting Limits. RL were acceptable. Holding times of 28 days were met for non-frozen samples. Holding times of 6 months for frozen samples were met with the following exceptions:

- DPSC-C001-C, DPSC-C001-D, DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B, DPSC-C029-A, DPSC-C029-B, DPSC-C031-A, DPSC-C031-B, DPSC-C031-C, DPSC-C035-A, DPSC-C036-A, DPSC-C041-A, DPSC-C041-B, DPSC-G017, DPSC-G046, DPSC-G048, DPSC-G054, DPSC-G055, DPSC-G058, and DPSC-G076. Results for TOC in those samples were qualified as estimated (J).

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exception:

- Batch QC MS/MSD: The recovery for the MS exceeded the laboratory control limits, while the MSD fell within the control limits. Associated sample results were not qualified as the source sample was not a site specific sample.

Laboratory Triplicates. The RSDs were within laboratory control limits.

Field Duplicates. The RPDs were within 50 percent.

Calibrations. The CCVs were within control limits.

3.2.6 Total Metals

The laboratory analyzed total mercury by EPA method 7471A; total selenium by EPA method 7742; aluminum, barium, chromium, copper, lead, and zinc by EPA method 6010B; antimony, arsenic, cadmium, chromium, copper, lead, selenium, and silver by EPA method 6020.

3.2.6.1 Total Metals by EPA 6010B

Holding Times and Reporting Limits. Holding times of 6 months or two years for frozen samples were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 07/27/09: Results for aluminum fell between the MDL and RL. Results for aluminum in the associated samples were greater than 10 times the amount in the MB, and sample results were not qualified.
- MB 03/02/10: Results for aluminum fell between the MDL and RL. Results for aluminum in the associated samples were greater than 10 times the amount in the MB, and sample results were not qualified.
- MB 03/05/10: Results for zinc fell between the MDL and RL. Results for zinc in the associated samples were greater than 10 times the amount in the MB, and sample results were not qualified.

Laboratory Control Samples. LCS recoveries were within laboratory and method control limits with the following exceptions:

- LCS 03/03/10: The recovery for aluminum (78.6%) fell within the current laboratory control limits (41-158%) and the SAP control limits (61-152%), but below the method control limits (80-120%). As the recovery was only slightly below the method control limits, associated sample results were not qualified.
- LCS 03/08/10: The recovery for aluminum (78.6%) fell within the current laboratory control limits (41-158%) and the SAP control limits (61-152%), but below the method control limits (80-120%). As the recovery was only slightly below the method control limits, associated sample results were not qualified.

- LCS 03/25/10: The recovery for aluminum (78.7%) fell within the current laboratory control limits (41-158%) and the SAP control limits (61-152%), but below the method control limits (80-120%). As the recovery was only slightly below the method control limits, associated sample results were not qualified.

Matrix Spikes. MS recoveries were within laboratory and method control limits with the following exceptions:

- DPSC-C001-C MS: The recovery for aluminum exceeds the CL due to large amounts of aluminum in the source sample compared to the spiking amount. Results in the associated samples were not qualified.
- DPSC-C041-A MS: The recovery for aluminum exceeds the CL due to large amounts of aluminum in the source sample compared to the spiking amount. The recovery for chromium (71.4%) fell within the current laboratory limits (32-170%) and SAP limits (22-184%) but fell below the method limits (75-125%). The recovery for lead fell below the laboratory and method control limits. Results for Al not qualified. Results for chromium by EPA 6020 were checked and fell below EPA 6010B reported results. Chromium results were qualified as estimated (J) in DPSC-C041-A and DPSC-C041-B. Lead results were qualified as estimated (N) by the laboratory in DPSC-C041-A and DPSC-C041-B. Laboratory "N" changed to J.
- DPSC-C089-B MS: The recovery for aluminum exceeds the CL due to large amounts of aluminum in the source sample compared to the spiking amount. Results for aluminum in the associated samples were not qualified. The recovery for lead (68.9%) fell within the current laboratory limits (46-151%) and SAP limits (51-155%), but fell below the method limits (75-125%). No post spike was prepared or analyzed, and LCS recoveries were within method and laboratory control limits. Laboratory duplicate RPDs for DPSC-C089-B exceeded the control limit due to sample heterogeneity. The results for lead in DPSC-C089-B were not qualified, as lead results for that sample were reported from the EPA 6020 analyses. Lead results by EPA 6010B in the associated samples DPSC-C086-B, DPSC-C095-B, and DPSC-C090-B were not qualified.
- DPSC-C090-A MS: The recovery for aluminum exceeds the CL due to large amounts of aluminum in the source sample compared to the spiking amount. The recovery for zinc (61.4%) fell within the current laboratory control limits (13-172%) and SAP control limits (32-169%), but below method control limits (75-125%). The amount of zinc in the source sample was higher than the amount spiked. Results for aluminum and zinc were not qualified.
- DPSC-G100 MS, DPSC-G113 MS, DPSC-G116 MS, DPSC-G598 MS, DPSC-G5112 MS, and DPSC-IDW-1 MS: The recovery for aluminum exceeds the CL due to large amounts of aluminum in the source sample compared to the spiking amount. Results in the associated samples were not qualified.

- DPSC-C090-A MS: The recovery for aluminum exceeds the CL due to large amounts of aluminum in the source sample compared to the spiking amount. The recovery for zinc (61.4%) fell within the current laboratory control limits (13-172%) and SAP control limits (32-169%), but below method control limits (75-125%). The amount of zinc in the source sample was higher than the amount spiked. Results for aluminum and zinc were not qualified.

Laboratory Duplicates. The RPDs were within laboratory control limits, or not applicable, as sample and duplicate results were less than five times the RL, with the following exceptions:

- DPSC-C041-A: The RPD for lead exceeded the control limit due to sample heterogeneity. Lead results qualified as estimated (J) in DPSC-C041-A.
- DPSC-C089-B: The RPD for lead exceeded the control limit due to sample heterogeneity. Sample results were not qualified, as lead was reported from the EPA 6020 analysis.

Field Duplicates. The RPDs were within 50 percent.

Serial Dilutions. Serial dilutions were within control limits or not applicable with the following exceptions:

- DPSC-C089-B: The serial dilution for chromium, lead, and zinc exceeded ten percent. Results for chromium and zinc in DPSC-C089-B were qualified as estimated (J). The result for lead was reported from the EPA 6020 analysis and not qualified.
- DPSC-IDW-1: The serial dilution for chromium exceeded ten percent. The result for chromium in DPSC-IDW-1 was qualified as estimated (J).

Calibrations. The CCVs were within control limits.

3.2.6.2 Total Metals by EPA 6020

Holding Times and Reporting Limits. Holding times of 6 months or two years for frozen samples were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 07/27/09: Results for lead exceeded the RL. Results for lead in associated samples were greater than ten times the amount in the MB, and sample results were not qualified.
- MB 03/02/10: Results for chromium and lead fell between the MDL and RL. Results for copper exceeded the RL. Results for these metals in the associated samples were greater than 10 times the amount in the MB, and sample results were not qualified.

- MB 03/03/10: Results for chromium, copper, and lead fell between the MDL and RL. Results for these metals in the associated samples were greater than 10 times the amount in the MB, and sample results were not qualified.
- MB 03/05/10: Results for cadmium and lead fell between the MDL and the RL. Result for cadmium in associated sample DPSC-C112-B was less than ten times the amount in the MB. The result was above the RL and reported as non-detect (U). Results in the remaining associated samples were greater than ten times the amount in the MB and not qualified.
- MB 03/09/10: Results for cadmium fell between the MDL and the RL. Results for cadmium in associated samples were greater than ten times the amount in the MB, and sample results were not qualified.
- MB 03/25/10: Results for lead fell between the MDL and the RL. Results for chromium exceeded the RL. Results for chromium and lead in associated samples were greater than ten times the amount in the MB, and sample results were not qualified.
- MB 04/05/10: Results for chromium fell between the MDL and the RL. Results for chromium in associated samples were greater than ten times the amount in the MB, and sample results were not qualified.

Laboratory Control Samples. LCS recoveries were within laboratory and method control limits with following exceptions:

- LCS 03/03/10: The recovery for antimony (79.8%) fell within the current laboratory control limits (50-150%) and the SAP control limits (32-162%), but below the method control limits (80-120%). As the recovery was only slightly below the method control limits, associated sample results were not qualified.
- LCS 03/09/10: The recovery for antimony (70.6%) fell within the current laboratory control limits (50-150%) and the SAP control limits (32-162%), but below the method control limits (80-120%). As the recovery for the MS and post spikes (PS) were within method control limits, associated sample results were not qualified.

Matrix Spikes. MS recoveries were within laboratory and method control limits with the following exceptions:

- DPSC-C001-C MS: The recovery for antimony (56.4%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS and PS recoveries were within control limits. Antimony in the associated samples (DPSC-C001-C, DPSC-C001-D, DPSC-C022-B, DPSC-C029-A, and DPSC-C029-B) was qualified as estimated (J). The recovery for lead (134.6%) fell within the laboratory control limits (27-178%), but exceeded the method control limits (75-125%). The LCS and PS recoveries were within control limits. Lead in the source sample DPSC-C001-C was qualified as estimated (J).

- DPSC-C089-B MS: The recovery for antimony (67.1%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS and PS recoveries were within control limits. Antimony in the associated samples (DPSC-C112-B, DPSC-C099-D, DPSC-C100-F, DPSC-C5100-F, DPSC-C095-B, DPSC-C090-B, DPSC-C089-B, and DPSC-C086-B) was qualified as estimated (J).
- DPSC-C090-A MS: The recovery for antimony (57.3%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS and PS recoveries were within control limits. Antimony in the associated samples (DPSC-C099-A, DPSC-C102-A, DPSC-C090-A, DPSC-C087-A, and DPSC-G106) was qualified as estimated (J).
- DPSC-G100 MS: The recovery for antimony (51.5%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS and PS recoveries were within control limits. Antimony in the associated samples (DPSC-G115, DPSC-G097, DPSC-G091, DPSC-G092, DPSC-G093, DPSC-G100, and DPSC-G094) was qualified as estimated (J).
- DPSC-G113 MS: The recovery for antimony (56.3%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS recovery was slightly low, while the PS recovery was within control limits, indicating a matrix effect. Antimony in the associated samples (DPSC-G096, DPSC-G114, DPSC-G116, DPSC-G113, DPSC-G089, DPSC-G109, DPSC-G088, and DPSC-G086) was qualified as estimated (J).
- DPSC-G116 MS: The recovery for antimony (49%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS recovery was slightly low, while the PS recovery was within control limits, indicating a matrix effect. Antimony in the associated samples (DPSC-G096, DPSC-G114, DPSC-G116, DPSC-G113, DPSC-G089, DPSC-G109, DPSC-G088, and DPSC-G086) was qualified as estimated (J). The recovery for copper (136%) fell within the current laboratory control limits (22-181%) and the SAP control limits (51-147%), but exceeded the method control limits (75-125%). The spiking amount for copper was less than 4 times the amount in the sample and results were not qualified.
- DPSC-G598 MS: The recovery for antimony (50.8%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS recovery was slightly low, while the PS recovery was within control limits, indicating a matrix effect. Antimony in the associated samples (DPSC-G098, DPSC-G102, DPSC-G101, DPSC-G598, and DPSC-G102-2) was qualified as estimated (J).
- DPSC-G5112 MS: The recovery for antimony (58.8%) fell within the laboratory control limits (10-125%), but fell below the method control limits (75-125%). The LCS and PS recoveries were within control limits, indicating a matrix effect. Antimony in the associated samples (DPSC-G095, DPSC-G112, DPSC-G5112, DPSC-G108, and DPSC-G104) was qualified as estimated (J).

Post Spikes. PS recoveries were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory control limits or not applicable, as sample and duplicate results were less than five times the RL, with the following exceptions:

- DPSC-C001-C: The RPD for antimony and lead exceeded the control limits due to sample heterogeneity. The results for antimony and lead were qualified as estimated (J) in sample DPSC-C001-C.
- DPSC-C041-A: The RPD for arsenic exceeded the control limits due to sample heterogeneity. The laboratory qualified the results for arsenic in DPSC-C041-A and DPSC-C041-B with "*". "*" changed to J in DPSC-C041-A and DPSC-C041-B.
- DPSC-G116: The RPDs for antimony, copper, and lead exceeded the control limits. The laboratory qualified all associated samples with "*". The "*" qualifier was changed to J in DPSC-G086, DPSC-G088, DPSC-G089, DPSC-G096, DPSC-G109, DPSC-G114, and DPSC-G116. The "*" qualifier was removed from DPSC-G113, as the laboratory duplicate for that sample was within control limits.

Field Duplicates. The RPDs were within 50 percent with the following exception:

- DPSC-C100-F/DPSC-C5100-F: The RPD for antimony exceeded 50 percent. The results for antimony in DPSC-C100-F and DPSC-C5100-F were qualified as estimated (J).

Serial Dilutions. Serial dilutions were within control limits or not applicable with the following exceptions:

- DPSC-C001-C: The serial dilution for antimony exceeded ten percent. Results for antimony in DPSC-C001-C and DPSC-C001-D were qualified as estimated (J).
- DPSC-G5112: The serial dilution for cadmium exceeded ten percent. Results for cadmium in DPSC-G5112 and DPSC-G112 were qualified as estimated (J).
- DPSC-G116: The serial dilution for copper exceeded ten percent. Results for copper in DPSC-G116 were qualified as estimated (J).
- DPSC-IDW-1: The serial dilution for arsenic exceeded ten percent. Results for arsenic in DPSC-IDW-1 were qualified as estimated (J).
- DPSC-C090-A: The serial dilution for antimony, cadmium, silver, and arsenic exceeded ten percent. Results for antimony, cadmium, silver, and arsenic in DPSC-C090-A were qualified as estimated (J).
- DPSC-G100: The serial dilution for arsenic, chromium, and copper exceeded ten percent. Results for arsenic, chromium, and copper in DPSC-G100 were qualified as estimated (J).

Calibrations. The CCVs were within control limits.

3.2.6.3 Total Mercury by EPA 7471A

Holding Times and Reporting Limits. RL were acceptable. Results between the MDL and RL were qualified as estimated (J) by the laboratory. Holding times of 28 days were met for all samples except DPSC-C001-C, DPSC-C001-D, DPSC-C002-B, DPSC-C029-A, DPSC-C029-B, DPSC-C041-A, DPSC-C041-B, and DPSC-G115. Sample volume for those samples were frozen. Results for mercury in those samples were qualified as estimated (J).

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory and method control limits.

Matrix Spikes. MS recoveries were within laboratory and method control limits.

Post Spikes. PS recoveries were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory control limits or not applicable, as sample and duplicate results were less than five times the RL.

Field Duplicates. The RPDs were within 50 percent with the following exception:

- DPSC-G112/DPSC-G5112: Results for sample and duplicate were less than five times the RL. Results were qualified as estimated (J).

Calibrations. The initial calibration curves were within acceptance criteria. The CCVs were within control limits.

3.2.6.4 Total Selenium by EPA 7742

Holding Times and Reporting Limits. Holding times of 6 months or two years for frozen samples were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J) OR (B). B qualifiers changed to J.

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exceptions:

- DPSC-C089-B: The recovery for selenium (58.6%) fell within the laboratory control limits (57-134%) but below the SAP control limits (64-131%) and the method control limits (75-125%). The associated samples (DPSC-C112-B, DPSC-C100-F, DPSC-C5100-F, DPSC-C095-B, DPSC-C090-B, DPSC-C089-B, and DPSC-C086-B) were qualified as estimated (J).
- DPSC-G598: The recovery for selenium fell below the laboratory and method control limits. The laboratory qualified associated samples with "N". The "N" qualifier was changed to "J" in samples DPSC-G098, DPSC-G102, DPSC-G101, DPSC-G598, and DPSC-G102-2.

Laboratory Duplicates. The RPDs were within laboratory control limits or not applicable, as sample and duplicate results were less than five times the RL.

Field Duplicates. The RPDs were within 50 percent.

Calibrations. The CCVs were within control limits.

3.2.7 Butyltins

Results for multiple analytes were qualified by the laboratory with "P" as the results exceeded 40 percent between columns. The P qualifier was changed to J in the following samples:

- DPSC-C095-B and DPSC-G102: Di-n-butyltin
- DPSC-G098: n-Butyltin

Holding Times and Reporting Limits. Holding times of one year for frozen samples were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J). RL were elevated due to matrix interferences for Di-n-butyltin in DPSC-G101. Laboratory qualifier Ui changed to U.

Method Blanks. Method blanks were non-detect.

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exceptions:

- Batch QC MS/MSD (03/08/10): The recoveries for tri-n-butyltin, di-n-butyltin and n-Butyltin fell outside the laboratory control limits due to high levels of those analytes in the source sample compared to the spiking amount. The RPD exceeded the control limits due to sample heterogeneity. Associated sample results were not qualified.

- Batch QC MS/MSD (03/24/10): The recoveries in the MS were within control limits. The recoveries in the MSD failed low due to an extraction malfunction. Results for the MSD were not reported, and no RPD was calculated. As recoveries for the MS and LCS were within control limits, no results were qualified.

Field Duplicates. The RPDs were within 50 percent or not applicable as sample and duplicate were below the RL.

Calibrations. The initial calibration curves were within acceptance criteria. The CCV were within control limits with the following exceptions:

- CCV 0311F025 on the RTX-1 column failed low for tetra-n-butyl tin, passed on the RTX-35 column. The associated samples MB, LCS, Batch QC, Batch QC MS/MSD, and DPSC-C5102-F for sediments were reported from the RTX-35 column, and no results were qualified.
- CCV 0317F015 on the RTX-1 column failed low for tetra-n-butyl tin, passed on the RTX-35 column. The associated samples MB, LCS, DPSC-C095-B, and DPSC-C095-B MS/MSD for sediments were reported from the RTX-35 column, and no results were qualified.
- CCV 0406F003 on the RTX-1 column failed low for n-butyl tin, passed on the RTX-35 column. CCV 0406F017 on the RTX-1 column failed low for Di-n-butyltin, passed on the RTX-35 column. The associated samples MB, LCS, and DPSC-G100 MS/MSD for sediments were reported from the RTX-35 column, and no results were qualified.

3.2.8 TPH by NWTPH-Dx with Silica Gel Treatment

Results for DRO and RRO in multiple samples were qualified by the laboratory due to chromatographic variances between the sample and the calibration standard. The "H", "L", "O", "Y", and "Z" qualifiers were changed to "J" in the following samples:

- DPSC-C099-D: DRO
- DPSC-C086-B, DPSC-C087A, DPSC-C089-B, DPSC-C090-A, DPSC-C090-B, DPSC-C095-B, DPSC-C100-F, DPSC-C5100-F, DPSC-G086, DPSC-G089, DPSC-G094, DPSC-G095, DPSC-G096, DPSC-G102, DPSC-G102-2: DRO, RRO

Holding Times and Reporting Limits. Holding times of 14 days or one year for frozen samples were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 02/25/10: The MB had a detection for RRO between the MDL and RL. Results in the associated samples were greater than five times the amount in the MB and not qualified.

- MB 03/04/10: The MB had a detection for RRO between the MDL and RL. Results in the associated sample DPSC-G113 were less than five times the amount in the MB. Results for RRO in DPSC-G113 were raised to the RL and qualified as non-detect (U). Results for RRO in the remaining associated samples were greater than five times the amount in the MB and not qualified.
- MB 03/12/10: The MB had detections for DRO and RRO between the MDL and RL. Results for DRO and RRO in the associated samples DPSC-C041-A, DPSC-C041-B, and DPSC-C112-B were less than five times the amount in the MB. Results for DRO and RRO in DPSC-C041-A, DPSC-C041-B, and DPSC-C112-B were raised to the RL and qualified as non-detect (U). Results for RRO in DPSC-C099-D were less than five times the amount in the MB. The results for RRO in DPSC-C099-D were raised to the RL and qualified as non-detect (U). Results for DRO and RRO in the remaining associated samples were greater than five times the amount in the MB and not qualified.
- MB 03/28/10: The MB had detections for DRO between the MDL and RL. The results for DRO in the associated samples DPSC-G106 and DPSC-G097 were less than five times the amount in the MB. The results for DRO in DPSC-G106 and DPSC-G097 were raised to the RL and qualified as non-detect (U). Results for DRO in the remaining associated samples were greater than five times the amount in the MB and not qualified.

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory limits, or not applicable, as sample and duplicate were below the RL, with the following exception:

- DPSC-C087-A: The RPD for DRO exceeded the control limits. The results for the sample and duplicate were less than five times the RL and the results were not qualified.

Field Duplicates. The RPDs were within 50 percent, or not applicable, as sample and duplicate were below the RL.

Calibrations. The initial calibration curves were within acceptance criteria. The CCVs were within control limits.

3.2.9 Pesticides by EPA 8081A

Results for multiple analytes were qualified by the laboratory with "P" as the results exceeded 40 percent between columns. The P qualifier was changed to J in the following samples:

- DPSC-C00&-A: gamma-Chlordane and 2,4-DDD

- DPSC-C008-C: beta-BHC, gamma-BHC, Heptachlor, gamma-Chlordane, 4,4-DDE, Endrin aldehyde, and 2,4-DDT
- DPSC-C022-B: gamma-BHC, Heptachlor epoxide, gamma-Chlordane, alpha-Chlordane, and 4,4-DDE
- DPSC-C024-B and MB 07/20/09: Oxychlordane
- DPSC-C025-B: gamma-BHC, gamma-Chlordane, and Endosulfan I
- DPSC-C031-A: 4,4-DDD, Endrin aldehyde, Endosulfan sulfate, 4,4-DDT, and Oxychlordane
- DPSC-C031-B: gamma-BHC, gamma-Chlordane, 4,4-DDE, and 2,4-DDD
- DPSC-C041-A: gamma-Chlordane and 2,4-DDT
- DPSC-C041-B, DPSC-G108, DPSC-G112, and DPSC-G598: 2,4-DDT
- DPSC-C086-B: gamma-chlordane, 4,4-DDE, endrin, endosulfan II, oxychlordane, 2,4-DDD, trans-nonachlor, and 2,4-DDT
- DPSC-C087-A: gamma-Chlordane, 4,4-DDT, and cis-Nonachlor
- DPSC-C089-B: 4,4-DDT
- DPSC-C090-A: Oxychlordane, 2,4-DDD, and 2,4-DDT
- DPSC-C090-B: gamma-BHC, methoxychlor, and trans-nonachlor
- DPSC-C095-B: 2,4-DDD
- DPSC-C099-A, DPSC-G091, DPSC-G096, DPSC-G104, and DPSC-IDW-1: gamma-chlordane and 4,4-DDE
- DPSC-C099-D: Heptachlor epoxide, 4,4-DDE, endrin aldehyde, 4,4-DDT, and 2,4-DDT
- DPSC-C102-A: gamma-chlordane, 4,4-DDD, and 4,4-DDT
- DPSC-C100-F: Hexachlorobenzene, beta-BHC, gamma-BHC, gamma-chlordane, and 2,4-DDT
- DPSC-C112-B, DPSC-G095, DPSC-G109, DPSC-G113, and DPSC-G114: 4,4-DDE
- DPSC-C5100-F: Hexachlorobenzene, gamma-BHC, and 2,4-DDT
- DPSC-G086: Heptachlor, Aldrin, gamma-chlordane, 4,4-DDT, and 2,4-DDD
- DPSC-G088: gamma-chlordane, alpha-chlordane, and trans-Nonachlor
- DPSC-G089: Hexachlorobenzene and Dieldrin
- DPSC-G092: Hexachlorobenzene, Dieldrin, 4,4-DDD, and 4,4-DDT
- DPSC-G093: Hexachlorobenzene, 4,4-DDT, and trans-Nonachlor
- DPSC-G094: gamma-chlordane and 2,4-DDD

- DPSC-G097: gamma-chlordane, 4,4-DDD, and Oxychlordane
- DPSC-G100: 4,4-DDD and trans-Nonachlor
- DPSC-C025-A, DPSC-G101, and DPSC-G102: gamma-Chlordane
- DPSC-G102-2: gamma-chlordane, 2,4-DDD, 2,4-DDT, and Hexachlorobutadiene
- DPSC-G106: Heptachlor epoxide and 2,4-DDT
- DPSC-G115: Aldrin, alpha-Chlordane, 4,4-DDT, Endrin ketone, and 2,4-DDT
- DPSC-G116: cis-Nonachlor
- DPSC-G5112: gamma-BHC and gamma-Chlordane

Holding Times and Reporting Limits. Holding times were within one year for frozen samples with the following exceptions:

- DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B, DPSC-C031-A, and DPSC-C031-B. The laboratory qualified some sample results as "*". The results for pesticides were qualified as estimated (J), and the "*" qualifier was removed.

RL were generally acceptable. Results between the MDL and RL were qualified as estimated (J). RL were elevated due to matrix interferences for multiple compounds in samples DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B DPSC-C031-A, DPSC-C031-B, DPSC-C041-A, DPSC-C041-B, DPSC-C086-B, DPSC-C087-A, DPSC-C089-B, DPSC-C090-A, DPSC-C090-B,DPSC-C095-B, DPSC-C099-A, DPSC-C099-D, DPSC-C102-A, DPSC-C100-F, DPSC-G091, DPSC-C112-B, DPSC-C5100-F, DPSC-G086, DPSC-G088, DPSC-G089, DPSC-G092, DPSC-G093, DPSC-G094, DPSC-G095, DPSC-G096, DPSC-G097, DPSC-G098, DPSC-G100, DPSC-G101, DPSC-G102, DPSC-G102-2, DPSC-G104, DPSC-G106, DPSC-G108, DPSC-G112, DPSC-G113, DPSC-G114, DPSC-G115, DPSC-G116, DPSC-G598, DPSC-G5112, and DPSC-IDW-1. Laboratory qualifier Ui changed to U.

RL were elevated for 4,4-DDT in samples DPSC-G086 and DPSC-C090-A due to sample dilution associated with high levels of the target analyte. The laboratory "D" qualifier was removed.

RL were elevated for 4,4-DDT, Endrin ketone, and Toxaphene in sample DPSC-C025-A due to sample dilution due to matrix interference. Laboratory qualifier Ui changed to U.

RL were elevated for all analytes in DPSC-C095-B due to 5-fold dilution due to matrix interference. The laboratory "D" qualifier was removed.

Method Blanks. Method blanks were non-detect with the following exception:

- MB 07/20/09: The method blank had a detection for Oxychlordane between the MDL and the RL. Results in the associated samples for Oxychlordane that fell below the MDL were not qualified. The result for Oxychlordane in the associated sample DPSC-C024-B was greater than five times the amount in the method blank and not qualified. The results for Oxychlordane in DPSC-C031-A and DPSC-C031-B were less than fives times the amount in the method blank and qualified as non-detect (U).

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exception:

- DPSC-C007-A MS/MSD: The recoveries for target analytes fell within the laboratory control limits. The recoveries for Hexachlorobenzene, 4,4-DDT, Endrin ketone, Mirex, and 2,4-DDE were not applicable due to matrix interferences. Results in the source sample for these analytes were qualified as estimated (J).
- DPSC-C025-A MS/MSD: The recovery for 4,4-DDD failed low in the MS, passed in the MSD. The recoveries for alpha-BHC, gamma-BHC, Aldrin, and Dieldrin failed low in the MSD, passed in the MS. The recoveries for delta-BHC and gamma-Chlordane failed low in the MS and MSD. The RPD for Endrin aldehyde exceeded the control limits. The recoveries for Heptachlor epoxide, alpha-Chlordane, 4,4-DDE, Endrin, Endosulfan II, Endrin aldehyde, 4,4-DDT, Endrin ketone, and Methoxychlor were not applicable due to matrix interferences. Results in the source sample for these analytes were qualified as estimated (J).
- DPSC-C025-B MS/MSD: The recoveries for target analytes fell within the laboratory control limits. The recoveries for Oxychlordane and cis-Nonachlor were not applicable due to matrix interferences. Results in the source sample for these analytes were qualified as estimated (J).
- DPSC-C031-A MS/MSD: The recoveries for Toxaphene fell within the control limits. The RPD for Toxaphene exceeded the control limits due to matrix interferences. Results in the source sample for these analytes were qualified as estimated (J).
- DPSC-C031-B MS/MSD: The recoveries for 2,4-DDD failed low due to high levels of 2,4-DDD in the source sample compared to the spiking amount. The recoveries for 2,4-DDE were not applicable due to matrix interferences. Results in the source sample for these analytes were qualified as estimated (J).
- DPSC-G106 MS/MSD: The recoveries for all target analytes were within the laboratory control limits. The RPD for Hexachloroethane exceeded the control limits. As the recoveries were within control, no results were qualified.

Internal Standards. The IS were within acceptance criteria.

Field Duplicates. Field duplicate RPDs were within 50 percent with the following exceptions:

- DPSC-C100-F/DPSC-C5100-F: The RPD for Aldrin and gamma-Chlordane exceeded 50 percent, as results were non-detect in the sample, detected in the duplicate. The results for Aldrin and gamma-Chlordane in DPSC-C100-F and DPSC-C5100-F were qualified as estimated (J).
- DPSC-G098/DPSC-G598: The RPDs for Hexachlorobenzene, gamma-Chlordane, cis-Nonachlor, and 2,4-DDD exceeded 50 percent. The results for Hexachlorobenzene, gamma-Chlordane, cis-Nonachlor, and 2,4-DDD in DPSC-G098 and DPSC-G598 were qualified as estimated (J).
- DPSC-G112/DPSC-G5112: The RPDs for Hexachlorobenzene, Aldrin, and gamma-chlordane exceeded 50 percent. Results were qualified as estimated (J).

Calibrations. The initial calibration curves (ICAL) were within acceptance criteria.

The CCVs were within control limits with the following exceptions:

- CCV 0104F007 on both columns failed low for Hexachloroethane. The associated samples were reanalyzed for Oxychlordane, cis-Nonachlor, trans-Nonchlor, Mirex, Hexachloroethane, and Hexachlorobutadiene the affected analytes on January 7, 2010, and no results were qualified.
- CCV 0310F019 failed. The associated samples were reanalyzed for the affected analytes on March 12, 2010, and no results were qualified.
- CCV 0311F004 on DB-35MS column failed high for the surrogate Decachlorobiphenyl (DCB), passed on DB-XLB column. CCV 0311F007 on DB-XLB column failed low for Mirex, passed on DB-35MS column. CCV 0311F008 on DB-XLB column failed low for 2,4-DDT, passed on DB-35MS column. Affected analytes reported from passing column in associated samples MB and LCS. Target analytes 2,4-DDT and Mirex not reported for associated DPSC-G113 MS/MSD and DPSC-G116 MS/MSD from these analyses. No results qualified.
- CCV 0311F029 on DB-XLB column failed low for Mirex, passed on DB-35MS column. Mirex reported from DB-35MS column in associated DPSC-G113 MS/MSD and DPSC-G116 MS/MSD. No results qualified.
- CCV 0312F005 on DB-XLB column failed low for Mirex, passed on DB-35MS column. Mirex reported from DB-35MS column in associated samples with following exception. Mirex in DPSC-G086 reported from DB-XLB column and qualified "*". "*" changed to J.
- CCV 0312F032 on DB-XLB column failed low for Mirex, passed on DB-35MS column. CCV 0312F033 on DB-XLB column failed low for 2,4-DDT, passed on DB-35MS column. Mirex

and 2,4-DDT were reported from the DB-35MS column in associated samples (MB, LCS, MS/MSD, DPSC-C112-B, DPSC-C099-D, DPSC-C100-F, DPSC-C5100-F, DPSC-C090-B, DPSC-C089-B, and DPSC-IDW-1) with the following exceptions: The analyte 2,4-DDT in DPSC-C112-B and DPSC-C090-B was reported from the DB-XLB column and qualified "*". "*" changed to J.

- CCV 0312F058 on DB-35MS column failed high for DCB, passed on DB-XLB column. CCV 0312F060 on DB-XLB column failed low for Mirex, passed on DB-35MS column. CCV 0312F062 on DB-XLB column failed low for 2,4-DDT, passed on DB-35MS column. Affected analytes in the associated samples DPSC-C041-A, DPSC-C041-B, DPSC-C086-B, and DPSC-IDW-1 were reported from the passing column with the following exception: The analyte Mirex in sample DPSC-C086-B was reported from the DB-XLB column and qualified "*". "*" changed to J.
- CCV 0315F004 on DB-35MS column failed high for DCB, passed on DB-XLB column. CCV 0315F007 on DB-XLB column failed low for Mirex, passed on DB-35MS column. CCV 0315F007 on DB-35MS column failed high for Hexachloroethane, passed on DB-XLB column. Affected analytes in associated sample DPSC-C095-B were reported from the passing column and not qualified.
- CCV 0406F007 on DB-35MS column failed high for Hexachloroethane, passed on DB-XLB column. Affected analytes in associated samples MB, LCS, DPSC-C099-A, DPSC-C102-A, DPSC-C090-A, DPSC-C087-A, DPSC-G106, DPSC-G106 MS/MSD, Batch QC, and Batch QC MS/MSD were reported from passing column with the following exceptions: The analyte Hexachloroethane in the LCS was reported from the DB-35MS column and qualified with "*". Results in samples were not qualified.
- CCV 0728F032 on both columns failed low for Hexachloroethane and Hexachlorobutadiene. As the CCVs passed the alternative criteria using average percent recovery of all analytes in the CCV standards, the laboratory did not reanalyze the samples. Affected analytes in associated samples MB, LCS, DPSC-C0008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, and DPSC-025-A MS/MSD were qualified as estimated (J).
- CCV 0730F004 on DB-35MS column failed low for DCB, passed on DB-XLB column. DCB was reported in the associated sample DPSC-C025-B from the passing column and not qualified.

CCVs passed alternative criteria using average percent recovery of all analytes in all CCV standards.

3.2.10 Pesticides by EPA 1699M

Holding Times and Reporting Limits. Holding times exceeded one year for frozen samples. The results for samples DPSC-C031-C, DPSC-G017, DPSC-G048, DPSC-G054, and DPSC-G058 were qualified as estimated (J). Results between the MDL and RL were qualified as estimated

(J). RLs were elevated for all analytes in DPSC-C031-C, DPSC-G048, and DPSC-G054 due to 10-fold dilution due to matrix interference. The laboratory "D" qualifier was removed.

Method Blanks. The method blank was non-detect with the following exception:

- MB 07/21/09: The method blank had a detection for 4,4-DDE between the MDL and the RL. The results for 4,4-DDE in the associated samples were greater than five times the amount in the method blank and not qualified.

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exception:

- DPSC-G054 MS/MSD: The recoveries for gamma-BHC, Aldrin, Oxychlordane, Endosulfan II, and Mirex failed high in the MS, passed in the MSD. The recoveries for 4,4-DDE failed low and for 2,4-DDT failed high in the MSD, passed in the MS. The recoveries for gamma-Chlordane, alpha-Chlordane, trans-Nonachlor, 2,4-DDD, Dieldrin, cis-Nonachlor, 4,4-DDD, and 4,4-DDT fell outside the control limits in the MS and MSD. The RPD failed for Aldrin, Oxychlordane, 4,4-DDE, 2,4-DDD, 2,4-DDT, 4,4-DDD, Endosulfan II, and 4,4-DDT. Results were not qualified for gamma-Chlordane, alpha-Chlordane, trans-Nonachlor, 4,4-DDE, 2,4-DDD, 4,4-DDD, and 4,4-DDT due to high levels of those analytes in the source sample compared to the spiking amount. Results in the source sample were qualified as estimated (J).

Internal Standards. The IS were within acceptance criteria with the following exceptions:

- DPSC-G054, MS/MSD: The internal standards Aldrin-13C12 and Isodrin 13C12 fell outside acceptance criteria. The associated analytes adrin and isodrin were flagged with "*" by the laboratory. Laboratory "*" changed to "J".

Calibrations. The ICAL and CCVs were within acceptance criteria.

3.2.11 PCBs

Results for target analytes were qualified by the laboratory with "P" as results exceeded 40 percent between columns. The P qualifier was changed to J in the following samples:

- DPSC-C089-B, DPSC-C090-A, DPSC-G098, DPSC-G106, DPSC-G108, DPSC-G112, and DPSC-G115: Aroclor 1254
- DPSC-C007-A, DPSC-G094, DPSC-G097, DPSC-G100, and DPSC-G5112: Aroclor 1260

Holding Times and Reporting Limits. Holding times were within one year for frozen samples with the following exceptions:

- DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B, DPSC-C031-A, DPSC-C031-B, DPSC-G017, and DPSC-G048. The results for PCBs were qualified as estimated (J).

RL were acceptable. Results between the MDL and RL were qualified as estimated (J).

RL elevated for Aroclors 1254, 1260 and 1262 in DPSC-C099-A due to matrix interferences. RL elevated for Aroclor 1254 in DPSC-G091, DPSC-G092, DPSC-G093, DPSC-G094, DPSC-G097, and DPSC-G100 due to matrix interference. Laboratory qualifier Ui changed to U.

RL elevated for all Aroclors in samples DPS-C031-B and DPSC-G048 due to sample dilution associated with high levels of target analytes. Laboratory D qualifier removed.

Method Blanks. Method blanks were non-detect.

Surrogates. Surrogate recoveries were within laboratory control limits with the following exceptions:

- DPSC-C099-A MS: The recovery of the surrogate DCB fell below the control limits. The recovery of the surrogate TCMX passed. The target analyte recoveries were low but within control limits, and no results were qualified.
- DPSC-G116 MSD: The recovery of the surrogate DCB fell below the control limits. The target analyte recoveries were low but within control limits, and no results were qualified.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exceptions:

- DPSC- C099-A MS/MSD: The RPD for Aroclor 1016 and 1260 exceeded the control limits due to low extraction efficiency in the MS. The recoveries of the MS and MSD results were within laboratory control limits. The associated sample results were not qualified.
- DPSC-G116 MS/MSD: The RPD for Aroclor 1016 and 1260 exceeded the control limits due to low extraction efficiency in the MSD. The recoveries of the MS and MSD results were within laboratory control limits. The associated sample results were not qualified.

Field Duplicates. Field duplicate RPDs were within 50 percent with the following exceptions:

- DPSC-G098/DPSC-G598: Sample DPSC-G098 had J-flagged results for Aroclor 1254. Field duplicate DPSC-G598 had detection for Aroclor 1260 above the RL. The sample chromatograms were reviewed and do not look similar. The laboratory was contacted regarding the discrepancy. The laboratory responded:

  "The lab reviewed the PCB data as well as the Pesticide data and both were consistent with each other (they are co-extracted). QC wasn't performed on either sample so there is no way to discuss heterogeneity without pulling the frozen archive and re-analyzing the samples, but they concur that the duplicates don't look similar at all. I also pulled the jars and verified that the field labels were consistent and that we didn't mislabel them here. Further, the samples appear to be similar, i.e. sandy material with no rocks." - Greg Salata, CAS PM, May 19, 2010.

  Results for Aroclor 1254 and 1260 in samples DPSC-G098 and DPSC-G598 were qualified as estimated (J).

Calibrations. The ICAL were within acceptance criteria with the following exception:

- ICAL 8507: The second source failed low for Aroclor 1016 on DB-35MS column, within control limits on DB-XLB column. The second source failed low for Aroclor 1260 on DB-XLB column, within control limits on DB-35MS column. No results were qualified.
- ICAL 9125: The second source failed low for Aroclor 1260 on DB-35MS column, within control limits on DB-XLB column. No results were qualified.

The CCVs were within control limits with the following exceptions:

- CCV 0315F023: The surrogate DCB failed low on the DB-35MS and DB-XLB columns. Aroclor 1016 and 1260 failed low on the DB-XLB column, passed on the DB-35MS column. Results for Aroclors 1016 and 1260 in the associated samples DPSC-C041-A, DPSC-C041-B, and DPSC-IDW-1 were reported from the passing column, and not qualified. Results for DCB were reported from a column using average percent recovery of all analytes in the CCV. Results for DCB were within control limits, and the samples were not qualified.
- CCV 0410F051 failed high for Aroclor 1260 on DB-35MS column, passed on DB-XLB column. CCV 0410F063 failed high for Aroclor 1016 on DB-35MS column, passed on DB-XLB column. Results for affected analytes in the associated samples MB, LCS, DPSC-C090-A, and DPSC-C087-A were reported from the passing column and not qualified. Results for affected analytes in the associated samples DPSC-C099-A MS/MSD were reported from the DB-35MS column and qualified with "*". "*" changed to J. The result for Aroclor 1260 in DPSC-C099-A was reported from the failing column. Analyst notes on the raw analytical data indicated that the results should have been reported from the passing column. The results

were reported from the passing column in the EDD (22 Ui changed to 21 Ui). DPSC-C102-A - The result for Aroclor 1254 in associated sample DPSC-C102-A was reported from the DB-35MS column and not qualified.

- CCV 0410F063 failed high for Aroclor 1016 on DB-35MS column, passed on DB-XLB column. There were no detections for Aroclor 1016 in the associated samples DPSC-G097, DPSC-G091, DPSC-G092, DPSC-G093, DPSC-G100, DPSC-G094, and DPSC-G106 and results were not qualified.
- CCV 0725F033 failed low for DCB on DB-XLB column, passed on DB-35MS column. Results for DCB were reported from the passing column in associated samples MB, LCS, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C025-A, DPSC-C025-B, DPSC-C031-A, DPSC-C031-B, DPSC-G048, and DPSC-C025-B MS and not qualified. The result for DCB was reported from the failing column in DPSC-C025-B MSD. The results for that QC sample were not qualified.
- CCV 1229F023 failed low for DCB and Aroclor 1260 on DB-35MS column, passed on DB-XLB column. Results for DCB and Aroclor 1260 were reported from the passing column in associated samples MB, LCS, DPSC-C007-A, DPSC-G017, and DPSC-C007-A MS/MSD and not qualified.

CCVs passed alternative criteria using average percent recovery of all analytes in the standard.

3.2.12 PAHs

Holding Times and Reporting Limits. Holding times were within one year for frozen samples with the following exceptions:

- DPSC-C001-C, DPSC-C001-D, and DPSC-C024-B. The results for PAHs were qualified as estimated (J).

RL were acceptable. Results between the MDL and RL were qualified as estimated (J). RL was elevated for Naphthalene in DPSC-C024-B and DPSC-G086 due to sample dilution associated with high levels of the target analyte. The laboratory "D" qualifier was removed.

RL were elevated for multiple analytes in DPSC-C087-A due to 10-fold sample dilution. The laboratory "D" qualifier was removed.

Method Blanks. Method blanks were non-detect with the following exception:

- MB 03/08/10: The MB had a detection for naphthalene between the MDL and RL. Results for naphthalene in the associated samples were greater than five times the amount in the MB and not qualified.

Surrogates. Surrogate recoveries were within laboratory control limits with the following exceptions:

- DPSC-C024-B: The recovery for the surrogate Fluoranthene-d10 fell below the control limit. The remaining surrogates were in control, and results were not qualified.
- DPSC-C087-A MSD: The recovery for the surrogate Terphenyl-d14 exceeded the control limit. The sample was analyzed at dilution. The remaining surrogates were in control, and results were not qualified.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits with the following exceptions:

- DPSC-C087-A MS/MSD: The recoveries for Phenanthrene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(123-cd)pyrene, Dibenz(ah)anthracene, and Benzo(ghe)perylene fell outside the laboratory control limits due to high levels of target analytes in the source sample compared to the spiking amount. Results were not qualified.
- DPSC-C099-D MS/MSD: The recoveries for the target analytes were in control in the MS. The MSD recoveries for Acenapthylene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, and Benzo(a)pyrene exceeded the control limits due to sample heterogeneity. The RPD exceeded control limits for Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(e)pyrene, Indeno(123-cd)pyrene, Benzo(ghi)perylene and Benzo(a)pyrene. Results above the RL for Acenapthylene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(e)pyrene, Indeno(123-cd)pyrene, Benzo(ghi)perylene and Benzo(a)pyrene in DPSC-C099-D were qualified as estimated (J).

Internal Standards. The IS were within acceptance criteria with the following exception:

- DPSC-G086 dilution: The IS Perylene-d12 exceeded the criteria. Analytes associated with this IS were reported from the initial undiluted analysis and no results were qualified.

Field Duplicates. Field duplicate RPDs were within 50 percent with the following exceptions:

- DPSC-G098/DPSC-G598: The RPDs for target analytes above the RL exceeded 50 percent due to sample heterogeneity. Results for Naphthalene, 2-Methylnapthalene, 1-Methylnaphthalene, Acenaphthylene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene,

Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(123-cd)pyrene, Dibenz(ah)anthracene, Benzo(ghi)perylene in DPSC-G098 and DPSC-G598 were qualified as estimated (J).

- DPSC-G112/DPSC-G5112: The RPDs for target analytes above the RL exceeded 50 percent due to sample heterogeneity. Results for Naphthalene, 2-Methylnaphthalene, 1-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno9123-cd)pyrene, Dibenz(ah)anthracene, and Benzo(ghi)perylene in DPSC-G112 and DPSC-G5112 were qualified as estimated (J).

Calibrations. The ICAL were within acceptance criteria with the following exceptions:

- ICAL 9400: The target analytes Pyrene and Terphenyl-d14 exceeded the RSD limits. The ICAL passed alternate criteria using the RSD of all analytes in the calibration. Results for Pyrene and Terphenyl-d14 were reported from the analysis on April 19, 2010, associated with ICAL 9029. No results were qualified.

The CCVs were within control limits with the following exceptions:

- CCV 0419F002: The Internal Standard Perylene-d12 fell outside the retention time windows. The associated samples were reanalyzed on April 21, 2010 and compounds associated with that IS were reported from the reanalysis. Results were not qualified.

3.2.13 Dioxins/Furans

Results for 2378-TCDF were qualified by the laboratory with "C" as the sample results were confirmed using a second column. The "C" qualifier was removed from the following samples: DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C035-A, DPSC-C036-A, DPSC-C095-B, DPSC-C909-B, DPSC-C089-B, DPSC-G046, DPSC-G055, DPSC-G095, DPSC-G114, DPSC-G116, DPSC-G113, DPSC-090-A, DPSC-G094, DPSC-G115, and DPSC-G089.

Results for multiple analytes were qualified by the laboratory with "K" as the ion abundance criteria were outside the QC limits. The "K" qualifier was changed to "J" in the following samples:

- DPSC-C007-A: 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, and 1,2,3,4,7,8,9-HpCDF
- DPSC-C008-C: 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,6,7,8-HxCDD, and 1,2,3,7,8-PeCDD
- DPSC-C022-B: 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, and 1,2,3,4,7,8,9-HpCDF

- DPSC-C024-B: 2,3,7,8-TCDF
- DPSC-C035-A: 2,3,4,6,7,8-HxCDF
- DPSC-C036-A: 2,3,7,8-TCDD and 1,2,3,6,7,8-HxCDF
- DPSC-C089-B: 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,7,8-PeCDF, and 2,3,4,7,8-PeCDF
- DPSC-C090-A: 2,3,7,8-TCDD
- DPSC-C090-B: 2,3,7,8-TCDD and 2,3,4,6,7,8-HxCDF
- DPSC-C095-B: 2,3,7,8-TCDD and 1,2,3,7,8,9-HxCDD
- DPSC-G046: 1,2,3,6,7,8-HxCDD, 1,2,3,7,8-PeCDF, 2,3,4,6,7,8-HxCDF, and 2,3,7,8-TCDF
- DPSC-G055: 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 2,3,4,7,8-PeCDF, 1,2,3,6,7,8-HxCDF, and 2,3,4,6,7,8-HxCDF
- DPSC-G076: 1,2,3,4,6,7,8-HpCDF
- DPSC-G089: 2,3,7,8-TCDD, 1,2,3,6,7,8-HxCDF, and 2,3,4,7,8-PeCDF
- DPSC-G094: 1,2,3,4,7,8-HxCDD, 2,3,7,8-TCDF, and 1,2,3,7,8-PeCDF
- DPSC-G114: 1,2,3,7,8-PeCDD and 1,2,3,6,7,8-HxCDD
- DPSC-G115: 2,3,7,8-TCDD, 1,2,3,4,7,8-HxCDD, and 1,2,3,6,7,8-HxCDF
- DPSC-G116: 2,3,4,6,7,8-HxCDF and 1,2,3,4,7,8,9-HpCDF
- MB 12/23/09: OCDD and 1,2,3,4,6,7,8-HpCDF
- MB 03/30/10: 1,2,3,7,8-PeCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,4,7,8-PeCDF, 1,2,3,6,7,8-HxCDF, and OCDF
- MB 04/14/10: 1,2,3,4,7,8,9-HpCDF and 1,2,3,4,6,7,8-HpCDD

Holding Times and Reporting Limits. Holding times were within one year for frozen samples with the following exceptions:

- DPSC-C007-A, DPSC-C008-C, DPSC-C022-B, DPSC-C024-B, DPSC-C035-A, DPSC-C036-A, DPSC-G046, DPSC-G055, and DPSC-G076. The results for dioxins/furans were qualified as estimated (J).

RL were acceptable. Results between the Estimated Detection Limit (EDL) and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 12/23/09: Results for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, OCDF, Total Heptadioxins, and OCDD fell between the EDL and the RL. Results for those analytes in the

associated samples DPSC-C007-A, DPSC-C035-A, DPSC-C036-A, DPSC-G046, and DPSC-G076 were qualified by the laboratory with "B". The results for 1,2,3,4,6,7,8-HpCDF and OCDF in sample DPSC-G076 were less than five times the amount in the MB, and were raised to the RL and qualified as non-detect (U). Results in the other associated samples were greater than five times the amount in the MB, and the B qualifier was removed.

- MB 03/01/10: Results for 1,2,3,4,6,7,8-HpCDD, Total Heptadioxins, and OCDD fell between the EDL and the RL. Results for those analytes in the associated sample DPSC-G095 were qualified by the laboratory with "B". Results in the associated sample were greater than five times the amount in the MB, and the B qualifier was removed.
- MB 03/05/10: Results for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, OCDF, Total Heptadioxins, Total Tetra-furans, Total Hexa-Furans, Total Heptafurans and OCDD fell between the EDL and the RL. Results for those analytes in the associated samples DPSC-G089 and DPSC-G114 were qualified by the laboratory with "B". Results for 1,2,3,4,6,7,8-HpCDD and OCDD in DPSC-G114 were less than five times the amount in the MB. The result for 1,2,3,4,6,7,8-HpCDD was raised to the MRL and qualified as non-detect (U). The result for OCDD was above the RL, and qualified as non-detect (U). Other results in the associated samples were greater than five times the amount in the MB, and the B qualifier was removed.
- MB 03/11/10: Results for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,6,7,8-HpCDF, OCDF, Total Heptadioxins, Total Heptafurans and OCDD fell between the EDL and the RL. Results for those analytes in the associated samples DPSC-C095-B, DPSC-C909-B, and DPSC-C089-B were qualified by the laboratory with "B". Results for those analytes in the associated samples were greater than five times the amount in the MB, and the B qualifier was removed.
- MB 03/30/10: Results for 1,2,3,7,8-PeCDD, 1,2,3,4,7,8,-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDD, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, OCDF, Total Hexadioxins, Total Heptadioxins, Total Hexafurans, Total Heptafurans and OCDD fell between the EDL and the RL. Results for those analytes in the associated sample DPSC-C090-A qualified by the laboratory with "B". Results for those analytes in the associated sample were greater than five times the amount in the MB, and the B qualifier was removed.
- MB 03/31/10: Results for 1,2,3,4,6,7,8-HpCDD, OCDD, and Total Heptadioxins fell between the EDL and the RL. Results for those analytes in the associated samples DPSC-G116 and DPSC-G113 were qualified by the laboratory with "B". Results for those analytes in the associated samples were greater than five times the amount in the MB, and the B qualifier was removed.
- MB 04/06/10: Results for 1,2,3,4,6,7,8-HpCDD, Total Heptadioxins, and OCDD fell between the EDL and the RL. Results for those analytes in the associated sample DPSC-G094 were qualified by the laboratory with "B". Results for those analytes in the

associated sample were greater than five times the amount in the MB, and the B qualifier was removed.

- MB 04/14/10: Results for 1,2,3,4,6,7,8-HpCDD, OCDD, 1,2,3,4,7,8,9-HpCDF, OCDF, Total Heptadioxins, and Total Tetra-Furans fell between the EDL and the RL. Results for those analytes in the associated sample DPSC-G115 were qualified by the laboratory with "B". Results for those analytes in the associated sample were greater than five times the amount in the MB, and the B qualifier was removed.

Surrogates. Surrogate recoveries were within control limits.

Laboratory Control Samples. LCS recoveries were within control limits with the following exception:

- LCS 04/14/10: The recovery for 1,2,3,6,7,8-HxCDD exceeded the control limits in the LCS, fell within the control limits in the LCSD. The result for 1,2,3,6,7,8-HxCDD was qualified as estimated (J) in associated sample DPSC-G115.

Laboratory Duplicates: Laboratory duplicates of DPSC-G116 and DPSC-G113 were originally prepared on March 5, 2010. The RPDs failed due to presumed sample heterogeneity. The duplicate samples were re-prepared on March 31, 2010. The original results were not included in Level IV DDP for K1001769. An LCS/LCSD was prepared for both analytical batches and recoveries and RPDs were within control limits. Results were not qualified for those samples.

- DPSC-G113 re-extraction: The RPD fell within 50 percent or was not applicable with the following exceptions: 1,2,3,4,6,7,8-HpCDD, OCDD, 1,2,3,4,6,7,8-HpCDF, Total Hepta-dioxins, and Total Hepta-furans. Those analytes fell below the RL or were less than five times the RL and results were not qualified.
- DPSC-G116 re-extraction: The RPD fell within 50 percent or was not applicable with the following exceptions: 1,2,3,6,7,8-HxCDD, 1,2,3,4,7,8,9-HpCDF, Total Hexa-dioxins, Total Penta-furans, and total Hexa-furans. Those analytes fell below the RL or were less than five times the RL and results were not qualified.

Internal Standards. The IS were within acceptance criteria

Calibrations. The ICAL were within acceptance criteria. The CCVs were within control limits.

4.0 CHEMICAL ANALYSES ON WATER

4.1 Analytical Methods

A total of four rinsate blank samples were collected. Three of the samples were analyzed; sample DPSC-G9102 was not analyzed due to insufficient sample volume. The samples were analyzed for one or more of the following:

- Ammonia by EPA method 350.1M and SM 4500-NH3-G;
- Total organic carbon by EPA method 415.1or SM 5310C;
- Total sulfides by SM 4500-S2-D;
- Total metals by EPA Method 6020/7470A;
- Butyltins by Krone et al 1989;
- Diesel and oil-range total petroleum hydrocarbons (TPH) by Ecology method NWTPH-Dx;
- Organochlorine Pesticides by EPA method 8081A;
- Polychlorinated biphenyls (PCBs) by EPA method 8082;
- Polynuclear aromatic hydrocarbon (PAHs) by EPA Method 8270C-SIM; and
- Dioxins/furans by EPA Method 1613B.

4.2 QA Review by Analysis Type

4.2.1 Ammonia

Holding Times and Reporting Limits. Holding times of 28 days were met. RL were acceptable.

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits.

Laboratory Duplicate. The RPDs were within laboratory control limits or not applicable as the sample and duplicate were below the reporting limits.

Calibrations. The CCV were within control limits of 90 to 110 percent.

4.2.2 Total Sulfides

Holding Times and Reporting Limits. Holding times of seven days were met. RL were acceptable.

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits.

Laboratory Duplicate. The RPD was not applicable as the sample and duplicate were below the RL.

Calibrations. The CCV were within control limits.

4.2.3 Total Organic Carbon

Holding Times and Reporting Limits. Holding times of 28 days were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Matrix Spikes. MS recoveries were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory control limits or not applicable as sample and duplicate were below the RL.

Calibrations. The CCV were within control limits.

4.2.4 Total Metals

The laboratory analyzed total mercury by EPA method 7470A; aluminum, antimony, arsenic, cadmium, chromium, copper, lead, selenium, silver, and zinc by EPA Method 6020.

4.2.4.1 Total Metals by EPA 6020

Holding Times and Reporting Limits. Holding times of 6 months were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 03/04/10: Results for chromium fell between the MDL and the RL. The result for chromium in the associated sample DPSC-G999 was less than ten times the amount in the MB. The result for chromium was raised to the RL and qualified as ND (U).
- MB 03/09/10: Results for chromium fell between the MDL and the RL. The result for chromium in the associated sample DPSC-C990 was less than 10 times the amount in the MB. The result for chromium was raised to the RL and qualified as ND (U).
- MB 04/05/10: Results for aluminum, chromium, and selenium fell between the MDL and the RL. Results for those metals in the associated sample DPSC-G994 were less than ten times the amount in the MB. The result for selenium was raised to the RL and qualified as ND (U). The results for aluminum and chromium were above the RL and qualified as ND (U).

Laboratory Control Samples. LCS recoveries were within laboratory and method control limits.

Matrix Spikes. MS recoveries were within laboratory and method control limits with the following exceptions:

- DPSC-G999 MS: The recovery for aluminum (142.5.8%) fell within the laboratory control limits (56-143%), but exceeded the method control limits (75-125%). The LCS and PS recoveries were within control limits, indicating a matrix effect. Aluminum in sample DPSC-G999 was qualified as estimated (J).

Post Spikes. PS recoveries were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory control limits or not applicable, as sample and duplicate results were less than five times the RL.

Serial Dilutions: Serial dilutions were within control limits or not applicable.

Calibrations. The CCVs were within control limits.

4.2.4.2 Total Mercury by EPA 7470A

Holding Times and Reporting Limits. Holding times of 28 days were met. RL were acceptable.

Method Blanks. Method blanks were non-detect.

Laboratory Control Samples. LCS recoveries were within laboratory and method control limits.

Matrix Spikes. MS recoveries were within laboratory and method control limits.

Post Spikes. PS recoveries were within laboratory control limits.

Laboratory Duplicates. The RPDs were within laboratory control limits or not applicable, as sample and duplicate results were less than five times the RL.

Calibrations. The initial calibration curves were within acceptance criteria. The CCVs were within control limits.

4.2.5 Butyltins

Holding Times and Reporting Limits. Holding times of 14 days were met. RL were acceptable.

Method Blanks. Method blanks were non-detect.

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Calibrations. The initial calibration curves were within acceptance criteria. The CCV were within control limits.

4.2.6 TPH by NWTPH-Dx

Holding Times and Reporting Limits. Holding times of 14 days were met. RL were acceptable. Results between the MDL and RL were qualified as estimated (J). For sample DPSC-G999, the RL were elevated for DRO and RRO due to associated laboratory contamination in the method blank.

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 03/08/10: The MB had detections for DRO and RRO between the MDL and RL. Results in the associated sample DPSC-G999 were less than five times the amount in the MB. Results for DRO and RRO were raised to the RL and qualified as non-detect (U).
- MB 03/12/10: The MB had a detection for RRO between the MDL and RL. Results in the associated sample DPSC-C990 were less than the amount in the MB. Results for RRO in DPSC-C990 were raised to the RL and qualified as non-detect (U).
- MB 04/06/10: The MB had a detection for DRO between the MDL and the RL. Results in the associated sample DPSC-G994 were less than five times the amount in the MB. Results for DRO in DPSC-G994 were raised to the RL and qualified as non-detect (U).

Surrogates. Surrogate recoveries were within laboratory control limits with the following exceptions:

- MB, LCS/LCSD 03/12/10: The recoveries for the surrogate n-Triacontane exceeded 200%. The recoveries for the surrogate o-Terphenyl were within laboratory control limits. Results for the associated sample DPSC-C990 were below the RL, and were not qualified.

Laboratory Control Samples. LCS recoveries were within laboratory control limits with the following exception:

- LCS/LCSD 03/12/10: The recoveries for DRO and RRO were within laboratory control limits. The RPDs for DRO and RRO exceeded the control limits. As the recoveries were within control limits and results for the associated sample DPSC-C990 were below the RL, results were not qualified.

Laboratory Duplicates. The RPDs were within laboratory limits, or not applicable, as sample and duplicate were below the RL.

Calibrations. The initial calibration curves were within acceptance criteria. The CCVs were within control limits.

4.2.7 Pesticides

Results for multiple analytes were qualified by the laboratory with "P" as the results exceeded 40 percent between columns. The P qualifier was changed to J in the following samples:

- DPSC-C990: 4,4-DDD
- DPSC-G999: Oxychlordane

Holding Times and Reporting Limits. Holding times were within seven days. Results between the MDL and RL were qualified as estimated (J).

RL were elevated due to matrix interferences for multiple compounds in samples MB 03/01/10, MB 04/01/10, DPSC-C990, DPSC-G994, and DPSC-G999. Laboratory qualifier Ui changed to U.

DPSC-C990, DPSC-G994, and DPSC-G999: The RL were elevated for all analytes due to sample dilution. The sample chromatogram indicated the presence of non-target background compounds. The samples were analyzed at dilution. The laboratory "D" qualifier was removed.

Method Blanks. Method blanks were non-detect with the following exception:

- MB 03/01/10: The MB had detections for Endrin and Endosulfan II above the RL, and for trans-nonachlor between the MDL and the RL. The associated sample DPSC-G999 was ND for those compounds and results were not qualified.

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Internal Standards. The IS were within acceptance criteria

Calibrations. The initial calibration curves (ICAL) were within acceptance criteria with the following exceptions:

- ICAL 8946: The recovery for Methoxychlor on the DB-35MS column in the second source exceeded the control limits, but fell within the control limits on the DB-XLB column. No results were qualified.
- ICAL 9383: The recovery for 2,4,-DDE on the DB-XLB column in the second source exceeded the control limits, but fell within the control limits on the DB-35MS column. No results were qualified.

The CCVs were within control limits with the following exceptions:

- CCV0312F007 on DB-35MS column failed low for Hexachloroethane and Hexachlorobutadiene, passed on DB-XLB column. Affected analytes were reported from the passing column in the MB, LCS and LCSD. No results were qualified.
- CCV 0316F008 on DB-XLB column failed high for 2,4-DDE, passed on DB-35MS column. Affected analytes were reported from the passing column in the MB, LCS and LCSD.
- CCV0407F004 on DB-XLB and DB-35MS column failed low for TCMX, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Aldrin, Dieldrin, 4,4-DDE, and Endrin. CCV0407F004 on DB-XLB column failed low for gamma-Chlordane and alpha-Chlordane, passed on DB-35MS column. CCV0407F004 on DB-35MS column failed low for DCB, Heptachlor epoxide, Endosulfan II, 4,4-DDD, 4,4-DDT, and Methoxychlor, passed on DB-XLB column. CCV 0407F006 failed low on DB-XLB and DB-35MS column for Chlordane. CCV 0407F007 failed low on DB-XLB and DB-35MS column for Hexachloroethane. CCV 0407F007 failed low on DB-35MS column for Hexachlorobutadiene, passed on DB-XLB column. Affected analytes in the associated sample MB were reported from the passing column with the following exceptions: Alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Aldrin, Dieldrin, 4,4-DDE, Endrin, chlordane, hexachloroethane were reported from the failing column and qualified with "*" in the MB, LCS/LCSD. Target analyte 4,4-DDD was reported from the DB-35MS column and qualified with "*". "*" changed to J.

- CCV 0414F005 on DB-XLB column failed low for Toxaphene, passed on DB-35MS column. CCV 0414F006 failed low on DB-XLB and DB-35MS column for Chlordane. Toxaphene in the associated sample DPSC-G994 was reported from the DB-XLB column by the laboratory, though hand-written notes on the raw analytical data indicated that it should have been reported from the DB-35MS column. The laboratory was contacted for confirmation. The result for Toxaphene in DPSC-G994 was changed to the DB-35MS column result (130 Ui to 57 Ui). Chlordane results in DPSC-G994 were qualified as estimated (J).

CCVs passed alternative criteria using average percent recovery of all analytes in all CCV standards.

4.2.8 PCBs

Holding Times and Reporting Limits. Holding times were within 7 days. RL were acceptable. RL were elevated due to matrix interferences for Aroclor 1221 and 1232 in sample DPSC-G999. Laboratory qualifier Ui changed to U.

Method Blanks. Method blanks were non-detect.

Surrogates. Surrogate recoveries were within laboratory control limits.

Laboratory Control Samples. LCS recoveries were within laboratory control limits with the following exception:

- LCS/LCSD 03/10/10: The recoveries for Aroclor 1016 and 1260 were within laboratory control limits. The RPD exceeded the control limits. As the percent recoveries were within control, results were not qualified.

Calibrations. The ICAL were within acceptance criteria with the following exception:

- ICAL 9125: The second source failed low for Aroclor 1260 on DB-35MS column, within control limits on DB-XLB column. No results were qualified.

The CCVs were within control limits with the following exceptions:

- CCV 0311F003 failed high for DCB, Aroclor 1016 and 1260 on DB-XLB column, passed on DB-35MS column. CCV 0311F011 failed high for DCB, Aroclor 1016 and 1260 on DB-XLB column, passed on DB-35MS column. Associated samples MB, LCS/LCSD, and DPSC-G999 were reported from the DB-35MS column, and no results were qualified.
- CCV 0312F003 failed high for DCB and Aroclor 1260 on DB-XLB column, passed on DB-35MS column. CCV 0312F024 failed high for DCB on DB-XLB column, passed on DB-35MS column.

Associated samples DPSC-C990, MB, and LCS/LCSD were reported from the passing column and results were not qualified.

- CCV 0406F002 failed low for Aroclor 1016 on DB-XLB column, passed on DB-35MS column. CCV 00406F018 failed low for Aroclor 1016 on DB-XLB column, passed on DB-35MS column. Associated samples MB, LCS/LCSD, and DPSC-G994 were reported from the DB-XLB column, and results were not qualified.

4.2.9 PAHs

Holding Times and Reporting Limits. Holding times were within seven days. RL were acceptable. Results between the MDL and RL were qualified as estimated (J). RL were elevated for Acenaphthene due to matrix interferences in samples DPSC-C990 and DPSC-G994. Laboratory qualifier Ui changed to U.

Method Blanks. Method blanks were non-detect with the following exceptions:

- MB 03/05/10: The MB had a detection for Naphthalene between the MDL and the RL. Results for naphthalene in the associated sample DPSC-G999 were greater than five times the amount in the MB and were not qualified.

Surrogates. Surrogate recoveries were within laboratory control limits with the following exceptions:

- DPSC-G994: All surrogate recoveries failed high. The laboratory reanalyzed the sample with similar results. Sample detections above the RL were qualified as estimated (J).

Laboratory Control Samples. LCS recoveries were within laboratory control limits.

Internal Standards. The IS were within acceptance criteria.

Calibrations. The ICAL were within acceptance criteria. The CCVs were within control limits with the following exception:

- CCV 0310F003 failed low for Pyrene. Pyrene in the associated sample DPSC-G999 was reported from analysis on March 9, 2010 and no results were qualified.

4.2.10 Dioxins/Furans

Results for 1,2,3,4,6,7,8-HpCDD in DPSC-G994 were flagged with "K" by the laboratory as ion abundance were outside the QC limits. The "K" qualifier was changed to "J".

Holding Times and Reporting Limits. Holding times were met. RL were acceptable. Results between the Estimated Detection Limit (EDL) and RL were qualified as estimated (J).

Method Blanks. Method blanks were non-detect with the following exceptions:

- 03/31/10: Results for 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, Total Heptadioxins, Total Hexafurans and OCDD fell between the EDL and the RL. Results for those analytes in the associated sample DPSC-G994 were qualified by the laboratory with "B". Results for 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, Total Heptadioxins, and Total Hexafurans in the associated sample DPSC-G994 were non-detect and not qualified. Results for 1,2,3,4,6,7,8-HpCDD and OCDD in sample DPSC-G994 were less than five times the amount in the MB and therefore raised to the RL and qualified as non-detect (U). The B qualifier was removed.

Surrogates. Surrogate recoveries were within control limits.

Laboratory Control Samples. LCS recoveries were within control limits.

Internal Standards. The IS were within acceptance criteria

Calibrations. The ICAL were within acceptance criteria. The CCVs were within control limits.

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