REPORT

DATA SUMMARY REPORT
YEAR 2 EVENT 2 LONG-TERM PILOT CAP MONITORING
REMOVAL ACTION NW NATURAL "GASCO" SITE

Prepared for Submittal to

U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Prepared by

Anchor QEA, LLC
6650 SW Redwood Lane, Suite 110
Portland, Oregon 97224

On behalf of

NW Natural
220 NW Second Avenue
Portland, Oregon 97209

May 2009

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TABLE OF CONTENTS

1 INTRODUCTION 1

2 SUMMARY OF MONITORING ACTIVITIES AND ANALYSES 3

2.1 Visual Inspection (RAO-Specific) 3

2.2 Bathymetric Survey (RAO-Specific) 3

2.3 Recent Depositional Sediment Sampling (Site-Specific) 3

2.4 Near-Bottom Surface Water Sampling (Pilot Cap-Specific) 4

2.5 Chemical Analysis 5

2.6 Quality Assurance/Quality Control (QA/QC) 5

2.6.1 Field QA/QC 5

2.6.2 Laboratory QA/QC 5

2.6.3 Chain-of-Custody 6

2.7 Data Validation 6

3 MONITORING RESULTS 7

3.1 Visual Inspection 7

3.2 Bathymetry Survey 7

3.3 Recent Depositional Sediment Sampling 7

3.4 Near-Bottom Surface Water 7

3.5 Quality Assurance/Quality Control 8

3.5.1 Field QA/QC 8

3.5.2 Laboratory QA/QC 8

3.5.3 Data Validation 8

3.5.3.1 Depositional Sediment Results 9

3.5.3.2 Discrete Surface Water Results 9

3.5.3.3 QA/QC Analytical Results 10

3.5.3.4 Reporting Limits 11

4 REFERENCES 12

List of Tables

Table 1 Sample Collection Information – Year 2 Event 2 Long-Term Monitoring
Table 2 Depositional Surface Sediment Analytical Results – Year 2 Event 2 Long-Term Monitoring
Table 3 Discrete Near-Bottom Surface Water Analytical Results – Year 2 Event 2 Long-Term Monitoring
Table 4 Quality Assurance/Quality Control Analytical Results – Year 2 Event 2 Long-Term Monitoring
Table 5 Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

List of Figures

Figure 1 Vicinity Map
Figure 2 Former Pre-Removal Lateral and Vertical Extents of Surface Tar Body
Figure 3 Actual Year 2 Event 2 Long-Term Monitoring Stations
Figure 4 Year 2 Event 2 Bathymetry
Figure 5 Isopach Comparing Post-Cap October 2005 and January 2009 Bathymetry Surveys

List of Appendices

Appendix A Visual Monitoring Collection Forms
Appendix B Depositional Surface Sediment Collection Forms
Appendix C Chain-of-Custody Forms
Appendix D Data Validation Reports

LIST OF ACRONYMS AND ABBREVIATIONS

AP	Analytical Perspectives
BTEX	benzene, toluene, ethylbenzene, and xylene
CAS	Columbia Analytical Services, Inc.
CDD	chlorinated dibenzo-p-dioxin
CDF	chlorinated dibenzofurans
COC	chain-of-custody
DOC	dissolved organic carbon
EPA	U.S. Environmental Protection Agency
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LDC	Laboratory Data Consultants, Inc.
MARP	Monitoring and Reporting Plan
MDL	method detection limit
MRL	method reporting limit
MS/MSD	matrix spike and matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
OPR	ongoing precision and recovery analysis
Order	Administrative Order on Consent
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCM	pilot cap monitoring
QA/QC	quality assurance/quality control
RAOs	Removal Action Objectives
RAPP	Removal Action Project Plan
RPD	relative percent difference
Site	NW Natural "Gasco" Site
SOW	Statement of Work
SVOC	semivolatile organic compound
TOC	total organic carbon
TPH-Dx	total petroleum hydrocarbons – diesel range
TPH-G	gasoline-range total petroleum hydrocarbons

TSS	total suspended solids
VOC	volatile organic compound

1 INTRODUCTION

NW Natural entered into an Administrative Order on Consent (Order) with the U.S. Environmental Protection Agency (EPA) on April 28, 2004, to perform a time-critical removal action at the "Gasco" site (Site; EPA 2004a; Figure 1). The Order requires that NW Natural perform a number of actions associated with removing a tar body (as defined in the Order) from the riverbank and nearshore sediment adjacent to the Site. The extent of the tar body was defined during the design characterization sampling (Figure 2). In accordance with the EPA-approved *Final Removal Action Project Plan* (RAPP; Anchor 2005), removal of the tar body was initiated in August 2005 and was completed in late October 2005.

Pending future implementation of a site-wide remedy, long-term monitoring of the tar body removal occurred in 2006, 2007, and 2008 (referred to as Year 0, Year 1, and Year 2 long-term monitoring) in accordance with the EPA-approved *Monitoring and Reporting Plan* (MARP; Anchor 2006a). Evaluation of the first two years of post-removal long-term monitoring results showed that a revised monitoring approach was warranted to continue to collect useful information relevant to the identified post-removal monitoring objectives. The revised monitoring approach was summarized in a letter to EPA dated March 26, 2008, with the subject "Proposed Revised Long-Term Pilot Cap Monitoring Approach – NW Natural "Gasco" Site." EPA approved of this approach in a letter to NW Natural dated April 30, 2008.

In summary, the revised monitoring approach consisted of the following activities and a reporting procedure and schedule identical to those defined in the MARP (Anchor 2006a):

- Diver reconnaissance surveys once per summer during low river elevations
- Bathymetric surveys during summer low and winter high river elevation conditions
- Continued monitoring for the presence of product (i.e., tar or oil) in the hydraulic low spot created by the removal action during the annual low river elevation diver reconnaissance surveys
- Continued monitoring of the stability of the pilot cap armor and adjacent fringe through completion of the semi-annual bathymetry surveys and annual diver reconnaissance surveys
- Continued monitoring of depositional sediment concentrations both within the pilot cap area and in the fringe cover area

- Continued monitoring of the discrete near-bottom surface water concentrations at the nine pilot cap monitoring stations and downstream and upstream "background" stations

In accordance with the reporting requirements identified in the MARP (Anchor 2006a), the remainder of this Data Summary Report provides the Year 2 Event 2 monitoring results. As requested by EPA, this Data Summary Report includes a summary of the monitoring conducted and methods used, tabulated results, data validation reports, and sampling location maps.

2 SUMMARY OF MONITORING ACTIVITIES AND ANALYSES

This section summarizes the Year 2 Event 2 sampling activities. Monitoring related to meeting the Removal Action Objectives (RAOs) of the Statement of Work (SOW) versus evaluation of the pilot cap are noted in the heading of each subsection below. The results of sampling activities are described in Section 3.

2.1 Visual Inspection (RAO-Specific)

Visual monitoring has been conducted since completion of the removal action to identify any areas of sheen or product release per the RAOs in the project SOW. Visual monitoring was conducted from October 2008 to March 2009 following submittal of the Data Summary Report - Year 2 Event 1 Long-Term Pilot Cap Monitoring (Anchor 2008b). Monitoring was conducted either from the waterside, the top of the bank, the beach, and/or the adjacent pipeline structure to ensure visual coverage of the removal action area.

Results of the visual surveys are discussed in Section 3.1.

2.2 Bathymetric Survey (RAO-Specific)

A bathymetry survey was performed during the Year 2 Event 2 monitoring activities on January 5, 2009, within the entire area previously bounded by the outer area containment system to monitor changes in mudline elevation and assess changes in cap and fringe cover thickness.

The bathymetry survey results are discussed in Section 3.2.

2.3 Recent Depositional Sediment Sampling (Site-Specific)

As identified during the Year 0, Year 1, and Year 2 long-term monitoring activities, a depositional layer of surface sediment was identified during the diver reconnaissance survey that overlaid the pilot cap armor layer and fringe cover outside of the pilot cap area. This layer ranged in thickness from approximately 3 to 10 centimeters across the entire pilot cap area (Table 1). Although not required by the MARP (Anchor 2006a), NW Natural has continued to sample these sediments to determine the chemical characteristics of the river-wide sediment loading to the pilot cap area and perimeter fringe cover area and evaluate the

potential concentration differences in these two areas. This material was sampled on December 11, 2008 at three pilot cap monitoring stations (PCM-02, PCM-06, and PCM-09), as well as at three stations in the fringe cover area (PCM-14, PCM-15, and PCM-22) (Figure 3). Sampling stations PCM-04 and PCM-22 were added to the revised monitoring approach to further evaluate depositional sediment concentration trends within the pilot cap and fringe cover areas, respectively. Due to insufficient depositional material at station PCM-04, no sample was collected at this station. The samples were analyzed for the full list of Portland Harbor Superfund Site contaminants of interest (Integral 2004), including dioxins/furans and polychlorinated biphenyl (PCB) congeners, rather than site-specific contaminants of interest.

The depositional surface sediment results are provided in Section 3.3.

2.4 Near-Bottom Surface Water Sampling (Pilot Cap-Specific)

Discrete near-bottom surface water samples were collected directly overlying the cap and at locations downstream and upstream from the removal action area. Nine near-bottom surface water samples were collected within the pilot cap area (PCM-02 to PCM-06, PCM-08 to PCM-10, and PCM-21). In addition, discrete samples were collected from three upstream stations (PCM-13, PCM-19, and PCM-20) and one downstream station (PCM-01). The sampling locations are shown on Figure 3.

The discrete samples were collected on December 11, 2008, in accordance with the MARP (Anchor 2006a) protocols. The discrete samples were collected first thing in the morning prior to any monitoring activities with the potential to disturb the mudline and increase suspended solids in the water column. The discrete samples were analyzed for total organic carbon (TOC); dissolved organic carbon (DOC); total suspended solids (TSS); total, free and amenable cyanide; sulfides; total and dissolved iron; polycyclic aromatic hydrocarbons (PAHs); and benzene, toluene, ethylbenzene, and xylene (BTEX). The DOC and dissolved iron were laboratory-filtered so the results are in dissolved concentrations. The BTEX samples were not field- or laboratory-filtered.

The discrete near-bottom surface water sampling results are discussed in Section 3.4.

2.5 Chemical Analysis

Columbia Analytical Services, Inc. (CAS), a National Environmental Laboratory Accreditation Program (NELAP) -certified laboratory located in Kelso, Washington, conducted all bulk sediment and water chemical analyses except for PCB congeners and dioxin/furan analyses. Analytical Perspectives (AP), a NELAP-certified laboratory located in Wilmington, North Carolina conducted the PCB congener and dioxin/furan analyses. Chemical testing adhered to the procedures defined in the MARP (Anchor 2006a).

2.6 Quality Assurance/Quality Control (QA/QC)

2.6.1 Field QA/QC

Field quality assurance/quality control (QA/QC) samples were used to evaluate the efficiency of field decontamination procedures. One trip blank accompanied samples submitted to the laboratory on December 12, 2008. One rinsate blank each was submitted in conjunction with depositional sediment sampling and near-bottom surface water sampling. In addition, one field blank, consisting of analysis of the deionized water used for the rinsate blanks, was submitted and analyzed.

2.6.2 Laboratory QA/QC

Matrix spike and matrix spike duplicates (MS/MSD) were analyzed with each organic analytical method with the exceptions of NWTPH-G, NWTPH-DX, PCB congeners, and dioxin/furans. NWTPH-G and NWTPH-DX require sample duplicates only. PCB congeners and dioxin/furans are spiked with labeled standards in every sample which evaluate the matrix bias of every sample and thus do not require a separate MS/MSD analysis. An MS and a sample duplicate were analyzed with each inorganic analytical method with the exception of total solids, TSS, and grain size analyses. For these three analyses, a duplicate or triplicate analysis was performed and a relative percent difference (RPD) was used to evaluate control. Additional quality control included method blanks, surrogate compound analysis, and laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) analyses, and ongoing precision and recovery analysis (OPR). Analyses which deviated from the suggested QA/QC guidelines are discussed below.

Analyses of the discrete surface water samples that deviated from the QA/QC guidelines listed above were PAHs and volatile organic compounds (VOCs), which had insufficient sample volume to prepare MS/MSD samples. An LCS/LCSD was analyzed in lieu of an MS/MSD to assess precision.

Analyses of the depositional sediment samples that deviated from the QA/QC guidelines were herbicides, which had no MS/MSD analysis. An LCS/LCSD was analyzed in lieu of an MS/MSD to assess precision.

2.6.3 Chain-of-Custody

Chain-of-custody (COC) forms were used to track sample custody and document the proper handling and integrity of all field samples. All sediment and water samples were delivered directly to the laboratory by Anchor QEA personnel. All samples were packed in chilled coolers. Copies of the COC forms for all sampling media are provided in Appendix D.

2.7 Data Validation

All data submitted in this report were validated by Laboratory Data Consultants, Inc. (LDC) of Carlsbad, California. The level 3 data validation was performed under EPA guidelines, as described in the MARP (Anchor 2006a). The analyses were validated using the following documents, as applicable to each method:

- Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 1999)
- Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 2004b)
- National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (EPA 2005)

3 MONITORING RESULTS

3.1 Visual Inspection

The visual monitoring forms are provided in Appendix B. No areas of sheen or product release were identified during any of the visual inspections.

3.2 Bathymetry Survey

The results of the bathymetry survey are provided in Figure 4. The isopach surface comparing the elevation differences identified between the post-cap placement (conducted in October 2005) and the Year 2 Event 2 surveys is provided in Figure 5. This isopach surface continues to document that the pilot cap area is, in general, a stable depositional environment and has withstood erosive forces during the high winter flows. Consistent with the Year 0, Year 1, and Year 2 survey results (Anchor 2007, Anchor 2008a, and Anchor 2008b), a small area within the protected area (i.e., area with no dredging) just upstream from the channelward pipeline support continues to show elevations below the as-built capping elevations. The lower elevations are in the same general footprint and depths as the Year 0, Year 1, and Year 2 surveys, indicating no significant additional erosion in this area. As discussed in previous monitoring reports, it is anticipated that these lower elevations are due to slope failure into the dredged area just upstream. Note that the accuracy of the bathymetry survey is estimated to be plus or minus 0.5 feet.

3.3 Recent Depositional Sediment Sampling

The depositional surface sediment collection forms are provided in Appendix C and the analytical results are provided in Table 2. A number of metals, PAHs, and pesticides yielded concentrations above the identified screening levels in the recently deposited sediments at the pilot cap and fringe cover stations. Additionally, several PCBs, semi-volatile organic compounds (SVOCs), and VOCs had non-detect reporting limits that exceeded one or more screening levels.

3.4 Near-Bottom Surface Water

The discrete near-bottom surface water analytical results are provided in Table 3. Total PAH concentrations at several of the pilot cap location stations were above the identified

screening levels. Free cyanide concentrations at several of the pilot cap location stations and one upstream location were above the identified screening levels. In addition, the benzo(a)pyrene concentrations at PCM-09, PCM-10, and PCM-21, and benzo(a)anthracene concentrations at PCM-10 and PCM-21 were above at least one of the identified screening levels. Note that free cyanide detections were right at the method reporting limit (MRL) for this analysis, likely indicating uncertainty as to the accuracy of the measurement. In addition, Ten out of the thirteen samples with free cyanide detections were undetected for total cyanide indicating further uncertainty as to the accuracy of the free cyanide detections in these samples. Also, some samples had non-detect reporting limits for total cyanide, benzo(a)pyrene, dibenzo(a,h)anthracene, and benzene that exceeded one or more screening level.

3.5 Quality Assurance/Quality Control

The overall data QA/QC results for the Year 2 Event 2 monitoring effort are described below. In summary, the completeness goal of 90% was met and other data quality objectives were generally met, with the exceptions discussed in the data validation section below.

3.5.1 Field QA/QC

The field QA/QC analytical results are provided in Table 4. Only very low level detections of common laboratory contaminants were identified, indicating the equipment decontamination protocols were successful.

3.5.2 Laboratory QA/QC

Data qualifiers assigned as a result of the data validation and their definitions are shown on each of the respective analytical results tables (i.e., Table 2 to Table 4).

3.5.3 Data Validation

Data qualifiers assigned as a result of the data validation and their definitions are shown on each of the respective analytical results tables (i.e., Table 2 to Table 4). Data validation reports are provided in Appendix E. These reports verified the analytical accuracy and precision of the chemical analyses performed during this monitoring effort. The Year 2

Event 2 monitoring data may have been qualified as estimated for a particular analysis based on method or technical criterion as stated in the functional guidelines (EPA 1999, 2004b). Data qualified with a "J" indicates that the associated numerical value is the approximate concentration of the analyte. Data qualified with a "UJ" indicates the approximate reporting limit below which the analyte was not detected. Consequently, these data qualifications are not expected to alter the data quality objectives defined in the MARP (Anchor 2006a). Data qualified with an "R" has been rejected and was not considered valid for the purpose of assessing completeness.

A brief description of the data usability for each of the media monitored is provided below.

3.5.3.1 Depositional Sediment Results

A total of six depositional sediment samples were collected on December 11, 2008. All chemical analyses were analyzed by CAS except PCB congeners and dioxin/furans which were analyzed by AP. The CAS data was reported under the lab report ID K0812115 and the AP data was reported under the lab report ID P9968. There were no problems encountered with total solids, ammonia, total sulfides, TOC, gasoline-range total petroleum hydrocarbons (TPH-G), diesel- and residual-range total petroleum hydrocarbons (TPH-Dx), PCBs, butyltins, phenols, dioxin/furans, and PCB-congeners analyses. Remaining analyses (VOCs, SVOCs, PAHs, pesticides, metals, hexavalent chromium, total cyanide, and grainsize) contained QA/QC-related issues pertaining to method or technical criteria. Associated sample results were qualified as estimated based on these findings. All data were determined to be useable as qualified in this data report with two exceptions: 1) a low LCS recovery of VOC analyte trans-1,4-dichloro-2-butene resulted in the rejection of this analyte in samples PCM-09DS-081211, PCM-14DS-081211, PCM-15DS-081211, and PCM-22DS-081211, and 2) low surrogate recoveries of acid compounds (phenolics) in some SVOC analyses resulted in the rejection of all acid compounds in samples PCM-14DS-081211, PCM-15DS-081211, and PCM-22DS-081211.

3.5.3.2 Discrete Surface Water Results

Thirteen surface water samples were collected December 11, 2008. The samples were submitted to CAS and reported under the lab report ID K0812106. There were no problems

encountered with the VOC, PAHs, iron, total cyanide, free cyanide, sulfide, TOC, and DOC analyses with the exception of method blank concentrations detected below the reporting limit which resulted in some detect values becoming non-detects. The remaining analyses (amenable cyanide and TSS) contained a few QA/QC related issues pertaining to method criteria. Associated results were qualified as estimates based on the findings. All data were deemed useable as qualified. Due to some sample collection oversights sample aliquots were not collected for sulfide in sample PCM-20DSW-081211 and dissolved iron and DOC in sample PCM-1DW-081211.

3.5.3.3 QA/QC Analytical Results

Four QA/QC samples were submitted to the laboratory on December 12, 2008. The samples were submitted to CAS and reported under the lab report IDs K0812114 and K0900558.

Analysis of the depositional sediment rinsate blank (i.e., sample PCM-DSRB-081212) resulted in the detection of aluminum, lead, benzyl alcohol, butylbenzyl phthalate, diethyl phthalate, chloroform, methylene chloride, and toluene below the MRL, but above the method detection limit (MDL). Zinc was detected above the MRL.

Analysis of the discrete surface water rinsate blank (i.e., sample PCM-DRB-081212) resulted in the detection of 2-methylnaphthalene below the MRL but above the MDL.

Analysis of the field blank (i.e., sample PCM-FB-081212) resulted in the detection of aluminum, lead, zinc, benzyl alcohol, diethyl phthalate, chloroform, methylene chloride, and toluene below the MRL, but above the MDL.

One trip blank was analyzed in association with sample collection. No VOCs were detected in this analysis.

None of the depositional sediment or discrete surface water results were qualified based on the rinsate or field blank analytical results.

3.5.3.4 Reporting Limits

As shown in Table 5, the target laboratory MRLs for all of the depositional sediment samples were achieved, with the exception of total cyanide, hexavalent chromium, tetra-butytin, PCB aroclors, PCB congeners, pesticides, herbicides, SVOCs, and VOCs in some samples. For PCB aroclor analyses, the reporting limits were elevated for multiple target aroclors due to the presence of non-target background components. For PCB congener analyses, all samples were diluted 1:10 to eliminate quantitative interference. For herbicide analyses the reporting limits were raised in several samples due to high levels of non-target background components; appropriate method clean-up procedures were attempted prior to dilution of the sample extracts but did not eliminate the need for a dilution. For VOC analyses the lab performed a screening prior to analysis which indicated that high concentrations of non-target VOCs were present. This prompted a medium-level analysis (which is essentially a dilution) on some samples. For SVOC analyses, most samples required dilutions due to high levels of non-target background components; appropriate method clean-up procedures were attempted prior to dilution of the sample extracts, but did not eliminate the need for a dilution. Pesticides, non-diluted VOCs, tetra-butyltin, total cyanide, and hexavalent chromium analyses had raised MRLs due to the concentration of the initial calibration's low-end standard, which did not support a lower reporting limit. Due to the difficult matrix of these samples, the achieved reporting limits were deemed adequate.

The target laboratory MRLs for the discrete surface water samples were achieved with the exception of total and amenable cyanide, TSS, and PAHs in some samples. The laboratory cannot achieve lower MRLs for amenable cyanide, total cyanide, and TSS due to instrument or equipment constraints. PAH MRLs were generally met; there were just a few insignificant exceedances due to initial sample size volumes. Achieved reporting limits were deemed adequate.

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TABLES

Table 1
Sample Collection Information - Year 2 Event 2 Long-Term Monitoring

Station	Proposed (NAD 83)		Actual (NAD 83)[e]		Depositional Surface Sediment			Discrete Near-Bottom Surface Water	
	Latitude	Longitude	Latitude	Longitude	Date	Time	Depositional Layer (cm)	Date	Time
PCM-01	45.5815213	-122.7611330	45.5815213	-122.7611330	--	--	--	12/11/2008	9:20
PCM-02	45.5801345	-122.7583817	45.5801345	-122.7583817	12/11/2008	13:50	8	12/11/2008	10:30
PCM-03	45.5800443	-122.7584068	45.5800443	-122.7584068	--	--	--	12/11/2008	11:15
PCM-04[a]	45.5799599	-122.7584167	45.5799599	-122.7584167	12/11/2008	14:10	3	12/11/2008	11:00
PCM-05	45.5801330	-122.7582274	45.5801330	-122.7582274	--	--	--	12/11/2008	11:25
PCM-06	45.5800349	-122.7582066	45.5800349	-122.7582066	12/11/2008	14:20	7	12/11/2008	11:40
PCM-21[b]	45.5798940	-122.7582338	45.5798940	-122.7582338	--	--	--	12/11/2008	13:40
PCM-08	45.5800056	-122.7580492	45.5800056	-122.7580492	--	--	--	12/11/2008	11:50
PCM-09	45.5798946	-122.7581036	45.5798946	-122.7581036	12/11/2008	14:40	9	12/11/2008	12:00
PCM-10	45.5798427	-122.7582100	45.5798427	-122.7582100	--	--	--	12/11/2008	12:30
PCM-13	45.5789664	-122.7548505	45.5789664	-122.7548505	--	--	--	12/11/2008	10:00
PCM-14[c]	45.5804451	-122.7578888	45.5804451	-122.7578888	12/11/2008	15:20	3	--	--
PCM-15[c]	45.5802183	-122.7572758	45.5802183	-122.7572758	12/11/2008	15:45	3	--	--
PCM-19	45.5787667	-122.7548054	45.5787667	-122.7548054	--	--	--	12/11/2008	10:05
PCM-20	45.5791756	-122.7549144	45.5791756	-122.7549144	--	--	--	12/11/2008	10:15
PCM-22[d]	45.5802003	-122.7579525	45.5802003	-122.7579525	12/11/2008	15:30	10	--	--

Notes:

a Additional depositional sediment sampling station collected during the Year 2 Event 1 and Year 2 Event 2 sampling to better evaluate depositional sediment concentrations within the pilot cap area. There was insufficient material to sample depositional sediment material while not collecting underlying fringe cap sand. No sample was collected and analyzed at Station PCM-04.

b This station was offset approximately 15 feet southwest from station PCM-18 sampled during Year 0 Event 3. Gravel placed at the target station location as part of the Phase 2 offshore drilling actitivies precluded sampling at PCM-18.

c The grab sampler was deployed twice at the same location to retrieve sufficient sample volume for analysis.

d Additional depositional sediment sampling station collected during the Year 2 Event 1 and Year 2 Event 2 sampling to better evaluate fringe cover depositional sediment concentrations.

e The actual sampling stations were collected when the vessel was on station.

Table 2
Depositional Surface Sediment Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID: Sample ID: Sample Date: Sample Depth Interval:	ODEQ (2001) Bioaccumulative Level II Screening Level Values (SLV)	MacDonald et al. (2000) Consensus Based Toxicity Probable Effects Concentration (PEC)	PCM-02 PCM-02DS-081211 12/11/2008 0 - 8 cm	PCM-06 PCM-06DS-081211 12/11/2008 0 - 7 cm	PCM-09 PCM-09DS-081211 12/11/2008 0 - 9 cm	PCM-14 PCM-14DS-081211 12/11/2008 0 - 3 cm	PCM-15 PCM-15DS-081211 12/11/2008 0 - 3 cm	PCM-22 PCM-22DS-081211 12/11/2008 0 - 10 cm
Conventional Parameters (pct)								
Total organic carbon			**3.04**	**2.95**	**2.92**	**1.81**	**1.98**	**2.61**
Total solids			**42.7**	**41**	**41.9**	**43.1**	**42**	**40**
Conventional Parameters (mg/kg)								
Ammonia			**83.4**	**78.9**	**149**	**40.7**	**47.6**	**121**
Cyanide			0.49 UJ	0.52 UJ	44 UJ	0.38 UJ	44 UJ	0.41 UJ
Sulfide			1.3 U	1.3 U	**9.2**	1.3 U	**1.2 J**	**6.3**
Conventional Parameters (su)								
pH			**6.83**	**6.89**	**6.91**	**6.96**	**7.05**	**6.91**
Grain Size (pct)								
Total Gravel			**1.59 J**	**0.62 J**	**1.73 J**	**0.57 J**	**4.64 J**	**2.58 J**
Total Sand			**52.68**	**39.04**	**32.74**	**50.77**	**45.41**	**22.31**
Total Silt			**39.3**	**58.9**	**63**	**47.6**	**50.1**	**73.1**
Total Clay			**5.34 J**	**6 J**	**8.12 J**	**2.81 J**	**4.36 J**	**4.51 J**
Total Fines (Silt + Clay)			**44.64**	**64.9**	**71.12**	**50.41**	**54.46**	**77.61**
Metals (mg/kg)								
Aluminum			**22900**	**26900**	**26500**	**21500**	**19300**	**26400**
Antimony	10	64	**0.16 J**	**0.2 J**	**0.17 J**	**0.19 J**	**0.13 J**	**0.15 J**
Arsenic	4	33	**3.1**	**3.6**	**3.8**	**3.8**	**3.5**	**3.7**
Cadmium	0.003	4.98	**0.216**	**0.248**	**0.252**	**0.184**	**0.188**	**0.245**
Chromium	4200	111	**26.9**	**30.5**	**31.1**	**25**	**24**	**29.7**
Chromium VI			1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ	1.3 UJ
Copper	10	149	**34.1**	**39.5**	**41.9**	**33.1**	**31.2**	**39.6**
Lead	128	128	**11.9 J**	**13 J**	**13.4 J**	**11.4 J**	**11.1 J**	**15.5 J**
Mercury		1.06	**0.064**	**0.063**	**0.062**	**0.046**	**0.057**	**0.064**
Nickel	316	48.6	**23.1**	**25.8**	**25.2**	**22.3**	**20.9**	**23.1**
Selenium	0.1	5	**0.27**	**0.32**	**0.3**	**0.23**	**0.22**	**0.29**
Silver		5	**0.193**	**0.184**	**0.176**	**0.148**	**0.147**	**0.192**
Zinc	3	459	**95.9**	**109**	**103**	**103**	**89.4**	**108**
Organometallic Compounds (ug/kg)								
n-Butyltin (ion)			**1.5 J**	**1.2 J**	**1.1 J**	**1.1 J**	**1.2 J**	**2 J**
Dibutyltin (ion)			**0.68 J**	**0.79 J**	**1.1 J**	**1.3 J**	**1.3 J**	**1.7 J**
Tributyltin (ion)	190		**2 J**	**1.5 J**	**1.6 J**	**1.6 J**	**2.9**	**4.2**
Tetrabutyltin (ion)			2.4 U	2.4 U	2.4 U	2.3 U	2.4 U	2.5 U
Aromatic Hydrocarbons (ug/kg)								
Total LPAH			**26900**	**13270**	**5600**	**1314**	**871**	**3080**
Naphthalene		561	**4400**	**5200**	**640**	**380**	**84**	**1500**
Acenaphthylene		200	**1200**	**430**	**440**	**65**	**47**	**130**
Acenaphthene		300	**3100**	**990**	**480**	**180**	**120**	**240**

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Depositional Surface Sediment Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID: Sample ID: Sample Date: Sample Depth Interval:	ODEQ (2001) Bioaccumulative Level II Screening Level Values (SLV)	MacDonald et al. (2000) Consensus Based Toxicity Probable Effects Concentration (PEC)	PCM-02 PCM-02DS-081211 12/11/2008 0 - 8 cm	PCM-06 PCM-06DS-081211 12/11/2008 0 - 7 cm	PCM-09 PCM-09DS-081211 12/11/2008 0 - 9 cm	PCM-14 PCM-14DS-081211 12/11/2008 0 - 3 cm	PCM-15 PCM-15DS-081211 12/11/2008 0 - 3 cm	PCM-22 PCM-22DS-081211 12/11/2008 0 - 10 cm
Fluorene		536	**1500**	**450 J**	**280**	**69**	**99**	**110**
Phenanthrene		1170	**13000**	**4200**	**2900**	**480**	**430**	**830**
Anthracene		845	**3700**	**2000**	**860**	**140**	**91**	**270**
Total HPAH			**90600**	**46160**	**36340**	**6132**	**3511**	**11380**
Fluoranthene		2230	**17000**	**8800**	**6900**	**860**	**520**	**2000**
Pyrene		1520	**21000**	**10000**	**8100**	**1000**	**660**	**2100**
Benzo(a)anthracene		1050	**6100**	**3500**	**2800**	**520**	**270**	**830**
Chrysene		1290	**7500**	**4100**	**3000**	**570**	**310**	**940**
Benzo(b)fluoranthene			**8400**	**4400**	**3500**	**730**	**380**	**1200**
Benzo(k)fluoranthene		13000	**2700**	**1400**	**1100**	**250**	**130**	**370**
Total Benzofluoranthenes (b, j, k)			**11100**	**5800**	**4600**	**980**	**510**	**1570**
Benzo(a)pyrene		1450	**9900**	**5200**	**4100**	**840**	**440**	**1500**
Indeno(1,2,3-c,d)pyrene		100	**7700**	**3800**	**3000**	**610**	**340**	**1100**
Dibenzo(a,h)anthracene		1300	**1200**	**660**	**440**	**92**	**61**	**140**
Benzo(g,h,i)perylene		300	**9100**	**4300**	**3400**	**660**	**400**	**1200**
Total PAH		676	**117500**	**59430**	**41940**	**7446**	**4382**	**14460**
2-Methylnaphthalene			**710**	**190 J**	**140**	**47**	**25**	**67**
PCB Aroclors (ug/kg)								
Aroclor 1016	420	530	12 U	13 U	12 U	12 U	12 U	13 U
Aroclor 1221			80 U	57 U	49 U	49 U	35 U	69 U
Aroclor 1232			31 U	22 U	30 U	12 U	12 U	20 U
Aroclor 1242	2		12 U	13 U	13 U	12 U	12 U	13 U
Aroclor 1248	4	1500	12 U	13 U	12 U	12 U	12 U	13 U
Aroclor 1254	10	300	44 U	19 U	27 U	13 U	24 U	21 U
Aroclor 1260		200	12 U	13 U	12 U	12 U	12 U	13 U
Aroclor 1262			12 U	13 U	12 U	12 U	12 U	13 U
Aroclor 1268			12 U	13 U	12 U	12 U	12 U	13 U
Total PCB		676	80 U	57 U	49 U	49 U	35 U	69 U
PCB Congeners (ng/kg)								
PCB-001			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-002			**20.8**	9.71 U	**12.2**	**8.44**	**11.8**	**11.5**
PCB-003			**14.9**	**8.62 J**	**8.4**	9.06 U	**10.8**	**10.2**
PCB-004			**40.5**	**32**	**31.3**	**22.8**	**31.6**	**29.7**
PCB-005			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-006			**15.8**	9.71 U	**15.3**	**9.26**	**12.3**	**10.8**
PCB-007			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-008			**65**	**55.2**	**55.7**	**36.5**	**49.7**	**43.6**
PCB-009			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-010			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U

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PCB-011			**184**	**152**	**197**	**146**	**160**	**205**
PCB-012/013			19.7 U	19.4 U	**10.4**	18.1 U	19.5 U	**8.55**
PCB-014			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-015			**75.3**	**62.8**	**70.5**	**41.4**	**49.1**	**63.1**
PCB-016			**47.2**	**40.2**	**43.8**	**25.4**	**29.6**	**33.9**
PCB-017			**66.5**	**55.4**	**53.3**	**35.2**	**41.6**	**45**
PCB-018/030			**123**	**104**	**107**	**67.7**	**80.1**	**85**
PCB-019			**34.5**	**28.8**	**28.4**	**23.7**	**25.7**	**28.7**
PCB-020/028			**302**	**285**	**261**	**170**	**167**	**250**
PCB-021/033			**103**	**93.7**	**92.8**	**60.9**	**61.2**	**80.3**
PCB-022			**76.3**	**70.2**	**69.2**	**45.8**	**44.3**	**61.7**
PCB-023			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-024			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-025			**24.6**	**24.7**	**21.7**	**16.1**	**15.5**	**20.3**
PCB-026/029			**50.1**	**46.2**	**48.2**	**28.1**	**29**	**38.5**
PCB-027			**14**	**15.1**	**12.4**	**10.5**	**10.3**	**11.1**
PCB-031			**220**	**197**	**191**	**126**	**123**	**172**
PCB-032			**53.3**	**44.3**	**43.3**	**27.1**	**30.7**	**37.6**
PCB-034			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-035			**8.27 J**	**6.66 J**	**6.55**	9.06 U	**5.86**	**6.85**
PCB-036			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-037			**95.5**	**93**	**90.7**	**52.9**	**53.7**	**83**
PCB-038			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-039			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-040/071			**188**	**178**	**141**	**106**	**104**	**153**
PCB-041			**32.8 J**	**30.7**	**22.7**	**16**	**18.5**	**23**
PCB-042			**118**	**106**	**86.3**	**61**	**63.3**	**95.7**
PCB-043			**16.1**	**15.8**	**12**	**8.54**	9.73 U	**11.9**
PCB-044/047/065			**502**	**454**	**379**	**264**	**282**	**421**
PCB-045			**57.7**	**48.9**	**41.7**	**25.2 J**	**27.5**	**45.3**
PCB-046			**27.1**	**22.4 J**	**18**	**13.7**	**13.7**	**20.9**
PCB-048			**73.2**	**65.6**	**50.7**	**39.5**	**39.1**	**54.1**
PCB-049/069			**320**	**283**	**242**	**160**	**180**	**260**
PCB-050/053			**92**	**94.2**	**64.5**	**46.9**	**58**	**74.6**
PCB-051			**43.5**	**44.7**	**28.7**	**24.3**	**30.4**	**37.5**
PCB-052			**558**	**493**	**455**	**262**	**295**	**457**
PCB-054			**8.27**	**7.37**	**5.87**	**6.13**	**5.55**	**7.5**
PCB-055			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	**4.64**
PCB-056			**192**	**169**	**147**	**104**	**109**	**161**

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PCB-057			9.83 U	9.71 U	**2.13**	9.06 U	9.73 U	9.57 U
PCB-058			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-059/062/075			**38.4**	**36.4**	**28.2**	**20.5**	**22.3**	**30.7**
PCB-060			**86.6**	**71.9**	**58.9**	**42.1**	**44.7**	**63.5**
PCB-061/070/074/076			**714**	**632**	**561**	**379**	**386**	**570**
PCB-063			**16.7**	**15.5**	**12.2**	**9.12 J**	**9.5**	**13.2**
PCB-064			**174**	**158**	**127**	**87.7**	**91.7**	**136**
PCB-066			**422**	**378**	**328**	**224**	**234**	**358**
PCB-067			**12.7**	**9.99 J**	**8.14 J**	9.06 U	**6.52**	**10.1**
PCB-068			9.83 U	9.71 U	**3.9**	9.06 U	9.73 U	**4.68**
PCB-072			9.83 U	**8.83**	**6.65**	9.06 U	9.73 U	**7.02**
PCB-073			9.83 U	9.71 U	9.43 U	**2.37**	9.73 U	**2.23 J**
PCB-077			**54.1**	**51.1**	**47.1**	**32.1**	**35.2**	**46.8**
PCB-078			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-079			9.83 U	9.71 U	**7.24**	9.06 U	9.73 U	9.57 U
PCB-080			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-081			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-082			**84.7**	**77.8**	**74.6**	**45.8**	**46.7 J**	**70.5**
PCB-083			**53.9**	9.71 U	**30.7 J**	9.06 U	**28.8**	9.57 U
PCB-084			**175**	**160**	**148**	**88.9**	**95.8**	**133**
PCB-085/116			**132**	**129**	**106**	**58.1**	**71.9**	**115**
PCB-086/087/097/108/119/125			**445**	**418**	**405**	**254**	**238**	**370**
PCB-088			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-089			**15.3**	**12.7 J**	**10.4**	9.06 U	**7.36 J**	**10.7**
PCB-090/101/113			**796**	**764**	**711**	**655**	**465**	**687**
PCB-091			**102**	**102**	**87.1**	**62.8**	**69.8**	**88.9**
PCB-092			**154**	**159**	**140**	**110**	**94.2**	**136**
PCB-093/100			**19.9 J**	**22.6**	**15.5**	**16.3**	**19.2**	**18.1**
PCB-094			9.83 U	**8.58**	**5.7**	9.06 U	9.73 U	**6.57**
PCB-095			**558**	**529**	**485**	**377**	**323**	**456**
PCB-096			**9.62**	**11.3 J**	**9.04**	**7.72**	**7.66**	**9.63**
PCB-098			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-099			**315**	**347**	**291**	**204**	**182**	**304**
PCB-102			**27.9**	**31.7**	**23**	**17.4 J**	**14.9**	**23.5**
PCB-103			**15**	**15.7**	**11.5**	**10.8 J**	**10.4 J**	**13.7**
PCB-104			9.83 U	9.71 U	**0.953**	9.06 U	9.73 U	**1.37**
PCB-105			**241**	**210**	**222**	**135**	**128**	**204**
PCB-106			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-107/124			**25.4 J**	**25.3**	**26.4**	**14.3 J**	**15**	**22.7**

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PCB-109			**46.3**	**46.4**	**42.8**	**27.4**	**26.2**	**41.9**
PCB-110			**714**	**667**	**668**	**450**	**412**	**605**
PCB-111			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-112			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-114			**13.9 J**	**16.3**	**14.4**	**8.57**	9.73 U	**12.7**
PCB-115			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-117			9.83 U	9.71 U	**11.5 J**	**13**	9.73 U	9.57 U
PCB-118			**601**	**536**	**556**	**381**	**338**	**513**
PCB-120			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	**4.19**
PCB-121			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-122			9.83 U	**11.2**	**10.9**	9.06 U	9.73 U	**8.79**
PCB-123			**11.5**	9.71 U	**12.8**	9.06 U	**5.5 J**	**9.74**
PCB-126			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-127			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-128/166			**145**	**207**	**152**	**174**	**99.3**	**145**
PCB-129/138/163			**1020**	**1570**	**1010**	**1530**	**689**	**965**
PCB-130			**62.5**	**76.4**	**62**	**59.5**	**40.7**	**55.8**
PCB-131			**10.4 J**	**12.4 J**	**10.7**	**10.9**	9.73 U	**9.13**
PCB-132			**290**	**341**	**273**	**377**	**180**	**264**
PCB-133			**23**	**32.7**	**20.8**	**23.4**	**18.5**	**19.7**
PCB-134			**63.2**	**73.9**	**54.1**	**71.5**	**40.2**	**53.6**
PCB-135/151			**389**	**523**	**352**	**637**	**266**	**362**
PCB-136			**145**	**180**	**137**	**236**	**103**	**135**
PCB-137			**22.7 J**	**37**	**31**	**18.3**	**23.3**	**30**
PCB-139/140			**18.5**	**21.5 J**	**15.9**	**11.8**	**14.1**	**16.4**
PCB-141			**184**	**288**	**172**	**355**	**116**	**166**
PCB-142			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-143			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-144			**53.1**	**70.4**	**47.3**	**95.5**	**35.3**	**46.1**
PCB-145			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-146			**179**	**282**	**164**	**224**	**120**	**167**
PCB-147/149			**791**	**1100**	**729**	**1270**	**538**	**735**
PCB-148			9.83 U	**5.41 J**	**4.19**	9.06 U	9.73 U	9.57 U
PCB-150			9.83 U	**7.47 J**	**3.44**	9.06 U	**3.59 J**	**3.74**
PCB-152			9.83 U	9.71 U	**1.88 J**	9.06 U	9.73 U	**1.55 J**
PCB-153/168			**852**	**1620**	**813**	**1530**	**577**	**806**
PCB-154			**23.5**	**35.9**	**19.9**	**18.3**	**17.7**	**22.1**
PCB-155			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-156/157			**105**	**148**	**94.5**	**116**	**61.7**	**92.3**

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Depositional Surface Sediment Analytical Results - Year 2 Event 2 Long-Term Monitoring

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PCB-158			**96.2**	**145**	**93.9**	**141**	**63.1**	**86**
PCB-159			**13.8**	**39.9**	**12.2**	**32.5**	**9.57**	**12.1**
PCB-160			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-161			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-162			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	**3.64**
PCB-164			**69.4**	**97.3**	**65.6**	**108**	**44.7**	**62.2**
PCB-165			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-167			**40.3**	**60.4**	**37.3**	**51.4**	**22.6**	**35.1**
PCB-169			9.83 U	**12**	9.43 U	9.06 U	9.73 U	**4.79**
PCB-170			**261**	**920**	**256**	**665**	**191**	**278**
PCB-171/173			**84.7**	**275**	**81.7**	**210**	**63.4**	**88**
PCB-172			**46.3**	**168**	**48.5**	**111**	**38.1**	**48.4**
PCB-174			**292**	**915**	**294**	**734**	**213**	**308**
PCB-175			**15.6**	**49.4**	**17.8**	**32.5**	**10.6**	**14.6**
PCB-176			**39.9**	**121**	**37.4**	**99.6**	**27.3**	**37.9**
PCB-177			**165**	**537**	**174**	**396**	**122**	**181**
PCB-178			**68.7**	**205**	**68.7**	**142**	**53.1**	**66.2**
PCB-179			**156**	**451**	**147**	**341**	**113**	**146**
PCB-180/193			**577**	**2210**	**598**	**1520**	**444**	**624**
PCB-181			**12.4**	9.71 U	**7.3**	**6.71**	**6.67**	**11.8**
PCB-182			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	**2.8 J**
PCB-183			**152**	**543**	**154**	**428**	**118**	**165**
PCB-184			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-185			**31.2**	**77.4**	**28**	9.06 U	**21**	**23.9**
PCB-186			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-187			**379**	**1180**	**385**	**850**	**287**	**401**
PCB-188			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	**1.47**
PCB-189			**11.5**	**43.8**	**10.9**	**26.7**	**8.25 J**	**11.9**
PCB-190			**70.6**	**248**	**69.8**	**177**	**48.6 J**	**69.8**
PCB-191			**14.2**	**43.9**	**12.6**	**32.6**	**9.61**	**13.2**
PCB-192			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-194			**152**	**683**	**154**	**403**	**118**	**167**
PCB-195			**64.4**	**275**	**60.9**	**166**	**46.2**	**69.2**
PCB-196			**87.4**	**331**	**77.7**	**201**	**63.8**	**82.7**
PCB-197			**8.02**	**26.4**	**6.98**	**18**	**5.64 J**	**5.9**
PCB-198/199			**215**	**676**	**203**	**420**	**147**	**202**
PCB-200			**32.8**	**97.1**	**26.6**	**63.7**	**19.6**	**27.6**
PCB-201			**29.6**	**94.3**	**26.9**	**61.4**	**19.9**	**28**
PCB-202			**46.4**	**111**	**39**	**71**	**29.7**	**40.6**

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PCB-203			**127**	**419**	**117**	**260**	**94.2**	**122**
PCB-204			9.83 U	9.71 U	9.43 U	9.06 U	9.73 U	9.57 U
PCB-205			**8.71 J**	**35.3**	**7.95**	**21.1**	9.73 U	**8.87 J**
PCB-206			**127**	**210**	**107**	**145**	**91.3**	**115**
PCB-207			**27.2**	**35.1**	**15.9**	**21.6**	**15.4**	**18.7**
PCB-208			**38.9**	**47.8**	**33.6**	**32.5**	**25.4**	**35.6**
PCB-209			**138**	**124**	**123**	**94.6**	**87**	**131**
Monochlorobiphenyls (total)			**35.8**	**8.62 J**	**20.6**	**8.44**	**22.6**	**21.7**
Dichlorobiphenyls (total)			**381**	**302**	**380**	**255**	**303**	**361**
Trichlorobiphenyls (total)			**1220 J**	**1100**	**1070**	**689**	**718**	**954**
Tetrachlorobiphenyls (total)			**3750 J**	**3370 J**	**2890 J**	**1940 J**	**2060**	**3070**
Pentachlorobiphenyls (total)			**4560 J**	**4300 J**	**4120 J**	**2940 J**	**2600 J**	**3870**
Hexachlorobiphenyls (total)			**4600 J**	**6990 J**	**4370**	**7090**	**3080**	**4300**
Heptachlorobiphenyls (total)			**2380**	**7980**	**2390**	**5780**	**1780 J**	**2490**
Octachlorobiphenyls (total)			**772 J**	**2750**	**720**	**1680**	**544 J**	**755 J**
Nonachlorobiphenyls (total)			**193**	**293**	**156**	**199**	**132**	**170**
Pesticides (ug/kg)								
2,2-Dichloropropionic acid (Dalapon)			300 U	310 U	300 U	290 U	300 U	320 U
2,4'-DDD (o,p'-DDD)			**13 J**	**9.2**	**8.7 J**	**3.1**	**7.9**	**5.8**
2,4'-DDE (o,p'-DDE)			2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
2,4'-DDT (o,p'-DDT)			2.1 U	1.3 U	1.5 U	1.2 U	**1.2 J**	1.3 U
4,4'-DDD (p,p'-DDD)	0.3	28	**34 J**	**15**	**14**	**5.8**	**19**	**11**
4,4'-DDE (p,p'-DDE)	0.3	31.3	**6.2 J**	**5.3**	**3.7**	**2.9**	**3.6**	**4.2**
4,4'-DDT (p,p'-DDT)	0.3	62.9	**44 J**	**14 J**	**26 J**	**10 J**	**14**	**17**
Total DDT	0.3		**84.2 J**	**34.3**	**43.7**	**18.7**	**36.6**	**32.2**
Aldrin		40	2.3 UJ	1.3 UJ	2.6 UJ	1.2 UJ	1.2 UJ	1.3 UJ
alpha-BHC			1.2 UJ	**1.4 J**	1.2 UJ	1.2 UJ	1.2 UJ	1.3 UJ
beta-BHC			1.2 UJ	1.9 UJ	2.4 UJ	1.2 UJ	1.2 UJ	1.3 UJ
alpha-Chlordane (cis-Chlordane)			3.4 U	3.6 U	1.2 U	2.2 U	3 U	4.1 U
cis-Nonachlor			8 U	3.9 U	4.5 U	1.2 U	1.2 U	1.8 U
trans-Nonachlor			1.3 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
delta-BHC			1.2 UJ	1.7 UJ	1.3 UJ	1.2 UJ	1.2 UJ	1.3 UJ
Dicamba			300 U	310 U	300 U	290 U	300 U	320 U
Dichlorprop			300 U	310 U	300 U	290 U	300 U	320 U
Dieldrin		61.8	1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Dinoseb			300 U	310 U	300 U	290 U	300 U	320 U
Endosulfan-alpha (I)			1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Endosulfan-beta (II)			1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Endosulfan sulfate			1.2 UJ	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U

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Endrin		207	1.7 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Endrin aldehyde			1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Endrin ketone			**3**	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
gamma-Chlordane			1.2 UJ	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
gamma-BHC (Lindane)		4.99	5.7 UJ	4.5 UJ	4.6 UJ	1.4 UJ	1.7 UJ	2.8 UJ
Heptachlor		10	3.6 UJ	1.3 UJ	1.3 UJ	1.2 UJ	1.2 UJ	**2.8 J**
Heptachlor epoxide		16	1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Hexachlorobenzene		100	1.3 U	1.3 U	1.9 U	**2 J**	**1.6 J**	**2.5 J**
Hexachlorobutadiene		600	6.6 U	4.6 UJ	7.9 U	1.2 U	1.2 U	1.3 U
Hexachloroethane			1.2 U	1.3 UJ	**4 J**	1.2 U	**0.99 J**	**3.1 J**
MCPA			59000 U	61000 U	60000 U	58000 U	60000 U	63000 U
Mecoprop (MCPP)			59000 UJ	61000 UJ	60000 UJ	58000 UJ	60000 UJ	63000 UJ
Methoxychlor			1.2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Mirex			**8.6 J**	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Oxychlordane			2.5 U	1.3 U	1.2 U	1.2 U	1.2 U	1.3 U
Toxaphene			660 U	310 U	330 U	140 U	64 U	65 U
Herbicides (ug/kg)								
2,4-D (2,4-Dichlorophenoxyacetic acid)			300 U	310 U	300 U	290 U	300 U	320 U
2,4-DB (2,4-D derivative)			300 U	310 U	300 U	290 U	300 U	320 U
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)			300 U	310 U	300 U	290 U	300 U	320 U
2,4,5-TP (Silvex)			300 U	310 U	300 U	290 U	300 U	320 U
Semi-Volatile Organics (ug/kg)								
1,2-Dichlorobenzene		1700	300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
1,3-Dichlorobenzene		300	300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
1,4-Dichlorobenzene		300	3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,2,4-Trichlorobenzene		9200	300 U	310 U	300 U	58 U	12 U	63 UJ
2,3,4,5-Tetrachlorophenol			12 U	12 U	12 U	12 U	12 U	13 U
2,3,5,6-Tetrachlorophenol			12 U	12 U	12 U	12 U	12 U	13 U
2,4,5-Trichlorophenol			300 U	310 U	300 U	**R**	**R**	**R**
2,4,6-Trichlorophenol			12 U	12 U	12 U	12 U	12 U	13 U
2,4-Dichlorophenol			300 U	310 U	300 U	**R**	**R**	**R**
2,4-Dimethylphenol			1500 UJ	1600 UJ	1500 UJ	**R**	**R**	**R**
2,4-Dinitrophenol			5900 UJ	6100 UJ	6000 UJ	**R**	**R**	**R**
2,4-Dinitrotoluene			300 U	310 U	300 U	58 U	12 U	63 U
2,6-Dinitrotoluene			300 U	310 U	300 U	58 U	12 U	63 U
2-Chloronaphthalene			300 U	310 U	300 U	58 U	12 U	63 U
2-Chlorophenol			300 UJ	310 UJ	300 UJ	**R**	**R**	**R**
2-Methylphenol (o-Cresol)			300 UJ	310 UJ	300 UJ	**R**	**R**	**R**
2-Nitroaniline			590 U	610 U	600 U	120 U	24 U	130 U

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2-Nitrophenol			300 U	310 U	300 U	**R**	**R**	**R**
3,3'-Dichlorobenzidine			3000 U	3100 U	3000 U	580 U	120 U	630 U
3-Nitroaniline			590 U	610 U	600 U	120 U	24 U	130 U
4-Bromophenyl-phenyl ether			300 U	310 U	300 U	58 U	12 U	63 U
4-Chloro-3-methylphenol			300 U	310 U	300 U	**R**	**R**	**R**
4-Chloroaniline			300 U	310 U	300 U	58 U	12 U	63 U
4-Chlorophenyl phenyl ether			300 U	310 U	300 U	58 U	12 U	63 U
4-Methylphenol (p-Cresol)			300 UJ	310 UJ	300 UJ	**R**	**R**	**R**
4-Nitroaniline			590 U	610 U	600 U	120 U	24 U	130 U
4-Nitrophenol			3000 U	3100 U	3000 U	**R**	**R**	**R**
Aniline			590 UJ	610 UJ	600 UJ	120 UJ	24 UJ	130 UJ
Azobenzene			300 U	310 U	300 U	58 U	12 U	63 U
Benzoic acid			5900 UJ	6100 UJ	6000 UJ	**R**	**R**	**R**
Benzyl alcohol			590 U	610 U	600 U	120 U	24 U	130 U
bis(2-Chloroethoxy)methane			300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
bis(2-Chloroethyl)ether			300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
bis(2-Chloroisopropyl) ether			300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
Carbazole		1600	**450**	**300 J**	**66 J**	**27 J**	**6.9 J**	**47 J**
Dibenzofuran			**190**	**76 J**	**46 J**	**13 J**	**9.8**	**17 J**
Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)			3000 U	3100 U	3000 U	**R**	**R**	**R**
Hexachlorocyclopentadiene		400	1500 UJ	1600 UJ	1500 UJ	290 UJ	60 UJ	320 UJ
Isophorone			300 U	310 U	300 U	58 U	12 U	63 U
Nitrobenzene			300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
N-Nitrosodi-N-propylamine			300 UJ	310 UJ	300 UJ	58 UJ	12 UJ	63 UJ
N-Nitrosodiphenylamine			300 U	310 U	300 U	58 U	12 U	63 U
Pentachlorophenol		1000	12 U	12 U	12 U	12 U	12 U	13 U
Phenol		50	880 UJ	910 UJ	890 UJ	**R**	**R**	**R**
Phthalates (ug/kg)								
Bis(2-ethylhexyl) phthalate	330	800	3000 U	3100 U	3000 U	580 U	**33 J**	**68 J**
Butylbenzyl phthalate			300 U	310 U	300 U	58 U	12 U	63 U
Diethyl phthalate		600	300 U	310 U	300 U	58 U	12 U	63 U
Dimethyl phthalate			300 U	**49 J**	300 U	58 U	12 U	63 U
Di-n-butyl phthalate		100	590 U	610 U	600 U	120 U	**11 J**	130 U
Di-n-octyl phthalate			300 U	310 U	300 U	58 U	12 U	63 U
Volatile Organics (ug/kg)								
1,1,1,2-Tetrachloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,1,1-Trichloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,1,2,2-Tetrachloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,1,2-Trichloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U

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1,1'-Dichloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,1'-Dichloroethene			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,2,3-Trichloropropane			3700 U	3900 U	12 U	12 U	12 U	13 U
Ethylene dibromide (1,2-Dibromoethane)			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,2-Dichloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,2-Dichloroethene, trans-			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,2-Dichloropropane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,3-Dichloropropene, cis-			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
1,3-Dichloropropene, trans-			3700 U	3900 U	6 U	5.7 U	5.9 U	6.2 U
2-Butanone (MEK)			15000 UJ	16000 UJ	24 UJ	23 UJ	24 UJ	25 UJ
2-Chloroethylvinyl ether			7400 UJ	7800 UJ	6 U	5.7 U	5.9 U	6.2 U
2-Hexanone (Methyl butyl ketone)			7400 UJ	7800 UJ	9.6 U	9.1 U	9.4 U	10 U
Acetone			37000 U	39000 U	24 UJ	23 UJ	24 UJ	25 U
Acrolein			9200 UJ	9700 UJ	9500 UJ	9200 UJ	9300 UJ	9900 UJ
Acrylonitrile			7400 U	7800 U	4.8 U	4.6 U	4.7 U	5 U
Benzene			**690 J**	**2300 J**	2.4 U	**4.4 J**	2.4 U	**480**
Bromochloromethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Bromodichloromethane			3700 U	3900 U	6 U	5.7 U	5.9 U	6.2 U
Bromoform			3700 U	3900 U	6 U	5.7 U	5.9 U	6.2 U
Bromomethane			3700 U	3900 U	6 UJ	5.7 UJ	5.9 UJ	6.2 UJ
Carbon disulfide			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Carbon tetrachloride			3700 U	3900 U	6 U	5.7 U	5.9 U	6.2 U
Chlorobenzene			3700 U	3900 U	2.4 U	2.3 UJ	2.4 U	2.5 U
Chloroethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Chloroform			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Chloromethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Dibromochloromethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Dibromomethane			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Dichlorodifluoromethane			3700 U	3900 U	6 U	5.7 U	5.9 U	6.2 U
Dichloromethane (Methylene chloride)			**84 J**	**85 J**	12 UJ	12 UJ	12 UJ	13 U
Ethylbenzene			**420 J**	**470 J**	2.4 U	**1.5 J**	2.4 U	**2.5**
Iodomethane (Methyl iodide)			7400 U	7800 U	24 UJ	23 UJ	24 UJ	25 UJ
Isopropylbenzene (Cumene)			**120 J**	**110 J**	2.4 U	**1.1 J**	2.4 U	**6.4**
Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))			7400 U	7800 U	12 U	12 U	12 U	13 U
Methyl tert-butyl ether			3700 U	3900 U	9.6 U	9.1 U	9.4 U	10 U
Styrene			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Tetrachloroethene		500	3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Toluene			3700 U	3900 U	2.4 U	2.3 UJ	2.4 U	**2.5**
trans-1,4-Dichloro-2-butene			7400 U	7800 U	**R**	**R**	**R**	**R**

Table 2
Depositional Surface Sediment Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID: Sample ID: Sample Date: Sample Depth Interval:	ODEQ (2001) Bioaccumulative Level II Screening Level Values (SLV)	MacDonald et al. (2000) Consensus Based Toxicity Probable Effects Concentration (PEC)	PCM-02 PCM-02DS-081211 12/11/2008 0 - 8 cm	PCM-06 PCM-06DS-081211 12/11/2008 0 - 7 cm	PCM-09 PCM-09DS-081211 12/11/2008 0 - 9 cm	PCM-14 PCM-14DS-081211 12/11/2008 0 - 3 cm	PCM-15 PCM-15DS-081211 12/11/2008 0 - 3 cm	PCM-22 PCM-22DS-081211 12/11/2008 0 - 10 cm
Trichloroethene		2100	3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
Trichlorofluoromethane (Fluorotrichloromethane)			3700 U	3900 U	6 U	5.7 U	5.9 U	6.2 U
Vinyl acetate			3700 UJ	3900 UJ	12 UJ	12 UJ	12 UJ	13 UJ
Vinyl chloride			3700 U	3900 U	2.4 U	2.3 U	2.4 U	2.5 U
m,p-Xylene			**69 J**	**180 J**	4.8 U	**1.7 J**	4.7 U	**32**
o-Xylene			**110 J**	**250 J**	2.4 U	**5 J**	2.4 U	**35**
Total Xylene			**179 J**	**430 J**	4.8 U	**6.7 J**	4.7 U	**67**
Dioxin Furans (ng/kg)								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)			**0.446 J**	**0.388 J**	**0.355 J**	**0.222 J**	**0.217 J**	**0.404 J**
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)			**1.38 J**	**0.614 J**	**0.728 J**	**0.546 J**	**0.544 J**	**0.831 J**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)			**2.87**	**1.31 J**	**1.32 J**	**1.15 J**	**0.879 J**	**1.43 J**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)			**11.3**	**6.15**	**5.42**	**5.56**	**3.6**	**5.3**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)			**4.5**	**2.78**	**2.74**	**2.24 J**	**1.91 J**	**2.72**
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)			**290**	**160**	**134**	**175**	**78.1**	**130**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)			**2310**	**2140**	**1220**	**2410**	**726**	**1190**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)			**80**	**9.65**	**12.4**	**6.31**	**5.77**	**13**
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)			**70.7**	**9.91**	**18.7**	**16.1**	**8.96**	**22.3**
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)			**40.3**	**6.3**	**12.7**	**5.91**	**4.47**	**11.9**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)			**121**	**16.7**	**49.3**	**37.7**	**20.9**	**37**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)			**33**	**4.93**	**11.5**	**10.8**	**5.94**	**10.5**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)			**18.9**	**2.43**	**5.26**	**3.4**	**2.13 J**	**4.95**
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)			**8.57**	**2.51**	**3.53**	**2.94**	**2.07 J**	**3.86**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)			**116**	**32.4**	**33.9**	**36.3**	**22.5**	**34.1**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)			**21.1**	**4.87**	**5.68**	**6.92**	**4.07**	**7.32**
1,2,3,4,5,6,7,8-Octachlorodibenzofuran (OCDF)			**446**	**113**	**96.4**	**122**	**58.4**	**96.2**
Total Tetrachlorodibenzo-p-dioxin (TCDD)			**15.6 J**	**8.09 J**	**9.1 J**	**6.65 J**	**61.8 J**	**10.9 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)			**9.9 J**	**7.31 J**	**7.35 J**	**6.09 J**	**9.18 J**	**7.7 J**
Total Hexachlorodibenzo-p-dioxin (HxCDD)			**68.1 J**	**44.3**	**42.8 J**	**42.3 J**	**28.9 J**	**44.7**
Total Heptachlorodibenzo-p-dioxin (HpCDD)			**582**	**340**	**302**	**438**	**173**	**294**
Total Tetrachlorodibenzofuran (TCDF)			**185 J**	**35.6 J**	**43.7 J**	**23 J**	**22.9 J**	**42.4 J**
Total Pentachlorodibenzofuran (PeCDF)			**190 J**	**37.6**	**67.8**	**39.2**	**29.5 J**	**66.5**
Total Hexachlorodibenzofuran (HxCDF)			**268**	**64.9**	**105**	**86.1 J**	**52.2 J**	**90.8 J**
Total Heptachlorodibenzofuran (HpCDF)			**435**	**116 J**	**99.7**	**129**	**60.6**	**98.4**
Total Dioxin/Furan TEQ (Mammal) ND=0			**49.1488**	**10.4839**	**16.73172**	**12.9758**	**7.97272**	**15.45006**
Total Dioxin/Furan TEQ (Mammal) ND=1/2			**49.1488**	**10.4839**	**16.73172**	**12.9758**	**7.97272**	**15.45006**
Total Petroleum Hydrocarbons (mg/kg)								
Diesel Range			**800**	**220**	**200**	**91**	**110**	**67**
Gasoline Range			**48**	**58**	**6.6 J**	**6.2 J**	15 U	**23**
Residual Range			**1300**	**770**	**780**	**450**	**410**	**320**

Table 2

Depositional Surface Sediment Analytical Results - Year 2 Event 2 Long-Term Monitoring

Notes:

Detected concentration is greater than SLV.

Detected concentration is greater than PEC level.

Non-detected concentration is above one or more identified screening levels.

Bold = Detected result

J = Estimated value.

U = Compound analyzed, but not detected above detection limit.

UJ = Compound analyzed, but not detected above estimated detection limit.

R = Rejected.

Total LPAH (Low PAH) are the total of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnapthalene is not included in the sum of LPAHs.

Total HPAH (High PAH) are the total of fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene.

Benzo(j)fluoranthene is included in the total of benzo(b&k)fluoranthenes.

Total PCB does not include Aroclor 1262 and 1268.

Total DDT consists of the sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

Total xylene is the sum of o-, m-, p- isomers.

Totals are calculated as the sum of all detected results. If all are undetected results, the highest reporting limit value is reported as the sum.

Data received a level III validation.

Table 3

Discrete Near-Bottom Surface Water Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID:	Ecological			Human Health	PCM-01	PCM-02	PCM-03	PCM-04	PCM-05
Sample ID:					PCM-1DSW-081211	PCM-02DSW-081211	PCM-03DSW-081211	PCM-04DSW-081211	PCM-05DSW-081211
Sample Date:	ODEQ 2004 Chronic Ambient Water Quality Criteria (AWQC)	EPA 2004 National Recommended Water Quality Criteria (NRWQC) Criterion Continuous Concentration (CCC)	Oakridge Nat. Lab 1996 Tier II Sediment Concentration Values (SCV)	EPA 2004 Drinking Water Region 9 PRGs	12/11/2008	12/11/2008	12/11/2008	12/11/2008	12/11/2008
Conventional Parameters (mg/L)									
Amenable Cyanide					0.01 UJ	--	0.01 UJ	**0.003 J**	0.01 UJ
Free Cyanide		0.0052			**0.008 J**	--	**0.004 J**	**0.006 J**	**0.005 J**
Cyanide	0.0052			0.73	0.01 U	--	0.01 U	**0.003 J**	0.01 U
Sulfide					0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Total organic carbon					**1.6**	**1.9**	**1.6**	**2.1**	**1.6**
Dissolved organic carbon					--	**1.6**	**1.3**	**1.9**	**1.4**
Total Suspended Solids					5 UJ	**5 J**	**8 J**	**6 J**	**6 J**
Metals (ug/L)									
Iron					**291**	**283**	**317**	**305**	**286**
Dissolved Metals (ug/L)									
Iron					--	**47.5**	**47.4**	**45.5**	**48.8**
Aromatic Hydrocarbons (ug/L)									
Total LPAH					0.02 U	**0.0613**	**0.0857**	**0.0937**	0.022 U
Naphthalene	620		12	6.2	0.02 U	**0.047**	**0.068**	**0.055**	0.022 U
Acenaphthylene					0.02 U	0.022 U	0.021 U	0.02 U	0.022 U
Acenaphthene	520			370	0.02 U	**0.0064 J**	**0.0077 J**	**0.011 J**	0.022 U
Fluorene			3.9	240	0.02 U	0.022 U	0.021 U	**0.0067 J**	0.022 U
Phenanthrene					0.02 U	**0.0079 J**	**0.01 J**	**0.016 J**	0.022 U
Anthracene			0.73	1800	0.02 U	0.022 U	0.021 U	**0.005 J**	0.022 U
2-Methylnaphthalene			2.1		**0.0038 J**	**0.0046 J**	**0.0057 J**	**0.0068 J**	**0.0036 J**
Total HPAH					**0.0117**	**0.0513**	**0.0217**	**0.1**	**0.0137**
Fluoranthene				1500	**0.005 J**	**0.0087 J**	**0.007 J**	**0.023**	**0.0059 J**
Pyrene				180	**0.0039 J**	**0.0074 J**	**0.0071 J**	**0.022**	**0.0044 J**
Benzo(a)anthracene			0.027	0.092	**0.0028 J**	**0.0074 J**	**0.0051 J**	**0.0093 J**	**0.0034 J**
Chrysene				9.2	0.02 U	**0.0046 J**	0.021 U	**0.0083 J**	0.022 U
Benzo(b)fluoranthene				0.092	0.02 U	**0.0051 J**	**0.0025 J**	**0.01 J**	0.022 U
Benzo(k)fluoranthene				0.92	0.02 U	**0.0041 J**	0.021 U	**0.0029 J**	0.022 U
Total Benzofluoranthenes (b, j, k)					0.02 U	**0.0092 J**	**0.0025**	**0.0129 J**	0.022 U
Benzo(a)pyrene			0.014	0.0092	0.02 U	0.022 U	0.021 U	**0.0089 J**	0.022 U
Indeno(1,2,3-c,d)pyrene				0.092	0.02 U	**0.0047 J**	0.021 U	**0.0073 J**	0.022 U
Dibenzo(a,h)anthracene				0.0092	0.02 U	**0.0039 J**	0.021 U	0.02 U	0.022 U
Benzo(g,h,i)perylene					0.02 U	**0.0054 J**	0.021 U	**0.0083 J**	0.022 U
Total PAH	0.014		0.14		**0.0117**	**0.1126**	**0.1074**	**0.1937**	**0.0137**
Volatile Organics (ug/L)									
Benzene			130	0.35	0.5 U	**0.08 J**	**0.06 J**	**0.15 J**	**0.05 J**
Ethylbenzene			7.3	1300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene			9.8	720	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Table 3

Discrete Near-Bottom Surface Water Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID:	Ecological			Human Health	PCM-01	PCM-02	PCM-03	PCM-04	PCM-05
Sample ID:					PCM-1DSW-081211	PCM-02DSW-081211	PCM-03DSW-081211	PCM-04DSW-081211	PCM-05DSW-081211
Sample Date:	ODEQ 2004 Chronic Ambient Water Quality Criteria (AWQC)	EPA 2004 National Recommended Water Quality Criteria (NRWQC) Criterion Continuous Concentration (CCC)	Oakridge Nat. Lab 1996 Tier II Sediment Concentration Values (SCV)	EPA 2004 Drinking Water Region 9 PRGs	12/11/2008	12/11/2008	12/11/2008	12/11/2008	12/11/2008
m,p-Xylene			1.8		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-Xylene			13		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Xylene					0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Notes:

Detected concentration above one or more ecological or human health screening level values.

Non-detected concentration is above one or more identified screening levels

Bold = Detected result

J = Estimated value

U = Compound analyzed, but not detected above detection limit

UJ = Compound analyzed, but not detected above estimated detection limit

Total LPAH (Low PAH) are the total of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnapthalene is not included in the sum of LPAHs.

Total HPAH (High PAH) are the total of fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene.

Benzo(j)fluoranthene is included in the total of benzo(b&k)fluoranthenes.

Total xylene is the sum of o-, m-, p- isomers.

Totals are calculated as the sum of all detected results. If all are undetected results, the highest reporting limit value is reported as the sum.

Data received a level III validation.

Table 3

Discrete Near-Bottom Surface Water Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID:	Ecological			Human Health	PCM-06	PCM-08	PCM-09	PCM-10	PCM-13
Sample ID:					PCM-06DSW-081211	PCM-08DSW-081211	PCM-09DSW-081211	PCM-10DSW-081211	PCM-13DSW-081211
Sample Date:	ODEQ 2004 Chronic Ambient Water Quality Criteria (AWQC)	EPA 2004 National Recommended Water Quality Criteria (NRWQC) Criterion Continuous Concentration (CCC)	Oakridge Nat. Lab 1996 Tier II Sediment Concentration Values (SCV)	EPA 2004 Drinking Water Region 9 PRGs	12/11/2008	12/11/2008	12/11/2008	12/11/2008	12/11/2008
Conventional Parameters (mg/L)									
Amenable Cyanide					0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ
Free Cyanide		0.0052			**0.005 J**	**0.006 J**	**0.004 J**	**0.007 J**	**0.006 J**
Cyanide	0.0052			0.73	0.01 U	0.01 U	0.01 U	**0.004 J**	0.01 U
Sulfide					0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Total organic carbon					**1.6**	**2.1**	**2**	**1.5**	**1.7**
Dissolved organic carbon					**1.2**	**1.6**	**1.4**	**1.4**	**1.4**
Total Suspended Solids					**7 J**	**7 J**	**6 J**	**9 J**	**6 J**
Metals (ug/L)									
Iron					**323**	**298**	**286**	**452**	**270**
Dissolved Metals (ug/L)									
Iron					**47.2**	**45.9**	51.5 U	52.9 U	44.9 U
Aromatic Hydrocarbons (ug/L)									
Total LPAH					**0.056**	**0.0465**	**0.1881**	**0.543**	0.02 U
Naphthalene	620		12	6.2	**0.03**	**0.028**	**0.092**	**0.24**	0.02 U
Acenaphthylene					0.02 U	0.024 U	**0.0091 J**	**0.027**	0.02 U
Acenaphthene	520			370	**0.006 J**	**0.0065 J**	**0.023**	**0.08**	0.02 U
Fluorene			3.9	240	0.02 U	0.024 U	**0.011 J**	**0.028**	0.02 U
Phenanthrene					**0.015 J**	**0.012 J**	**0.042**	**0.11**	0.02 U
Anthracene			0.73	1800	**0.005 J**	0.024 U	**0.011 J**	**0.058**	0.02 U
2-Methylnaphthalene			2.1		**0.0056 J**	**0.0053 J**	**0.011 J**	**0.027**	**0.0036 J**
Total HPAH					**0.0651**	**0.0452**	**0.2236**	**0.8696**	**0.0028**
Fluoranthene				1500	**0.015 J**	**0.012 J**	**0.052**	**0.18**	0.02 U
Pyrene				180	**0.017 J**	**0.012 J**	**0.056**	**0.2**	0.02 U
Benzo(a)anthracene			0.027	0.092	**0.007 J**	**0.0057 J**	**0.018 J**	**0.058**	**0.0028 J**
Chrysene				9.2	**0.0062 J**	**0.0046 J**	**0.02**	**0.11**	0.02 U
Benzo(b)fluoranthene				0.092	**0.0054 J**	**0.0042 J**	**0.019 J**	**0.076**	0.02 U
Benzo(k)fluoranthene				0.92	0.02 U	0.024 U	**0.0066 J**	**0.026**	0.02 U
Total Benzofluoranthenes (b, j, k)					**0.0054**	**0.0042**	**0.0256 J**	**0.102**	0.02 U
Benzo(a)pyrene			0.014	0.0092	**0.0057 J**	0.024 U	**0.019 J**	**0.079**	0.02 U
Indeno(1,2,3-c,d)pyrene				0.092	**0.0041 J**	**0.0031 J**	**0.015 J**	**0.059**	0.02 U
Dibenzo(a,h)anthracene				0.0092	0.02 U	0.024 U	0.02 U	**0.0066 J**	0.02 U
Benzo(g,h,i)perylene					**0.0047 J**	**0.0036 J**	**0.018 J**	**0.075**	0.02 U
Total PAH	0.014		0.14		**0.1211**	**0.0917**	**0.4117**	**1.4126**	**0.0028**
Volatile Organics (ug/L)									
Benzene			130	0.35	**0.06 J**	**0.08 J**	**0.08 J**	**0.08 J**	0.5 U
Ethylbenzene			7.3	1300	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene			9.8	720	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Table 3

Discrete Near-Bottom Surface Water Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID:	Ecological			Human Health	PCM-06	PCM-08	PCM-09	PCM-10	PCM-13
Sample ID:					PCM-06DSW-081211	PCM-08DSW-081211	PCM-09DSW-081211	PCM-10DSW-081211	PCM-13DSW-081211
Sample Date:	ODEQ 2004 Chronic Ambient Water Quality Criteria (AWQC)	EPA 2004 National Recommended Water Quality Criteria (NRWQC) Criterion Continuous Concentration (CCC)	Oakridge Nat. Lab 1996 Tier II Sediment Concentration Values (SCV)	EPA 2004 Drinking Water Region 9 PRGs	12/11/2008	12/11/2008	12/11/2008	12/11/2008	12/11/2008
m,p-Xylene			1.8		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
o-Xylene			13		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Xylene					0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Notes:

Detected concentration above one or more ecological or human health screening level values.

Non-detected concentration is above one or more identified screening levels

Bold = Detected result

J = Estimated value

U = Compound analyzed, but not detected above detection limit

UJ = Compound analyzed, but not detected above estimated detection limit

Total LPAH (Low PAH) are the total of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnapthalene is not included in the sum of LPAHs.

Total HPAH (High PAH) are the total of fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene.

Benzo(j)fluoranthene is included in the total of benzo(b&k)fluoranthenes.

Total xylene is the sum of o-, m-, p- isomers.

Totals are calculated as the sum of all detected results. If all are undetected results, the highest reporting limit value is reported as the sum.

Data received a level III validation.

Table 3

Discrete Near-Bottom Surface Water Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID:	Ecological			Human Health	PCM-19	PCM-20	PCM-21
Sample ID:					PCM-19DSW-081211	PCM-20DSW-081211	PCM-21DSW-081211
Sample Date:	ODEQ 2004 Chronic Ambient Water Quality Criteria (AWQC)	EPA 2004 National Recommended Water Quality Criteria (NRWQC) Criterion Continuous Concentration (CCC)	Oakridge Nat. Lab 1996 Tier II Sediment Concentration Values (SCV)	EPA 2004 Drinking Water Region 9 PRGs	12/11/2008	12/11/2008	12/11/2008
Conventional Parameters (mg/L)							
Amenable Cyanide					0.01 UJ	0.01 UJ	0.01 UJ
Free Cyanide		0.0052			**0.005 J**	**0.005 J**	**0.005 J**
Cyanide	0.0052			0.73	0.01 U	0.01 U	0.01 U
Sulfide					0.05 U	--	0.05 U
Total organic carbon					**1.9**	**1.7**	**2**
Dissolved organic carbon					**1.5**	**1.3**	**1.6**
Total Suspended Solids					5 UJ	**11 J**	**10 J**
Metals (ug/L)							
Iron					**280**	**336**	**389**
Dissolved Metals (ug/L)							
Iron					49.4 U	66.6 U	**52.8**
Aromatic Hydrocarbons (ug/L)							
Total LPAH					**0.0041**	**0.0057**	**0.369**
Naphthalene	620		12	6.2	0.022 U	0.02 U	**0.15**
Acenaphthylene					0.022 U	0.02 U	**0.02 J**
Acenaphthene	520			370	0.022 U	0.02 U	**0.053**
Fluorene			3.9	240	**0.0041 J**	0.02 U	**0.021 J**
Phenanthrene					0.022 U	**0.0057 J**	**0.093**
Anthracene			0.73	1800	0.022 U	0.02 U	**0.032**
2-Methylnaphthalene			2.1		**0.003 J**	**0.0026 J**	**0.022 J**
Total HPAH					0.022 U	**0.0075**	**0.6209**
Fluoranthene				1500	0.022 U	**0.0044 J**	**0.13**
Pyrene				180	0.022 U	0.02 U	**0.15**
Benzo(a)anthracene			0.027	0.092	0.022 U	**0.0031 J**	**0.041**
Chrysene				9.2	0.022 U	0.02 U	**0.07**
Benzo(b)fluoranthene				0.092	0.022 U	0.02 U	**0.053**
Benzo(k)fluoranthene				0.92	0.022 U	0.02 U	**0.019 J**
Total Benzofluoranthenes (b, j, k)					0.022 U	0.02 U	**0.072**
Benzo(a)pyrene			0.014	0.0092	0.022 U	0.02 U	**0.056**
Indeno(1,2,3-c,d)pyrene				0.092	0.022 U	0.02 U	**0.043**
Dibenzo(a,h)anthracene				0.0092	0.022 U	0.02 U	**0.0049 J**
Benzo(g,h,i)perylene					0.022 U	0.02 U	**0.054**
Total PAH	0.014		0.14		**0.0041**	**0.0132**	**0.9899**
Volatile Organics (ug/L)							
Benzene			130	0.35	**0.05 J**	0.5 U	**0.08 J**
Ethylbenzene			7.3	1300	0.5 U	0.5 U	0.5 U
Toluene			9.8	720	0.5 U	0.5 U	0.5 U

Table 3

Discrete Near-Bottom Surface Water Analytical Results - Year 2 Event 2 Long-Term Monitoring

Location ID:	Ecological			Human Health	PCM-19	PCM-20	PCM-21
Sample ID:					PCM-19DSW-081211	PCM-20DSW-081211	PCM-21DSW-081211
Sample Date:	ODEQ 2004 Chronic Ambient Water Quality Criteria (AWQC)	EPA 2004 National Recommended Water Quality Criteria (NRWQC) Criterion Continuous Concentration (CCC)	Oakridge Nat. Lab 1996 Tier II Sediment Concentration Values (SCV)	EPA 2004 Drinking Water Region 9 PRGs	12/11/2008	12/11/2008	12/11/2008
m,p-Xylene			1.8		0.5 U	0.5 U	0.5 U
o-Xylene			13		0.5 U	0.5 U	0.5 U
Total Xylene					0.5 U	0.5 U	0.5 U

Notes:

Detected concentration above one or more ecological or human health screening level values.

Non-detected concentration is above one or more identified screening levels

Bold = Detected result

J = Estimated value

U = Compound analyzed, but not detected above detection limit

UJ = Compound analyzed, but not detected above estimated detection limit

Total LPAH (Low PAH) are the total of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene. 2-Methylnapthalene is not included in the sum of LPAHs.

Total HPAH (High PAH) are the total of fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzofluoranthenes, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene.

Benzo(j)fluoranthene is included in the total of benzo(b&k)fluoranthenes.

Total xylene is the sum of o-, m-, p- isomers.

Totals are calculated as the sum of all detected results. If all are undetected results, the highest reporting limit value is reported as the sum.

Data received a level III validation.

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
Conventional Parameters (mg/L)				
Amenable Cyanide	0.01 UJ	0.01 UJ	--	--
Free Cyanide	0.01 U	0.01 U	--	--
Cyanide	0.01 UJ	0.01 UJ	--	--
Metals (ug/L)				
Aluminum	**0.9**	--	**0.9**	--
Antimony	0.05 U	--	0.05 U	--
Arsenic	0.5 U	--	0.5 U	--
Cadmium	0.02 U	--	0.02 U	--
Chromium	0.2 U	--	0.2 U	--
Copper	0.1 U	--	0.1 U	--
Iron	20 U	20 U	20 U	--
Lead	**0.005**	--	**0.004**	--
Mercury	0.2 UJ	--	0.2 UJ	--
Nickel	0.2 U	--	0.2 U	--
Selenium	1 U	--	1 U	--
Silver	0.02 U	--	0.02 U	--
Zinc	**0.4**	--	**1.8**	--
Organometallic Compounds (ug/L)				
n-Butyltin	0.05 U	--	0.05 U	--
Dibutyltin	0.05 U	--	0.05 U	--
Tetrabutyltin	0.05 U	--	0.05 U	--
Tri-n-Butyltin - synonym with Tributyltin	0.05 U	--	0.05 U	--
Aromatic Hydrocarbons (ug/L)				
Total LPAH	0.2 U	0.022 U	0.24 U	--
Naphthalene	0.2 U	0.022 U	0.24 U	--
Acenaphthylene	0.2 U	0.022 U	0.24 U	--
Acenaphthene	0.2 U	0.022 U	0.24 U	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
Fluorene	0.2 U	0.022 U	0.24 U	--
Phenanthrene	0.2 U	0.022 U	0.24 U	--
Anthracene	0.2 U	0.022 U	0.24 U	--
Total HPAH	0.2 U	0.022 U	0.24 U	--
Fluoranthene	0.2 U	0.022 U	0.24 U	--
Pyrene	0.2 U	0.022 U	0.24 U	--
Benzo(a)anthracene	0.2 U	0.022 U	0.24 U	--
Chrysene	0.2 U	0.022 U	0.24 U	--
Benzo(b)fluoranthene	0.2 U	0.022 U	0.24 U	--
Benzo(k)fluoranthene	0.2 U	0.022 U	0.24 U	--
Total Benzofluoranthenes (b, j, k)	0.2 U	0.022 U	0.24 U	--
Benzo(a)pyrene	0.2 U	0.022 U	0.24 U	--
Indeno(1,2,3-c,d)pyrene	0.2 U	0.022 U	0.24 U	--
Dibenzo(a,h)anthracene	0.2 U	0.022 U	0.24 U	--
Benzo(g,h,i)perylene	0.2 U	0.022 U	0.24 U	--
Total PAH	0.2 U	0.022 U	0.24 U	--
2-Methylnaphthalene	--	**0.0038 J**	--	--
PCB Aroclors (ug/L)				
Aroclor 1016	0.2 U	--	0.23 U	--
Aroclor 1221	0.4 U	--	0.45 U	--
Aroclor 1232	0.2 U	--	0.23 U	--
Aroclor 1242	0.2 U	--	0.23 U	--
Aroclor 1248	0.2 U	--	0.23 U	--
Aroclor 1254	0.2 U	--	0.23 U	--
Aroclor 1260	0.2 U	--	0.23 U	--
Aroclor 1262	0.2 U	--	0.23 U	--
Aroclor 1268	0.2 U	--	0.23 U	--
Total PCB	0.4 U	--	0.45 U	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
Pesticides (ug/L)				
2,2-Dichloropropionic acid (Dalapon)	0.41 U	--	0.44 U	--
2,4'-DDD (o,p'-DDD)	0.01 U	--	0.012 U	--
2,4'-DDE (o,p'-DDE)	0.01 U	--	0.012 U	--
2,4'-DDT (o,p'-DDT)	0.01 U	--	0.012 U	--
4,4'-DDD (p,p'-DDD)	0.01 U	--	0.012 U	--
4,4'-DDE (p,p'-DDE)	0.01 U	--	0.012 U	--
4,4'-DDT (p,p'-DDT)	0.01 U	--	0.012 U	--
Total DDT	0.01 U	--	0.012 U	--
Aldrin	0.01 U	--	0.012 U	--
alpha-BHC	0.01 U	--	0.012 U	--
beta-BHC	0.01 U	--	0.012 U	--
alpha-Chlordane (cis-Chlordane)	0.01 U	--	0.012 U	--
cis-Nonachlor	0.01 U	--	0.012 U	--
trans-Nonachlor	0.01 U	--	0.012 U	--
delta-BHC	0.01 U	--	0.012 U	--
Dicamba	0.21 U	--	0.22 U	--
Dichlorprop	0.41 U	--	0.44 U	--
Dieldrin	0.01 U	--	0.012 U	--
Dinoseb	0.21 U	--	0.22 U	--
Endosulfan-alpha (I)	0.01 U	--	0.012 U	--
Endosulfan-beta (II)	0.01 U	--	0.012 U	--
Endosulfan sulfate	0.01 U	--	0.012 U	--
Endrin	0.01 U	--	0.012 U	--
Endrin aldehyde	0.01 U	--	0.012 U	--
Endrin ketone	0.01 U	--	0.012 U	--
gamma-Chlordane	0.01 U	--	0.012 U	--
gamma-BHC (Lindane)	0.01 U	--	0.012 U	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
Heptachlor	0.01 U	--	0.012 U	--
Heptachlor epoxide	0.01 U	--	0.012 U	--
Hexachlorobenzene	0.01 U	--	0.012 U	--
Hexachlorobutadiene	0.01 U	--	0.012 U	--
Hexachloroethane	0.01 U	--	0.012 U	--
MCPA	110 U	--	110 U	--
Mecoprop (MCPP)	110 U	--	110 U	--
Methoxychlor	0.01 U	--	0.012 U	--
Mirex	0.01 U	--	0.012 U	--
Oxychlordane	0.01 U	--	0.012 U	--
Toxaphene	0.5 U	--	0.56 U	--
Herbicides (ug/L)				
2,4-D (2,4-Dichlorophenoxyacetic acid)	0.41 U	--	0.44 U	--
2,4-DB (2,4-D derivative)	0.41 U	--	0.44 U	--
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	0.21 U	--	0.22 U	--
2,4,5-TP (Silvex)	0.21 U	--	0.22 U	--
Semi-Volatile Organics (ug/L)				
1,2,4-Trichlorobenzene	0.2 U	--	0.24 U	--
1,2-Dichlorobenzene	0.2 U	--	0.24 U	--
1,3-Dichlorobenzene	0.2 U	--	0.24 U	--
1,4-Dichlorobenzene	0.2 U	--	0.24 U	--
2,3,4,5-Tetrachlorophenol	0.5 UJ	--	0.5 UJ	--
2,3,5,6-Tetrachlorophenol	0.5 UJ	--	0.5 UJ	--
2,4,5-Trichlorophenol	0.5 U	--	0.6 U	--
2,4,6-Trichlorophenol	0.5 U	--	0.5 U	--
2,4-Dichlorophenol	0.5 U	--	0.6 U	--
2,4-Dimethylphenol	4 U	--	4.8 U	--
2,4-Dinitrophenol	4 UJ	--	4.8 UJ	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
2,4-Dinitrotoluene	0.2 U	--	0.24 U	--
2,6-Dinitrotoluene	0.2 U	--	0.24 U	--
2-Chloronaphthalene	0.2 U	--	0.24 U	--
2-Chlorophenol	0.5 U	--	0.6 U	--
2-Methylphenol (o-Cresol)	0.5 U	--	0.6 U	--
2-Nitroaniline	0.2 U	--	0.24 U	--
2-Nitrophenol	0.5 U	--	0.6 U	--
3,3'-Dichlorobenzidine	2 U	--	2.4 U	--
3-Nitroaniline	1 U	--	1.2 U	--
4-Bromophenyl-phenyl ether	0.2 U	--	0.24 U	--
4-Chloro-3-methylphenol	0.5 U	--	0.6 U	--
4-Chloroaniline	0.2 U	--	0.24 U	--
4-Chlorophenyl phenyl ether	0.2 U	--	0.24 U	--
4-Methylphenol (p-Cresol)	0.5 U	--	0.6 U	--
4-Nitroaniline	1 U	--	1.2 U	--
4-Nitrophenol	2 U	--	2.4 U	--
Aniline	1 U	--	1.2 U	--
Azobenzene	0.2 U	--	0.24 U	--
Benzoic acid	5 U	--	6 U	--
Benzyl alcohol	**0.077 J**	--	**0.12 J**	--
bis(2-Chloroethoxy)methane	0.2 U	--	0.24 U	--
bis(2-Chloroethyl)ether	0.2 U	--	0.24 U	--
bis(2-Chloroisopropyl) ether	0.2 U	--	0.24 U	--
Carbazole	0.2 U	--	0.24 U	--
Dibenzofuran	0.2 U	--	0.24 U	--
Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	2 U	--	2.4 U	--
Hexachlorocyclopentadiene	1 U	--	1.2 U	--
Isophorone	0.2 U	--	0.24 U	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
Nitrobenzene	0.2 U	--	0.24 U	--
N-Nitrosodi-N-propylamine	0.2 U	--	0.24 U	--
N-Nitrosodiphenylamine	0.2 U	--	0.24 U	--
Pentachlorophenol	0.5 UJ	--	0.5 UJ	--
Phenol	0.5 U	--	0.6 U	--
Phthalates (ug/L)				
Bis(2-ethylhexyl) phthalate	1 U	--	1.2 U	--
Butylbenzyl phthalate	0.2 U	--	**0.19 J**	--
Diethyl phthalate	**0.18 J**	--	**0.2 J**	--
Dimethyl phthalate	0.2 U	--	0.24 U	--
Di-n-butyl phthalate	0.44 U	--	0.5 U	--
Di-n-octyl phthalate	0.2 U	--	0.24 U	--
Volatile Organics (ug/L)				
1,1,1,2-Tetrachloroethane	0.5 U	--	0.5 U	--
1,1,1-Trichloroethane	0.5 U	--	0.5 U	--
1,1,2,2-Tetrachloroethane	0.5 U	--	0.5 U	--
1,1,2-Trichloroethane	0.5 U	--	0.5 U	--
1,1'-Dichloroethane	0.5 U	--	0.5 U	--
1,1'-Dichloroethene	0.5 U	--	0.5 U	--
1,2,3-Trichloropropane	0.5 U	--	0.5 U	--
Ethylene dibromide (1,2-Dibromoethane)	2 U	--	2 U	--
1,2-Dichloroethane	0.5 U	--	0.5 U	--
1,2-Dichloroethene, trans-	0.5 U	--	0.5 U	--
1,2-Dichloropropane	0.5 U	--	0.5 U	--
1,3-Dichloropropene, cis-	0.5 U	--	0.5 U	--
1,3-Dichloropropene, trans-	0.5 U	--	0.5 U	--
2-Butanone (MEK)	20 UJ	--	20 UJ	--
2-Chloroethylvinyl ether	5 UJ	--	5 UJ	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
2-Hexanone (Methyl butyl ketone)	20 U	--	20 U	--
Acetone	20 U	--	20 U	--
Acrolein	20 UJ	--	20 UJ	--
Acrylonitrile	5 U	--	5 U	--
Benzene	0.5 U	0.5 U	0.5 U	0.5 U
Bromochloromethane	0.5 U	--	0.5 U	--
Bromodichloromethane	0.5 U	--	0.5 U	--
Bromoform	0.5 U	--	0.5 U	--
Bromomethane	0.5 U	--	0.5 U	--
Carbon disulfide	0.5 U	--	0.5 U	--
Carbon tetrachloride	0.5 U	--	0.5 U	--
Chlorobenzene	0.5 U	--	0.5 U	--
Chloroethane	0.5 U	--	0.5 U	--
Chloroform	**0.33 J**	--	**0.36 J**	--
Chloromethane	0.5 U	--	0.5 U	--
Dibromochloromethane	0.5 U	--	0.5 U	--
Dibromomethane	0.5 U	--	0.5 U	--
Dichlorodifluoromethane	0.5 U	--	0.5 U	--
Dichloromethane (Methylene chloride)	**0.4 J**	--	**0.91 J**	--
Ethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U
Iodomethane (Methyl iodide)	5 U	--	5 U	--
Isopropylbenzene (Cumene)	2 U	--	2 U	--
Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	20 U	--	20 U	--
Methyl tert-butyl ether	0.5 U	--	0.5 U	--
Styrene	0.5 U	--	0.5 U	--
Tetrachloroethene	0.5 U	--	0.5 U	--
Toluene	**0.21 J**	0.5 U	**0.15 J**	0.5 U
trans-1,4-Dichloro-2-butene	10 U	--	10 U	--

Table 4
Quality Assurance/Quality Control Analytical Results - Gasco Year 2 Event 2 Long-Term Monitoring

Sample ID: Sample Date:	PCM-FB-081212 12/12/2008 Field Blank	PCM-DRB-081212 12/12/2008 Discrete Near-Bottom Surface Water Rinsate Blank	PCM-DSRB-081212 12/12/2008 Depositional Sediment Rinsate Blank	TRIP BLANK-081211 12/11/2008 Trip Blank
Trichloroethene	0.5 U	--	0.5 U	--
Trichlorofluoromethane (Fluorotrichloromethane)	0.5 U	--	0.5 U	--
Vinyl acetate	5 UJ	--	5 UJ	--
Vinyl chloride	0.5 U	--	0.5 U	--
m,p-Xylene	0.5 U	0.5 U	0.5 U	0.5 U
o-Xylene	0.5 U	0.5 U	0.5 U	0.5 U
Total Xylene	0.5 U	0.5 U	0.5 U	0.5 U

Notes:

Bold = Detected result

J = Estimated value.

U = Compound analyzed, but not detected above detection limit.

UJ = Compound analyzed, but not detected above estimated detection limit.

Total LPAH (Low PAH) are the total of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene and Anthracene. 2-Methylnapthalene is not included in the sum of LPAHs.

Total HPAH (High PAH) are the total of Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzofluoranthenes, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, Dibenzo(a,h)anthracene and Benzo(g,h,i)perylene.

Benzo(j)fluoranthene is included in the total of benzo(b&k)fluoranthenes.

Total PCB does not include Aroclor 1262 and 1268.

Total DDT consists of the sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.

Total xylene is the sum of o-, m-, p- isomers.

Totals are calculated as the sum of all detected results. If all are undetcted results, the highest reporting limit value is reported as the sum.

Data received a level III validation.

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	1,1,1,2-Tetrachloroethane	1	3700	30	µg/kg
PCM-02	PCM-02DS-081211	1,1,1-Trichloroethane	1	3700	12	µg/kg
PCM-02	PCM-02DS-081211	1,1,2,2-Tetrachloroethane	1	3700	26	µg/kg
PCM-02	PCM-02DS-081211	1,1'-Dichloroethane	1	3700	32	µg/kg
PCM-02	PCM-02DS-081211	1,1'-Dichloroethene	1	3700	74	µg/kg
PCM-02	PCM-02DS-081211	1,2,3-Trichloropropane	1	3700	77	µg/kg
PCM-02	PCM-02DS-081211	1,2,4-Trichlorobenzene	10	300	77	µg/kg
PCM-02	PCM-02DS-081211	1,2-Dichlorobenzene	10	300	85	µg/kg
PCM-02	PCM-02DS-081211	1,2-Dichloroethane	1	3700	20	µg/kg
PCM-02	PCM-02DS-081211	1,2-Dichloroethene, trans-	1	3700	33	µg/kg
PCM-02	PCM-02DS-081211	1,2-Dichloropropane	1	3700	30	µg/kg
PCM-02	PCM-02DS-081211	1,3-Dichlorobenzene	10	300	88	µg/kg
PCM-02	PCM-02DS-081211	1,3-Dichloropropene, cis-	1	3700	33	µg/kg
PCM-02	PCM-02DS-081211	1,3-Dichloropropene, trans-	1	3700	34	µg/kg
PCM-02	PCM-02DS-081211	1,4-Dichlorobenzene	10	3700	28	µg/kg
PCM-02	PCM-02DS-081211	2,2-Dichloropropionic acid (Dalapon)	50	300	190	µg/kg
PCM-02	PCM-02DS-081211	2,3,4,5-Tetrachlorophenol	5	12	7	µg/kg
PCM-02	PCM-02DS-081211	2,3,5,6-Tetrachlorophenol	5	12	8.7	µg/kg
PCM-02	PCM-02DS-081211	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	50	300	24	µg/kg
PCM-02	PCM-02DS-081211	2,4,5-TP (Silvex)	50	300	22	µg/kg
PCM-02	PCM-02DS-081211	2,4,5-Trichlorophenol	5	300	44	µg/kg
PCM-02	PCM-02DS-081211	2,4,6-Trichlorophenol	5	12	6.3	µg/kg
PCM-02	PCM-02DS-081211	2,4-D (2,4-Dichlorophenoxyacetic acid)	50	300	22	µg/kg
PCM-02	PCM-02DS-081211	2,4-DB (2,4-D derivative)	50	300	41	µg/kg
PCM-02	PCM-02DS-081211	2,4'-DDE (o,p'-DDE)	1	2	2	µg/kg
PCM-02	PCM-02DS-081211	2,4'-DDT (o,p'-DDT)	1	2.1	2.1	µg/kg
PCM-02	PCM-02DS-081211	2,4-Dichlorophenol	10	300	30	µg/kg
PCM-02	PCM-02DS-081211	2,4-Dimethylphenol	20	1500	170	µg/kg
PCM-02	PCM-02DS-081211	2,4-Dinitrophenol	200	5900	500	µg/kg
PCM-02	PCM-02DS-081211	2,4-Dinitrotoluene	10	300	44	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	2,6-Dinitrotoluene	10	300	59	µg/kg
PCM-02	PCM-02DS-081211	2-Butanone (MEK)	4	15000	770	µg/kg
PCM-02	PCM-02DS-081211	2-Chloroethylvinyl ether	2	7400	160	µg/kg
PCM-02	PCM-02DS-081211	2-Chloronaphthalene	10	300	47	µg/kg
PCM-02	PCM-02DS-081211	2-Chlorophenol	10	300	59	µg/kg
PCM-02	PCM-02DS-081211	2-Hexanone (Methyl butyl ketone)	2	7400	700	µg/kg
PCM-02	PCM-02DS-081211	2-Methylphenol (o-Cresol)	10	300	44	µg/kg
PCM-02	PCM-02DS-081211	2-Nitroaniline	20	590	94	µg/kg
PCM-02	PCM-02DS-081211	2-Nitrophenol	10	300	44	µg/kg
PCM-02	PCM-02DS-081211	3,3'-Dichlorobenzidine	100	3000	110	µg/kg
PCM-02	PCM-02DS-081211	3-Nitroaniline	20	590	74	µg/kg
PCM-02	PCM-02DS-081211	4-Bromophenyl-phenyl ether	10	300	47	µg/kg
PCM-02	PCM-02DS-081211	4-Chloro-3-methylphenol	10	300	41	µg/kg
PCM-02	PCM-02DS-081211	4-Chloroaniline	10	300	56	µg/kg
PCM-02	PCM-02DS-081211	4-Chlorophenyl phenyl ether	10	300	41	µg/kg
PCM-02	PCM-02DS-081211	4-Methylphenol (p-Cresol)	10	300	44	µg/kg
PCM-02	PCM-02DS-081211	4-Nitroaniline	20	590	53	µg/kg
PCM-02	PCM-02DS-081211	4-Nitrophenol	100	3000	530	µg/kg
PCM-02	PCM-02DS-081211	Acetone	10	37000	880	µg/kg
PCM-02	PCM-02DS-081211	Acrolein	2.5	9200	630	µg/kg
PCM-02	PCM-02DS-081211	Acrylonitrile	2	7400	120	µg/kg
PCM-02	PCM-02DS-081211	Aldrin	1	2.3	2.3	µg/kg
PCM-02	PCM-02DS-081211	alpha-BHC	1	1.2	1.2	µg/kg
PCM-02	PCM-02DS-081211	alpha-Chlordane (cis-Chlordane)	1	3.4	3.4	µg/kg
PCM-02	PCM-02DS-081211	Aniline	20	590	44	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1016	10	12	12	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1221	10	80	80	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1232	10	31	31	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1242	10	12	5.2	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1248	10	12	7	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	Aroclor 1254	10	44	44	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1260	10	12	7.2	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1262	10	12	7.2	µg/kg
PCM-02	PCM-02DS-081211	Aroclor 1268	10	12	4.3	µg/kg
PCM-02	PCM-02DS-081211	Benzoic acid	200	5900	2900	µg/kg
PCM-02	PCM-02DS-081211	Benzyl alcohol	10	590	62	µg/kg
PCM-02	PCM-02DS-081211	beta-BHC	1	1.2	1.2	µg/kg
PCM-02	PCM-02DS-081211	bis(2-Chloroethoxy)methane	10	300	44	µg/kg
PCM-02	PCM-02DS-081211	bis(2-Chloroethyl)ether	10	300	56	µg/kg
PCM-02	PCM-02DS-081211	Bis(2-ethylhexyl) phthalate	20	3000	210	µg/kg
PCM-02	PCM-02DS-081211	Bromochloromethane	1	3700	36	µg/kg
PCM-02	PCM-02DS-081211	Bromodichloromethane	1	3700	32	µg/kg
PCM-02	PCM-02DS-081211	Bromoform	1	3700	36	µg/kg
PCM-02	PCM-02DS-081211	Bromomethane	1	3700	70	µg/kg
PCM-02	PCM-02DS-081211	Butylbenzyl phthalate	10	300	94	µg/kg
PCM-02	PCM-02DS-081211	Carbon disulfide	1	3700	55	µg/kg
PCM-02	PCM-02DS-081211	Carbon tetrachloride	1	3700	77	µg/kg
PCM-02	PCM-02DS-081211	Chlorobenzene	1	3700	24	µg/kg
PCM-02	PCM-02DS-081211	Chloroethane	1	3700	55	µg/kg
PCM-02	PCM-02DS-081211	Chloroform	1	3700	33	µg/kg
PCM-02	PCM-02DS-081211	Chloromethane	1	3700	36	µg/kg
PCM-02	PCM-02DS-081211	Chromium VI	0.5	1.3	0.015	mg/kg
PCM-02	PCM-02DS-081211	cis-Nonachlor	1	8	8	µg/kg
PCM-02	PCM-02DS-081211	delta-BHC	1	1.2	0.064	µg/kg
PCM-02	PCM-02DS-081211	Dibromochloromethane	1	3700	25	µg/kg
PCM-02	PCM-02DS-081211	Dibromomethane	1	3700	63	µg/kg
PCM-02	PCM-02DS-081211	Dicamba	50	300	21	µg/kg
PCM-02	PCM-02DS-081211	Dichlorodifluoromethane	1	3700	77	µg/kg
PCM-02	PCM-02DS-081211	Dichlorprop	50	300	18	µg/kg
PCM-02	PCM-02DS-081211	Dieldrin	1	1.2	0.34	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	Diethyl phthalate	10	300	39	µg/kg
PCM-02	PCM-02DS-081211	Dimethyl phthalate	10	300	30	µg/kg
PCM-02	PCM-02DS-081211	Di-n-butyl phthalate	10	590	240	µg/kg
PCM-02	PCM-02DS-081211	Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	100	3000	41	µg/kg
PCM-02	PCM-02DS-081211	Di-n-octyl phthalate	10	300	50	µg/kg
PCM-02	PCM-02DS-081211	Dinoseb	80	300	37	µg/kg
PCM-02	PCM-02DS-081211	Endosulfan sulfate	1	1.2	0.092	µg/kg
PCM-02	PCM-02DS-081211	Endosulfan-alpha (I)	1	1.2	0.2	µg/kg
PCM-02	PCM-02DS-081211	Endosulfan-beta (II)	1	1.2	0.23	µg/kg
PCM-02	PCM-02DS-081211	Endrin	1	1.7	1.7	µg/kg
PCM-02	PCM-02DS-081211	Endrin aldehyde	1	1.2	1.1	µg/kg
PCM-02	PCM-02DS-081211	Ethylene dibromide (1,2-Dibromoethane)	1	3700	27	µg/kg
PCM-02	PCM-02DS-081211	gamma-BHC (Lindane)	1	5.7	5.7	µg/kg
PCM-02	PCM-02DS-081211	gamma-Chlordane	1	1.2	0.075	µg/kg
PCM-02	PCM-02DS-081211	Heptachlor	1	3.6	3.6	µg/kg
PCM-02	PCM-02DS-081211	Heptachlor epoxide	1	1.2	0.16	µg/kg
PCM-02	PCM-02DS-081211	Hexachlorocyclopentadiene	50	1500	850	µg/kg
PCM-02	PCM-02DS-081211	Iodomethane (Methyl iodide)	2	7400	240	µg/kg
PCM-02	PCM-02DS-081211	Isophorone	10	300	30	µg/kg
PCM-02	PCM-02DS-081211	MCPA	10000	59000	3000	µg/kg
PCM-02	PCM-02DS-081211	Mecoprop (MCPP)	10000	59000	1500	µg/kg
PCM-02	PCM-02DS-081211	Methoxychlor	1	1.2	0.12	µg/kg
PCM-02	PCM-02DS-081211	Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	2	7400	1300	µg/kg
PCM-02	PCM-02DS-081211	Methyl tert-butyl ether (MTBE)	1	3700	55	µg/kg
PCM-02	PCM-02DS-081211	Nitrobenzene	10	300	65	µg/kg
PCM-02	PCM-02DS-081211	N-Nitrosodi-N-propylamine	10	300	71	µg/kg
PCM-02	PCM-02DS-081211	N-Nitrosodiphenylamine	10	300	47	µg/kg
PCM-02	PCM-02DS-081211	Oxychlordane	1	2.5	2.5	µg/kg
PCM-02	PCM-02DS-081211	PCB-001	1	9.83	16.3	pg/g
PCM-02	PCM-02DS-081211	PCB-005	1	9.83	7.16	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	PCB-007	1	9.83	6.87	pg/g
PCM-02	PCM-02DS-081211	PCB-009	1	9.83	7.44	pg/g
PCM-02	PCM-02DS-081211	PCB-010	1	9.83	5.27	pg/g
PCM-02	PCM-02DS-081211	PCB-012/013	1	19.7	7.32	pg/g
PCM-02	PCM-02DS-081211	PCB-014	1	9.83	6.68	pg/g
PCM-02	PCM-02DS-081211	PCB-023	1	9.83	5.62	pg/g
PCM-02	PCM-02DS-081211	PCB-024	1	9.83	2.6	pg/g
PCM-02	PCM-02DS-081211	PCB-034	1	9.83	6.16	pg/g
PCM-02	PCM-02DS-081211	PCB-036	1	9.83	5.67	pg/g
PCM-02	PCM-02DS-081211	PCB-038	1	9.83	5.76	pg/g
PCM-02	PCM-02DS-081211	PCB-039	1	9.83	5.09	pg/g
PCM-02	PCM-02DS-081211	PCB-055	1	9.83	4.4	pg/g
PCM-02	PCM-02DS-081211	PCB-057	1	9.83	4.57	pg/g
PCM-02	PCM-02DS-081211	PCB-058	1	9.83	4.37	pg/g
PCM-02	PCM-02DS-081211	PCB-068	1	9.83	3.93	pg/g
PCM-02	PCM-02DS-081211	PCB-072	1	9.83	4.93	pg/g
PCM-02	PCM-02DS-081211	PCB-073	1	9.83	2.56	pg/g
PCM-02	PCM-02DS-081211	PCB-078	1	9.83	5.73	pg/g
PCM-02	PCM-02DS-081211	PCB-079	1	9.83	4.7	pg/g
PCM-02	PCM-02DS-081211	PCB-080	1	9.83	4.02	pg/g
PCM-02	PCM-02DS-081211	PCB-081	1	9.83	5.3	pg/g
PCM-02	PCM-02DS-081211	PCB-088	1	9.83	7.74	pg/g
PCM-02	PCM-02DS-081211	PCB-094	1	9.83	7.46	pg/g
PCM-02	PCM-02DS-081211	PCB-098	1	9.83	7.85	pg/g
PCM-02	PCM-02DS-081211	PCB-104	1	9.83	2.61	pg/g
PCM-02	PCM-02DS-081211	PCB-106	1	9.83	6.09	pg/g
PCM-02	PCM-02DS-081211	PCB-111	1	9.83	5.18	pg/g
PCM-02	PCM-02DS-081211	PCB-112	1	9.83	5.18	pg/g
PCM-02	PCM-02DS-081211	PCB-115	1	9.83	5.12	pg/g
PCM-02	PCM-02DS-081211	PCB-117	1	9.83	5.46	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	PCB-120	1	9.83	5.13	pg/g
PCM-02	PCM-02DS-081211	PCB-121	1	9.83	5.12	pg/g
PCM-02	PCM-02DS-081211	PCB-122	1	9.83	7.24	pg/g
PCM-02	PCM-02DS-081211	PCB-126	1	9.83	6.68	pg/g
PCM-02	PCM-02DS-081211	PCB-127	1	9.83	6.63	pg/g
PCM-02	PCM-02DS-081211	PCB-142	1	9.83	2.98	pg/g
PCM-02	PCM-02DS-081211	PCB-143	1	9.83	2.81	pg/g
PCM-02	PCM-02DS-081211	PCB-145	1	9.83	2.49	pg/g
PCM-02	PCM-02DS-081211	PCB-148	1	9.83	2.76	pg/g
PCM-02	PCM-02DS-081211	PCB-150	1	9.83	2.34	pg/g
PCM-02	PCM-02DS-081211	PCB-152	1	9.83	2.75	pg/g
PCM-02	PCM-02DS-081211	PCB-155	1	9.83	2.37	pg/g
PCM-02	PCM-02DS-081211	PCB-160	1	9.83	2.25	pg/g
PCM-02	PCM-02DS-081211	PCB-161	1	9.83	2.23	pg/g
PCM-02	PCM-02DS-081211	PCB-162	1	9.83	5.92	pg/g
PCM-02	PCM-02DS-081211	PCB-165	1	9.83	2.49	pg/g
PCM-02	PCM-02DS-081211	PCB-169	1	9.83	8.69	pg/g
PCM-02	PCM-02DS-081211	PCB-182	1	9.83	6.47	pg/g
PCM-02	PCM-02DS-081211	PCB-184	1	9.83	2.97	pg/g
PCM-02	PCM-02DS-081211	PCB-186	1	9.83	2.45	pg/g
PCM-02	PCM-02DS-081211	PCB-188	1	9.83	2.37	pg/g
PCM-02	PCM-02DS-081211	PCB-192	1	9.83	5.37	pg/g
PCM-02	PCM-02DS-081211	PCB-204	1	9.83	3.9	pg/g
PCM-02	PCM-02DS-081211	Pentachlorophenol	5	12	8.2	µg/kg
PCM-02	PCM-02DS-081211	Phenol	30	880	59	µg/kg
PCM-02	PCM-02DS-081211	Styrene	1	3700	17	µg/kg
PCM-02	PCM-02DS-081211	Sulfide	0.2	1.3	0.13	mg/kg
PCM-02	PCM-02DS-081211	Tetrabutyltin (ion)	1	2.4	1.1	µg/kg
PCM-02	PCM-02DS-081211	Tetrachloroethene	1	3700	55	µg/kg
PCM-02	PCM-02DS-081211	Toluene	1	3700	32	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-02	PCM-02DS-081211	Toxaphene	50	660	660	µg/kg
PCM-02	PCM-02DS-081211	trans-1,4-Dichloro-2-butene	2	7400	130	µg/kg
PCM-02	PCM-02DS-081211	trans-Nonachlor	1	1.3	1.3	µg/kg
PCM-02	PCM-02DS-081211	Trichloroethene	1	3700	48	µg/kg
PCM-02	PCM-02DS-081211	Trichlorofluoromethane (Fluorotrichloromethane)	1	3700	85	µg/kg
PCM-02	PCM-02DS-081211	Vinyl acetate	1	3700	140	µg/kg
PCM-02	PCM-02DS-081211	Vinyl chloride	1	3700	70	µg/kg
PCM-06	PCM-06DS-081211	1,1,1,2-Tetrachloroethane	1	3900	32	µg/kg
PCM-06	PCM-06DS-081211	1,1,1-Trichloroethane	1	3900	13	µg/kg
PCM-06	PCM-06DS-081211	1,1,2,2-Tetrachloroethane	1	3900	28	µg/kg
PCM-06	PCM-06DS-081211	1,1'-Dichloroethane	1	3900	34	µg/kg
PCM-06	PCM-06DS-081211	1,1'-Dichloroethene	1	3900	78	µg/kg
PCM-06	PCM-06DS-081211	1,2,3-Trichloropropane	1	3900	82	µg/kg
PCM-06	PCM-06DS-081211	1,2,4-Trichlorobenzene	10	310	79	µg/kg
PCM-06	PCM-06DS-081211	1,2-Dichlorobenzene	10	310	88	µg/kg
PCM-06	PCM-06DS-081211	1,2-Dichloroethane	1	3900	21	µg/kg
PCM-06	PCM-06DS-081211	1,2-Dichloroethene, trans-	1	3900	35	µg/kg
PCM-06	PCM-06DS-081211	1,2-Dichloropropane	1	3900	32	µg/kg
PCM-06	PCM-06DS-081211	1,3-Dichlorobenzene	10	310	91	µg/kg
PCM-06	PCM-06DS-081211	1,3-Dichloropropene, cis-	1	3900	35	µg/kg
PCM-06	PCM-06DS-081211	1,3-Dichloropropene, trans-	1	3900	36	µg/kg
PCM-06	PCM-06DS-081211	1,4-Dichlorobenzene	10	3900	30	µg/kg
PCM-06	PCM-06DS-081211	2,2-Dichloropropionic acid (Dalapon)	50	310	190	µg/kg
PCM-06	PCM-06DS-081211	2,3,4,5-Tetrachlorophenol	5	12	7.1	µg/kg
PCM-06	PCM-06DS-081211	2,3,5,6-Tetrachlorophenol	5	12	8.8	µg/kg
PCM-06	PCM-06DS-081211	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	50	310	25	µg/kg
PCM-06	PCM-06DS-081211	2,4,5-TP (Silvex)	50	310	22	µg/kg
PCM-06	PCM-06DS-081211	2,4,5-Trichlorophenol	5	310	46	µg/kg
PCM-06	PCM-06DS-081211	2,4,6-Trichlorophenol	5	12	6.4	µg/kg
PCM-06	PCM-06DS-081211	2,4-D (2,4-Dichlorophenoxyacetic acid)	50	310	23	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-06	PCM-06DS-081211	2,4-DB (2,4-D derivative)	50	310	43	µg/kg
PCM-06	PCM-06DS-081211	2,4'-DDE (o,p'-DDE)	1	1.3	1.1	µg/kg
PCM-06	PCM-06DS-081211	2,4'-DDT (o,p'-DDT)	1	1.3	1.3	µg/kg
PCM-06	PCM-06DS-081211	2,4-Dichlorophenol	10	310	31	µg/kg
PCM-06	PCM-06DS-081211	2,4-Dimethylphenol	20	1600	170	µg/kg
PCM-06	PCM-06DS-081211	2,4-Dinitrophenol	200	6100	520	µg/kg
PCM-06	PCM-06DS-081211	2,4-Dinitrotoluene	10	310	46	µg/kg
PCM-06	PCM-06DS-081211	2,6-Dinitrotoluene	10	310	61	µg/kg
PCM-06	PCM-06DS-081211	2-Butanone (MEK)	4	16000	820	µg/kg
PCM-06	PCM-06DS-081211	2-Chloroethylvinyl ether	2	7800	170	µg/kg
PCM-06	PCM-06DS-081211	2-Chloronaphthalene	10	310	49	µg/kg
PCM-06	PCM-06DS-081211	2-Chlorophenol	10	310	61	µg/kg
PCM-06	PCM-06DS-081211	2-Hexanone (Methyl butyl ketone)	2	7800	740	µg/kg
PCM-06	PCM-06DS-081211	2-Methylphenol (o-Cresol)	10	310	46	µg/kg
PCM-06	PCM-06DS-081211	2-Nitroaniline	20	610	97	µg/kg
PCM-06	PCM-06DS-081211	2-Nitrophenol	10	310	46	µg/kg
PCM-06	PCM-06DS-081211	3,3'-Dichlorobenzidine	100	3100	120	µg/kg
PCM-06	PCM-06DS-081211	3-Nitroaniline	20	610	76	µg/kg
PCM-06	PCM-06DS-081211	4-Bromophenyl-phenyl ether	10	310	49	µg/kg
PCM-06	PCM-06DS-081211	4-Chloro-3-methylphenol	10	310	43	µg/kg
PCM-06	PCM-06DS-081211	4-Chloroaniline	10	310	58	µg/kg
PCM-06	PCM-06DS-081211	4-Chlorophenyl phenyl ether	10	310	43	µg/kg
PCM-06	PCM-06DS-081211	4-Methylphenol (p-Cresol)	10	310	46	µg/kg
PCM-06	PCM-06DS-081211	4-Nitroaniline	20	610	55	µg/kg
PCM-06	PCM-06DS-081211	4-Nitrophenol	100	3100	550	µg/kg
PCM-06	PCM-06DS-081211	Acetone	10	39000	930	µg/kg
PCM-06	PCM-06DS-081211	Acrolein	2.5	9700	660	µg/kg
PCM-06	PCM-06DS-081211	Acrylonitrile	2	7800	130	µg/kg
PCM-06	PCM-06DS-081211	Aldrin	1	1.3	1.1	µg/kg
PCM-06	PCM-06DS-081211	alpha-Chlordane (cis-Chlordane)	1	3.6	3.6	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-06	PCM-06DS-081211	Aniline	20	610	46	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1016	10	13	7.8	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1221	10	57	57	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1232	10	22	22	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1242	10	13	11	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1248	10	13	6.3	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1254	10	19	19	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1260	10	13	5.4	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1262	10	13	5.3	µg/kg
PCM-06	PCM-06DS-081211	Aroclor 1268	10	13	3.3	µg/kg
PCM-06	PCM-06DS-081211	Benzoic acid	200	6100	3000	µg/kg
PCM-06	PCM-06DS-081211	Benzyl alcohol	10	610	64	µg/kg
PCM-06	PCM-06DS-081211	beta-BHC	1	1.9	1.9	µg/kg
PCM-06	PCM-06DS-081211	bis(2-Chloroethoxy)methane	10	310	46	µg/kg
PCM-06	PCM-06DS-081211	bis(2-Chloroethyl)ether	10	310	58	µg/kg
PCM-06	PCM-06DS-081211	Bis(2-ethylhexyl) phthalate	20	3100	220	µg/kg
PCM-06	PCM-06DS-081211	Bromochloromethane	1	3900	38	µg/kg
PCM-06	PCM-06DS-081211	Bromodichloromethane	1	3900	34	µg/kg
PCM-06	PCM-06DS-081211	Bromoform	1	3900	38	µg/kg
PCM-06	PCM-06DS-081211	Bromomethane	1	3900	74	µg/kg
PCM-06	PCM-06DS-081211	Butylbenzyl phthalate	10	310	97	µg/kg
PCM-06	PCM-06DS-081211	Carbon disulfide	1	3900	59	µg/kg
PCM-06	PCM-06DS-081211	Carbon tetrachloride	1	3900	82	µg/kg
PCM-06	PCM-06DS-081211	Chlorobenzene	1	3900	25	µg/kg
PCM-06	PCM-06DS-081211	Chloroethane	1	3900	59	µg/kg
PCM-06	PCM-06DS-081211	Chloroform	1	3900	35	µg/kg
PCM-06	PCM-06DS-081211	Chloromethane	1	3900	38	µg/kg
PCM-06	PCM-06DS-081211	Chromium VI	0.5	1.3	0.015	mg/kg
PCM-06	PCM-06DS-081211	cis-Nonachlor	1	3.9	3.9	µg/kg
PCM-06	PCM-06DS-081211	delta-BHC	1	1.7	1.7	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-06	PCM-06DS-081211	Dibromochloromethane	1	3900	27	µg/kg
PCM-06	PCM-06DS-081211	Dibromomethane	1	3900	66	µg/kg
PCM-06	PCM-06DS-081211	Dicamba	50	310	22	µg/kg
PCM-06	PCM-06DS-081211	Dichlorodifluoromethane	1	3900	82	µg/kg
PCM-06	PCM-06DS-081211	Dichlorprop	50	310	19	µg/kg
PCM-06	PCM-06DS-081211	Dieldrin	1	1.3	0.36	µg/kg
PCM-06	PCM-06DS-081211	Diethyl phthalate	10	310	40	µg/kg
PCM-06	PCM-06DS-081211	Di-n-butyl phthalate	10	610	240	µg/kg
PCM-06	PCM-06DS-081211	Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	100	3100	43	µg/kg
PCM-06	PCM-06DS-081211	Di-n-octyl phthalate	10	310	52	µg/kg
PCM-06	PCM-06DS-081211	Dinoseb	80	310	39	µg/kg
PCM-06	PCM-06DS-081211	Endosulfan sulfate	1	1.3	0.096	µg/kg
PCM-06	PCM-06DS-081211	Endosulfan-alpha (I)	1	1.3	0.21	µg/kg
PCM-06	PCM-06DS-081211	Endosulfan-beta (II)	1	1.3	0.23	µg/kg
PCM-06	PCM-06DS-081211	Endrin	1	1.3	0.25	µg/kg
PCM-06	PCM-06DS-081211	Endrin aldehyde	1	1.3	1.3	µg/kg
PCM-06	PCM-06DS-081211	Endrin ketone	1	1.3	0.1	µg/kg
PCM-06	PCM-06DS-081211	Ethylene dibromide (1,2-Dibromoethane)	1	3900	29	µg/kg
PCM-06	PCM-06DS-081211	gamma-BHC (Lindane)	1	4.5	4.5	µg/kg
PCM-06	PCM-06DS-081211	gamma-Chlordane	1	1.3	1.3	µg/kg
PCM-06	PCM-06DS-081211	Heptachlor	1	1.3	1.3	µg/kg
PCM-06	PCM-06DS-081211	Heptachlor epoxide	1	1.3	0.16	µg/kg
PCM-06	PCM-06DS-081211	Hexachlorocyclopentadiene	50	1600	880	µg/kg
PCM-06	PCM-06DS-081211	Iodomethane (Methyl iodide)	2	7800	260	µg/kg
PCM-06	PCM-06DS-081211	Isophorone	10	310	31	µg/kg
PCM-06	PCM-06DS-081211	MCPA	10000	61000	61000	µg/kg
PCM-06	PCM-06DS-081211	Mecoprop (MCPP)	10000	61000	1600	µg/kg
PCM-06	PCM-06DS-081211	Methoxychlor	1	1.3	0.13	µg/kg
PCM-06	PCM-06DS-081211	Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	2	7800	1400	µg/kg
PCM-06	PCM-06DS-081211	Methyl tert-butyl ether (MTBE)	1	3900	59	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-06	PCM-06DS-081211	Mirex	1	1.3	0.077	µg/kg
PCM-06	PCM-06DS-081211	Nitrobenzene	10	310	67	µg/kg
PCM-06	PCM-06DS-081211	N-Nitrosodi-N-propylamine	10	310	73	µg/kg
PCM-06	PCM-06DS-081211	N-Nitrosodiphenylamine	10	310	49	µg/kg
PCM-06	PCM-06DS-081211	Oxychlordane	1	1.3	0.071	µg/kg
PCM-06	PCM-06DS-081211	PCB-001	1	9.71	16.5	pg/g
PCM-06	PCM-06DS-081211	PCB-002	1	9.71	3.35	pg/g
PCM-06	PCM-06DS-081211	PCB-005	1	9.71	6.02	pg/g
PCM-06	PCM-06DS-081211	PCB-006	1	9.71	6.23	pg/g
PCM-06	PCM-06DS-081211	PCB-007	1	9.71	5.77	pg/g
PCM-06	PCM-06DS-081211	PCB-009	1	9.71	6.25	pg/g
PCM-06	PCM-06DS-081211	PCB-010	1	9.71	4.48	pg/g
PCM-06	PCM-06DS-081211	PCB-012/013	1	19.4	6.15	pg/g
PCM-06	PCM-06DS-081211	PCB-014	1	9.71	5.61	pg/g
PCM-06	PCM-06DS-081211	PCB-023	1	9.71	5.63	pg/g
PCM-06	PCM-06DS-081211	PCB-024	1	9.71	2.5	pg/g
PCM-06	PCM-06DS-081211	PCB-034	1	9.71	6.17	pg/g
PCM-06	PCM-06DS-081211	PCB-036	1	9.71	5.69	pg/g
PCM-06	PCM-06DS-081211	PCB-038	1	9.71	5.77	pg/g
PCM-06	PCM-06DS-081211	PCB-039	1	9.71	5.1	pg/g
PCM-06	PCM-06DS-081211	PCB-055	1	9.71	6.84	pg/g
PCM-06	PCM-06DS-081211	PCB-057	1	9.71	7.1	pg/g
PCM-06	PCM-06DS-081211	PCB-058	1	9.71	6.79	pg/g
PCM-06	PCM-06DS-081211	PCB-068	1	9.71	6.11	pg/g
PCM-06	PCM-06DS-081211	PCB-073	1	9.71	3.08	pg/g
PCM-06	PCM-06DS-081211	PCB-078	1	9.71	8.92	pg/g
PCM-06	PCM-06DS-081211	PCB-079	1	9.71	7.31	pg/g
PCM-06	PCM-06DS-081211	PCB-080	1	9.71	6.26	pg/g
PCM-06	PCM-06DS-081211	PCB-081	1	9.71	8.24	pg/g
PCM-06	PCM-06DS-081211	PCB-083	1	9.71	7.51	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-06	PCM-06DS-081211	PCB-088	1	9.71	7.22	pg/g
PCM-06	PCM-06DS-081211	PCB-098	1	9.71	7.33	pg/g
PCM-06	PCM-06DS-081211	PCB-104	1	9.71	2.17	pg/g
PCM-06	PCM-06DS-081211	PCB-106	1	9.71	5.68	pg/g
PCM-06	PCM-06DS-081211	PCB-111	1	9.71	4.84	pg/g
PCM-06	PCM-06DS-081211	PCB-112	1	9.71	4.84	pg/g
PCM-06	PCM-06DS-081211	PCB-115	1	9.71	4.78	pg/g
PCM-06	PCM-06DS-081211	PCB-117	1	9.71	5.1	pg/g
PCM-06	PCM-06DS-081211	PCB-120	1	9.71	4.79	pg/g
PCM-06	PCM-06DS-081211	PCB-121	1	9.71	4.78	pg/g
PCM-06	PCM-06DS-081211	PCB-123	1	9.71	5.25	pg/g
PCM-06	PCM-06DS-081211	PCB-126	1	9.71	7.57	pg/g
PCM-06	PCM-06DS-081211	PCB-127	1	9.71	5.18	pg/g
PCM-06	PCM-06DS-081211	PCB-142	1	9.71	3.22	pg/g
PCM-06	PCM-06DS-081211	PCB-143	1	9.71	3.03	pg/g
PCM-06	PCM-06DS-081211	PCB-145	1	9.71	2.65	pg/g
PCM-06	PCM-06DS-081211	PCB-152	1	9.71	2.92	pg/g
PCM-06	PCM-06DS-081211	PCB-155	1	9.71	2.52	pg/g
PCM-06	PCM-06DS-081211	PCB-160	1	9.71	2.43	pg/g
PCM-06	PCM-06DS-081211	PCB-161	1	9.71	2.41	pg/g
PCM-06	PCM-06DS-081211	PCB-162	1	9.71	5.43	pg/g
PCM-06	PCM-06DS-081211	PCB-165	1	9.71	2.69	pg/g
PCM-06	PCM-06DS-081211	PCB-181	1	9.71	5.34	pg/g
PCM-06	PCM-06DS-081211	PCB-182	1	9.71	5.51	pg/g
PCM-06	PCM-06DS-081211	PCB-184	1	9.71	2.95	pg/g
PCM-06	PCM-06DS-081211	PCB-186	1	9.71	2.44	pg/g
PCM-06	PCM-06DS-081211	PCB-188	1	9.71	2.36	pg/g
PCM-06	PCM-06DS-081211	PCB-192	1	9.71	4.57	pg/g
PCM-06	PCM-06DS-081211	PCB-204	1	9.71	3.22	pg/g
PCM-06	PCM-06DS-081211	Pentachlorophenol	5	12	8.3	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-06	PCM-06DS-081211	Phenol	30	910	61	µg/kg
PCM-06	PCM-06DS-081211	Styrene	1	3900	18	µg/kg
PCM-06	PCM-06DS-081211	Sulfide	0.2	1.3	0.13	mg/kg
PCM-06	PCM-06DS-081211	Tetrabutyltin (ion)	1	2.4	1.1	µg/kg
PCM-06	PCM-06DS-081211	Tetrachloroethene	1	3900	59	µg/kg
PCM-06	PCM-06DS-081211	Toluene	1	3900	33	µg/kg
PCM-06	PCM-06DS-081211	Toxaphene	50	310	310	µg/kg
PCM-06	PCM-06DS-081211	trans-1,4-Dichloro-2-butene	2	7800	140	µg/kg
PCM-06	PCM-06DS-081211	trans-Nonachlor	1	1.3	0.7	µg/kg
PCM-06	PCM-06DS-081211	Trichloroethene	1	3900	51	µg/kg
PCM-06	PCM-06DS-081211	Trichlorofluoromethane (Fluorotrichloromethane)	1	3900	90	µg/kg
PCM-06	PCM-06DS-081211	Vinyl acetate	1	3900	150	µg/kg
PCM-06	PCM-06DS-081211	Vinyl chloride	1	3900	74	µg/kg
PCM-09	PCM-09DS-081211	1,1,1,2-Tetrachloroethane	1	2.4	0.43	µg/kg
PCM-09	PCM-09DS-081211	1,1,1-Trichloroethane	1	2.4	0.36	µg/kg
PCM-09	PCM-09DS-081211	1,1,2,2-Tetrachloroethane	1	2.4	0.22	µg/kg
PCM-09	PCM-09DS-081211	1,1'-Dichloroethane	1	2.4	0.12	µg/kg
PCM-09	PCM-09DS-081211	1,1'-Dichloroethene	1	2.4	0.17	µg/kg
PCM-09	PCM-09DS-081211	1,2,3-Trichloropropane	1	12	0.65	µg/kg
PCM-09	PCM-09DS-081211	1,2,4-Trichlorobenzene	10	300	77	µg/kg
PCM-09	PCM-09DS-081211	1,2-Dichlorobenzene	10	300	86	µg/kg
PCM-09	PCM-09DS-081211	1,2-Dichloroethane	1	2.4	0.13	µg/kg
PCM-09	PCM-09DS-081211	1,2-Dichloroethene, trans-	1	2.4	0.12	µg/kg
PCM-09	PCM-09DS-081211	1,2-Dichloropropane	1	2.4	0.16	µg/kg
PCM-09	PCM-09DS-081211	1,3-Dichlorobenzene	10	300	89	µg/kg
PCM-09	PCM-09DS-081211	1,3-Dichloropropene, cis-	1	2.4	0.074	µg/kg
PCM-09	PCM-09DS-081211	1,3-Dichloropropene, trans-	1	6	0.24	µg/kg
PCM-09	PCM-09DS-081211	2,2-Dichloropropionic acid (Dalapon)	50	300	190	µg/kg
PCM-09	PCM-09DS-081211	2,3,4,5-Tetrachlorophenol	5	12	7.1	µg/kg
PCM-09	PCM-09DS-081211	2,3,5,6-Tetrachlorophenol	5	12	8.7	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-09	PCM-09DS-081211	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	50	300	24	µg/kg
PCM-09	PCM-09DS-081211	2,4,5-TP (Silvex)	50	300	22	µg/kg
PCM-09	PCM-09DS-081211	2,4,5-Trichlorophenol	5	300	45	µg/kg
PCM-09	PCM-09DS-081211	2,4,6-Trichlorophenol	5	12	6.4	µg/kg
PCM-09	PCM-09DS-081211	2,4-D (2,4-Dichlorophenoxyacetic acid)	50	300	23	µg/kg
PCM-09	PCM-09DS-081211	2,4-DB (2,4-D derivative)	50	300	42	µg/kg
PCM-09	PCM-09DS-081211	2,4'-DDE (o,p'-DDE)	1	1.2	1.1	µg/kg
PCM-09	PCM-09DS-081211	2,4'-DDT (o,p'-DDT)	1	1.5	1.5	µg/kg
PCM-09	PCM-09DS-081211	2,4-Dichlorophenol	10	300	30	µg/kg
PCM-09	PCM-09DS-081211	2,4-Dimethylphenol	20	1500	170	µg/kg
PCM-09	PCM-09DS-081211	2,4-Dinitrophenol	200	6000	510	µg/kg
PCM-09	PCM-09DS-081211	2,4-Dinitrotoluene	10	300	45	µg/kg
PCM-09	PCM-09DS-081211	2,6-Dinitrotoluene	10	300	60	µg/kg
PCM-09	PCM-09DS-081211	2-Butanone (MEK)	4	24	3.9	µg/kg
PCM-09	PCM-09DS-081211	2-Chloroethylvinyl ether	2	6	0.74	µg/kg
PCM-09	PCM-09DS-081211	2-Chloronaphthalene	10	300	48	µg/kg
PCM-09	PCM-09DS-081211	2-Chlorophenol	10	300	60	µg/kg
PCM-09	PCM-09DS-081211	2-Hexanone (Methyl butyl ketone)	2	9.6	1.9	µg/kg
PCM-09	PCM-09DS-081211	2-Methylphenol (o-Cresol)	10	300	45	µg/kg
PCM-09	PCM-09DS-081211	2-Nitroaniline	20	600	95	µg/kg
PCM-09	PCM-09DS-081211	2-Nitrophenol	10	300	45	µg/kg
PCM-09	PCM-09DS-081211	3,3'-Dichlorobenzidine	100	3000	110	µg/kg
PCM-09	PCM-09DS-081211	3-Nitroaniline	20	600	74	µg/kg
PCM-09	PCM-09DS-081211	4-Bromophenyl-phenyl ether	10	300	48	µg/kg
PCM-09	PCM-09DS-081211	4-Chloro-3-methylphenol	10	300	42	µg/kg
PCM-09	PCM-09DS-081211	4-Chloroaniline	10	300	57	µg/kg
PCM-09	PCM-09DS-081211	4-Chlorophenyl phenyl ether	10	300	42	µg/kg
PCM-09	PCM-09DS-081211	4-Methylphenol (p-Cresol)	10	300	45	µg/kg
PCM-09	PCM-09DS-081211	4-Nitroaniline	20	600	54	µg/kg
PCM-09	PCM-09DS-081211	4-Nitrophenol	100	3000	540	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-09	PCM-09DS-081211	Acetone	10	24	7	µg/kg
PCM-09	PCM-09DS-081211	Acrolein	2.5	9500	640	µg/kg
PCM-09	PCM-09DS-081211	Acrylonitrile	2	4.8	2.4	µg/kg
PCM-09	PCM-09DS-081211	Aldrin	1	2.6	2.6	µg/kg
PCM-09	PCM-09DS-081211	alpha-BHC	1	1.2	0.56	µg/kg
PCM-09	PCM-09DS-081211	alpha-Chlordane (cis-Chlordane)	1	1.2	1.2	µg/kg
PCM-09	PCM-09DS-081211	Aniline	20	600	45	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1016	10	12	12	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1221	10	49	49	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1232	10	30	30	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1242	10	13	13	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1248	10	12	4.2	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1254	10	27	27	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1260	10	12	6.1	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1262	10	12	4.8	µg/kg
PCM-09	PCM-09DS-081211	Aroclor 1268	10	12	7.6	µg/kg
PCM-09	PCM-09DS-081211	Benzene	1	2.4	0.34	µg/kg
PCM-09	PCM-09DS-081211	Benzoic acid	200	6000	2900	µg/kg
PCM-09	PCM-09DS-081211	Benzyl alcohol	10	600	62	µg/kg
PCM-09	PCM-09DS-081211	beta-BHC	1	2.4	2.4	µg/kg
PCM-09	PCM-09DS-081211	bis(2-Chloroethoxy)methane	10	300	45	µg/kg
PCM-09	PCM-09DS-081211	bis(2-Chloroethyl)ether	10	300	57	µg/kg
PCM-09	PCM-09DS-081211	Bis(2-ethylhexyl) phthalate	20	3000	210	µg/kg
PCM-09	PCM-09DS-081211	Bromochloromethane	1	2.4	0.6	µg/kg
PCM-09	PCM-09DS-081211	Bromodichloromethane	1	6	0.11	µg/kg
PCM-09	PCM-09DS-081211	Bromoform	1	6	0.6	µg/kg
PCM-09	PCM-09DS-081211	Bromomethane	1	6	1.1	µg/kg
PCM-09	PCM-09DS-081211	Butylbenzyl phthalate	10	300	95	µg/kg
PCM-09	PCM-09DS-081211	Carbon disulfide	1	2.4	0.13	µg/kg
PCM-09	PCM-09DS-081211	Carbon tetrachloride	1	6	0.19	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-09	PCM-09DS-081211	Chlorobenzene	1	2.4	0.13	µg/kg
PCM-09	PCM-09DS-081211	Chloroethane	1	2.4	0.72	µg/kg
PCM-09	PCM-09DS-081211	Chloroform	1	2.4	0.12	µg/kg
PCM-09	PCM-09DS-081211	Chloromethane	1	2.4	0.14	µg/kg
PCM-09	PCM-09DS-081211	Chromium VI	0.5	1.3	0.015	mg/kg
PCM-09	PCM-09DS-081211	cis-Nonachlor	1	4.5	4.5	µg/kg
PCM-09	PCM-09DS-081211	delta-BHC	1	1.3	1.3	µg/kg
PCM-09	PCM-09DS-081211	Dibromochloromethane	1	2.4	0.39	µg/kg
PCM-09	PCM-09DS-081211	Dibromomethane	1	2.4	0.43	µg/kg
PCM-09	PCM-09DS-081211	Dicamba	50	300	21	µg/kg
PCM-09	PCM-09DS-081211	Dichlorodifluoromethane	1	6	0.18	µg/kg
PCM-09	PCM-09DS-081211	Dichloromethane (Methylene chloride)	5	12	0.34	µg/kg
PCM-09	PCM-09DS-081211	Dichlorprop	50	300	18	µg/kg
PCM-09	PCM-09DS-081211	Dieldrin	1	1.2	0.35	µg/kg
PCM-09	PCM-09DS-081211	Diethyl phthalate	10	300	39	µg/kg
PCM-09	PCM-09DS-081211	Dimethyl phthalate	10	300	30	µg/kg
PCM-09	PCM-09DS-081211	Di-n-butyl phthalate	10	600	240	µg/kg
PCM-09	PCM-09DS-081211	Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	100	3000	42	µg/kg
PCM-09	PCM-09DS-081211	Di-n-octyl phthalate	10	300	51	µg/kg
PCM-09	PCM-09DS-081211	Dinoseb	80	300	38	µg/kg
PCM-09	PCM-09DS-081211	Endosulfan sulfate	1	1.2	0.094	µg/kg
PCM-09	PCM-09DS-081211	Endosulfan-alpha (I)	1	1.2	0.21	µg/kg
PCM-09	PCM-09DS-081211	Endosulfan-beta (II)	1	1.2	0.23	µg/kg
PCM-09	PCM-09DS-081211	Endrin	1	1.2	0.24	µg/kg
PCM-09	PCM-09DS-081211	Endrin aldehyde	1	1.2	1.2	µg/kg
PCM-09	PCM-09DS-081211	Endrin ketone	1	1.2	0.098	µg/kg
PCM-09	PCM-09DS-081211	Ethylbenzene	1	2.4	0.098	µg/kg
PCM-09	PCM-09DS-081211	Ethylene dibromide (1,2-Dibromoethane)	1	2.4	0.46	µg/kg
PCM-09	PCM-09DS-081211	gamma-BHC (Lindane)	1	4.6	4.6	µg/kg
PCM-09	PCM-09DS-081211	gamma-Chlordane	1	1.2	0.076	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-09	PCM-09DS-081211	Heptachlor	1	1.3	1.3	µg/kg
PCM-09	PCM-09DS-081211	Heptachlor epoxide	1	1.2	0.16	µg/kg
PCM-09	PCM-09DS-081211	Hexachlorocyclopentadiene	50	1500	860	µg/kg
PCM-09	PCM-09DS-081211	Iodomethane (Methyl iodide)	2	24	1.5	µg/kg
PCM-09	PCM-09DS-081211	Isophorone	10	300	30	µg/kg
PCM-09	PCM-09DS-081211	Isopropylbenzene (Cumene)	1	2.4	0.074	µg/kg
PCM-09	PCM-09DS-081211	m,p-Xylene	1	4.8	0.23	µg/kg
PCM-09	PCM-09DS-081211	MCPA	10000	60000	60000	µg/kg
PCM-09	PCM-09DS-081211	Mecoprop (MCPP)	10000	60000	1500	µg/kg
PCM-09	PCM-09DS-081211	Methoxychlor	1	1.2	0.12	µg/kg
PCM-09	PCM-09DS-081211	Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	2	12	0.58	µg/kg
PCM-09	PCM-09DS-081211	Methyl tert-butyl ether (MTBE)	1	9.6	0.2	µg/kg
PCM-09	PCM-09DS-081211	Mirex	1	1.2	1.2	µg/kg
PCM-09	PCM-09DS-081211	Nitrobenzene	10	300	65	µg/kg
PCM-09	PCM-09DS-081211	N-Nitrosodi-N-propylamine	10	300	71	µg/kg
PCM-09	PCM-09DS-081211	N-Nitrosodiphenylamine	10	300	48	µg/kg
PCM-09	PCM-09DS-081211	Oxychlordane	1	1.2	0.069	µg/kg
PCM-09	PCM-09DS-081211	o-Xylene	1	2.4	0.15	µg/kg
PCM-09	PCM-09DS-081211	PCB-001	1	9.43	2.28	pg/g
PCM-09	PCM-09DS-081211	PCB-005	1	9.43	3.36	pg/g
PCM-09	PCM-09DS-081211	PCB-007	1	9.43	3.22	pg/g
PCM-09	PCM-09DS-081211	PCB-009	1	9.43	3.49	pg/g
PCM-09	PCM-09DS-081211	PCB-010	1	9.43	1.56	pg/g
PCM-09	PCM-09DS-081211	PCB-014	1	9.43	3.13	pg/g
PCM-09	PCM-09DS-081211	PCB-023	1	9.43	2.29	pg/g
PCM-09	PCM-09DS-081211	PCB-024	1	9.43	0.936	pg/g
PCM-09	PCM-09DS-081211	PCB-034	1	9.43	2.51	pg/g
PCM-09	PCM-09DS-081211	PCB-036	1	9.43	2.32	pg/g
PCM-09	PCM-09DS-081211	PCB-038	1	9.43	2.35	pg/g
PCM-09	PCM-09DS-081211	PCB-039	1	9.43	2.08	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-09	PCM-09DS-081211	PCB-055	1	9.43	2.61	pg/g
PCM-09	PCM-09DS-081211	PCB-058	1	9.43	2.59	pg/g
PCM-09	PCM-09DS-081211	PCB-073	1	9.43	1.13	pg/g
PCM-09	PCM-09DS-081211	PCB-078	1	9.43	3.4	pg/g
PCM-09	PCM-09DS-081211	PCB-080	1	9.43	2.39	pg/g
PCM-09	PCM-09DS-081211	PCB-081	1	9.43	3.15	pg/g
PCM-09	PCM-09DS-081211	PCB-088	1	9.43	4.16	pg/g
PCM-09	PCM-09DS-081211	PCB-098	1	9.43	4.23	pg/g
PCM-09	PCM-09DS-081211	PCB-106	1	9.43	3.28	pg/g
PCM-09	PCM-09DS-081211	PCB-111	1	9.43	2.79	pg/g
PCM-09	PCM-09DS-081211	PCB-112	1	9.43	2.79	pg/g
PCM-09	PCM-09DS-081211	PCB-115	1	9.43	2.75	pg/g
PCM-09	PCM-09DS-081211	PCB-120	1	9.43	2.76	pg/g
PCM-09	PCM-09DS-081211	PCB-121	1	9.43	2.75	pg/g
PCM-09	PCM-09DS-081211	PCB-126	1	9.43	2.74	pg/g
PCM-09	PCM-09DS-081211	PCB-127	1	9.43	3	pg/g
PCM-09	PCM-09DS-081211	PCB-142	1	9.43	1.14	pg/g
PCM-09	PCM-09DS-081211	PCB-143	1	9.43	1.07	pg/g
PCM-09	PCM-09DS-081211	PCB-145	1	9.43	0.858	pg/g
PCM-09	PCM-09DS-081211	PCB-155	1	9.43	0.818	pg/g
PCM-09	PCM-09DS-081211	PCB-160	1	9.43	0.857	pg/g
PCM-09	PCM-09DS-081211	PCB-161	1	9.43	0.85	pg/g
PCM-09	PCM-09DS-081211	PCB-162	1	9.43	2.11	pg/g
PCM-09	PCM-09DS-081211	PCB-165	1	9.43	0.95	pg/g
PCM-09	PCM-09DS-081211	PCB-169	1	9.43	2.99	pg/g
PCM-09	PCM-09DS-081211	PCB-182	1	9.43	2.27	pg/g
PCM-09	PCM-09DS-081211	PCB-184	1	9.43	0.858	pg/g
PCM-09	PCM-09DS-081211	PCB-186	1	9.43	0.709	pg/g
PCM-09	PCM-09DS-081211	PCB-188	1	9.43	0.684	pg/g
PCM-09	PCM-09DS-081211	PCB-192	1	9.43	1.89	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-09	PCM-09DS-081211	PCB-204	1	9.43	1.22	pg/g
PCM-09	PCM-09DS-081211	Pentachlorophenol	5	12	8.3	µg/kg
PCM-09	PCM-09DS-081211	Phenol	30	890	60	µg/kg
PCM-09	PCM-09DS-081211	Styrene	1	2.4	0.19	µg/kg
PCM-09	PCM-09DS-081211	Tetrabutyltin (ion)	1	2.4	1.2	µg/kg
PCM-09	PCM-09DS-081211	Tetrachloroethene	1	2.4	0.29	µg/kg
PCM-09	PCM-09DS-081211	Toluene	1	2.4	0.11	µg/kg
PCM-09	PCM-09DS-081211	Toxaphene	50	330	330	µg/kg
PCM-09	PCM-09DS-081211	trans-1,4-Dichloro-2-butene	2	12	1.3	µg/kg
PCM-09	PCM-09DS-081211	trans-Nonachlor	1	1.2	0.64	µg/kg
PCM-09	PCM-09DS-081211	Trichloroethene	1	2.4	0.31	µg/kg
PCM-09	PCM-09DS-081211	Trichlorofluoromethane (Fluorotrichloromethane)	1	6	0.13	µg/kg
PCM-09	PCM-09DS-081211	Vinyl acetate	1	12	1.5	µg/kg
PCM-09	PCM-09DS-081211	Vinyl chloride	1	2.4	0.14	µg/kg
PCM-14	PCM-14DS-081211	1,1,1,2-Tetrachloroethane	1	2.3	0.41	µg/kg
PCM-14	PCM-14DS-081211	1,1,1-Trichloroethane	1	2.3	0.35	µg/kg
PCM-14	PCM-14DS-081211	1,1,2,2-Tetrachloroethane	1	2.3	0.21	µg/kg
PCM-14	PCM-14DS-081211	1,1'-Dichloroethane	1	2.3	0.11	µg/kg
PCM-14	PCM-14DS-081211	1,1'-Dichloroethene	1	2.3	0.16	µg/kg
PCM-14	PCM-14DS-081211	1,2,3-Trichloropropane	1	12	0.62	µg/kg
PCM-14	PCM-14DS-081211	1,2,4-Trichlorobenzene	10	58	15	µg/kg
PCM-14	PCM-14DS-081211	1,2-Dichlorobenzene	10	58	17	µg/kg
PCM-14	PCM-14DS-081211	1,2-Dichloroethane	1	2.3	0.13	µg/kg
PCM-14	PCM-14DS-081211	1,2-Dichloroethene, trans-	1	2.3	0.11	µg/kg
PCM-14	PCM-14DS-081211	1,2-Dichloropropane	1	2.3	0.15	µg/kg
PCM-14	PCM-14DS-081211	1,3-Dichlorobenzene	10	58	18	µg/kg
PCM-14	PCM-14DS-081211	1,3-Dichloropropene, cis-	1	2.3	0.071	µg/kg
PCM-14	PCM-14DS-081211	1,3-Dichloropropene, trans-	1	5.7	0.23	µg/kg
PCM-14	PCM-14DS-081211	2,2-Dichloropropionic acid (Dalapon)	50	290	180	µg/kg
PCM-14	PCM-14DS-081211	2,3,4,5-Tetrachlorophenol	5	12	6.9	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-14	PCM-14DS-081211	2,3,5,6-Tetrachlorophenol	5	12	8.5	µg/kg
PCM-14	PCM-14DS-081211	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	50	290	24	µg/kg
PCM-14	PCM-14DS-081211	2,4,5-TP (Silvex)	50	290	21	µg/kg
PCM-14	PCM-14DS-081211	2,4,5-Trichlorophenol	5	58	8.7	µg/kg
PCM-14	PCM-14DS-081211	2,4,6-Trichlorophenol	5	12	6.2	µg/kg
PCM-14	PCM-14DS-081211	2,4-D (2,4-Dichlorophenoxyacetic acid)	50	290	22	µg/kg
PCM-14	PCM-14DS-081211	2,4-DB (2,4-D derivative)	50	290	41	µg/kg
PCM-14	PCM-14DS-081211	2,4'-DDE (o,p'-DDE)	1	1.2	0.27	µg/kg
PCM-14	PCM-14DS-081211	2,4'-DDT (o,p'-DDT)	1	1.2	0.78	µg/kg
PCM-14	PCM-14DS-081211	2,4-Dichlorophenol	10	58	5.8	µg/kg
PCM-14	PCM-14DS-081211	2,4-Dimethylphenol	20	290	32	µg/kg
PCM-14	PCM-14DS-081211	2,4-Dinitrophenol	200	1200	98	µg/kg
PCM-14	PCM-14DS-081211	2,4-Dinitrotoluene	10	58	8.7	µg/kg
PCM-14	PCM-14DS-081211	2,6-Dinitrotoluene	10	58	12	µg/kg
PCM-14	PCM-14DS-081211	2-Butanone (MEK)	4	23	3.7	µg/kg
PCM-14	PCM-14DS-081211	2-Chloroethylvinyl ether	2	5.7	0.71	µg/kg
PCM-14	PCM-14DS-081211	2-Chloronaphthalene	10	58	9.2	µg/kg
PCM-14	PCM-14DS-081211	2-Chlorophenol	10	58	12	µg/kg
PCM-14	PCM-14DS-081211	2-Hexanone (Methyl butyl ketone)	2	9.1	1.8	µg/kg
PCM-14	PCM-14DS-081211	2-Methylphenol (o-Cresol)	10	58	8.7	µg/kg
PCM-14	PCM-14DS-081211	2-Nitroaniline	20	120	19	µg/kg
PCM-14	PCM-14DS-081211	2-Nitrophenol	10	58	8.7	µg/kg
PCM-14	PCM-14DS-081211	3,3'-Dichlorobenzidine	100	580	22	µg/kg
PCM-14	PCM-14DS-081211	3-Nitroaniline	20	120	15	µg/kg
PCM-14	PCM-14DS-081211	4-Bromophenyl-phenyl ether	10	58	9.2	µg/kg
PCM-14	PCM-14DS-081211	4-Chloro-3-methylphenol	10	58	8.1	µg/kg
PCM-14	PCM-14DS-081211	4-Chloroaniline	10	58	11	µg/kg
PCM-14	PCM-14DS-081211	4-Chlorophenyl phenyl ether	10	58	8.1	µg/kg
PCM-14	PCM-14DS-081211	4-Methylphenol (p-Cresol)	10	58	8.7	µg/kg
PCM-14	PCM-14DS-081211	4-Nitroaniline	20	120	11	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-14	PCM-14DS-081211	4-Nitrophenol	100	580	110	µg/kg
PCM-14	PCM-14DS-081211	Acetone	10	23	6.6	µg/kg
PCM-14	PCM-14DS-081211	Acrolein	2.5	9200	630	µg/kg
PCM-14	PCM-14DS-081211	Acrylonitrile	2	4.6	2.3	µg/kg
PCM-14	PCM-14DS-081211	Aldrin	1	1.2	0.73	µg/kg
PCM-14	PCM-14DS-081211	alpha-BHC	1	1.2	0.4	µg/kg
PCM-14	PCM-14DS-081211	alpha-Chlordane (cis-Chlordane)	1	2.2	2.2	µg/kg
PCM-14	PCM-14DS-081211	Aniline	20	120	8.7	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1016	10	12	1.9	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1221	10	49	49	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1232	10	12	12	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1242	10	12	1.5	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1248	10	12	2.9	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1254	10	13	13	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1260	10	12	4.5	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1262	10	12	3.5	µg/kg
PCM-14	PCM-14DS-081211	Aroclor 1268	10	12	2.6	µg/kg
PCM-14	PCM-14DS-081211	Benzoic acid	200	1200	560	µg/kg
PCM-14	PCM-14DS-081211	Benzyl alcohol	10	120	13	µg/kg
PCM-14	PCM-14DS-081211	beta-BHC	1	1.2	0.35	µg/kg
PCM-14	PCM-14DS-081211	bis(2-Chloroethoxy)methane	10	58	8.7	µg/kg
PCM-14	PCM-14DS-081211	bis(2-Chloroethyl)ether	10	58	11	µg/kg
PCM-14	PCM-14DS-081211	Bis(2-ethylhexyl) phthalate	20	580	41	µg/kg
PCM-14	PCM-14DS-081211	Bromochloromethane	1	2.3	0.57	µg/kg
PCM-14	PCM-14DS-081211	Bromodichloromethane	1	5.7	0.1	µg/kg
PCM-14	PCM-14DS-081211	Bromoform	1	5.7	0.57	µg/kg
PCM-14	PCM-14DS-081211	Bromomethane	1	5.7	0.96	µg/kg
PCM-14	PCM-14DS-081211	Butylbenzyl phthalate	10	58	19	µg/kg
PCM-14	PCM-14DS-081211	Carbon disulfide	1	2.3	0.13	µg/kg
PCM-14	PCM-14DS-081211	Carbon tetrachloride	1	5.7	0.18	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-14	PCM-14DS-081211	Chlorobenzene	1	2.3	0.13	µg/kg
PCM-14	PCM-14DS-081211	Chloroethane	1	2.3	0.69	µg/kg
PCM-14	PCM-14DS-081211	Chloroform	1	2.3	0.11	µg/kg
PCM-14	PCM-14DS-081211	Chloromethane	1	2.3	0.13	µg/kg
PCM-14	PCM-14DS-081211	Chromium VI	0.5	1.3	0.015	mg/kg
PCM-14	PCM-14DS-081211	cis-Nonachlor	1	1.2	1.2	µg/kg
PCM-14	PCM-14DS-081211	delta-BHC	1	1.2	0.064	µg/kg
PCM-14	PCM-14DS-081211	Dibromochloromethane	1	2.3	0.37	µg/kg
PCM-14	PCM-14DS-081211	Dibromomethane	1	2.3	0.41	µg/kg
PCM-14	PCM-14DS-081211	Dicamba	50	290	21	µg/kg
PCM-14	PCM-14DS-081211	Dichlorodifluoromethane	1	5.7	0.17	µg/kg
PCM-14	PCM-14DS-081211	Dichloromethane (Methylene chloride)	5	12	0.32	µg/kg
PCM-14	PCM-14DS-081211	Dichlorprop	50	290	18	µg/kg
PCM-14	PCM-14DS-081211	Dieldrin	1	1.2	0.34	µg/kg
PCM-14	PCM-14DS-081211	Diethyl phthalate	10	58	7.5	µg/kg
PCM-14	PCM-14DS-081211	Dimethyl phthalate	10	58	5.8	µg/kg
PCM-14	PCM-14DS-081211	Di-n-butyl phthalate	10	120	46	µg/kg
PCM-14	PCM-14DS-081211	Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	100	580	8.1	µg/kg
PCM-14	PCM-14DS-081211	Di-n-octyl phthalate	10	58	9.8	µg/kg
PCM-14	PCM-14DS-081211	Dinoseb	80	290	37	µg/kg
PCM-14	PCM-14DS-081211	Endosulfan sulfate	1	1.2	1.2	µg/kg
PCM-14	PCM-14DS-081211	Endosulfan-alpha (I)	1	1.2	0.41	µg/kg
PCM-14	PCM-14DS-081211	Endosulfan-beta (II)	1	1.2	0.57	µg/kg
PCM-14	PCM-14DS-081211	Endrin	1	1.2	0.24	µg/kg
PCM-14	PCM-14DS-081211	Endrin aldehyde	1	1.2	0.062	µg/kg
PCM-14	PCM-14DS-081211	Endrin ketone	1	1.2	0.095	µg/kg
PCM-14	PCM-14DS-081211	Ethylene dibromide (1,2-Dibromoethane)	1	2.3	0.44	µg/kg
PCM-14	PCM-14DS-081211	gamma-BHC (Lindane)	1	1.4	1.4	µg/kg
PCM-14	PCM-14DS-081211	gamma-Chlordane	1	1.2	1.2	µg/kg
PCM-14	PCM-14DS-081211	Heptachlor	1	1.2	1.2	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-14	PCM-14DS-081211	Heptachlor epoxide	1	1.2	0.15	µg/kg
PCM-14	PCM-14DS-081211	Hexachlorocyclopentadiene	50	290	170	µg/kg
PCM-14	PCM-14DS-081211	Iodomethane (Methyl iodide)	2	23	1.4	µg/kg
PCM-14	PCM-14DS-081211	Isophorone	10	58	5.8	µg/kg
PCM-14	PCM-14DS-081211	MCPA	10000	58000	2900	µg/kg
PCM-14	PCM-14DS-081211	Mecoprop (MCPP)	10000	58000	1500	µg/kg
PCM-14	PCM-14DS-081211	Methoxychlor	1	1.2	0.12	µg/kg
PCM-14	PCM-14DS-081211	Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	2	12	0.55	µg/kg
PCM-14	PCM-14DS-081211	Methyl tert-butyl ether (MTBE)	1	9.1	0.19	µg/kg
PCM-14	PCM-14DS-081211	Mirex	1	1.2	0.073	µg/kg
PCM-14	PCM-14DS-081211	Nitrobenzene	10	58	13	µg/kg
PCM-14	PCM-14DS-081211	N-Nitrosodi-N-propylamine	10	58	14	µg/kg
PCM-14	PCM-14DS-081211	N-Nitrosodiphenylamine	10	58	9.2	µg/kg
PCM-14	PCM-14DS-081211	Oxychlordane	1	1.2	0.067	µg/kg
PCM-14	PCM-14DS-081211	PCB-001	1	9.06	17.3	pg/g
PCM-14	PCM-14DS-081211	PCB-003	1	9.06	3.37	pg/g
PCM-14	PCM-14DS-081211	PCB-005	1	9.06	8.29	pg/g
PCM-14	PCM-14DS-081211	PCB-007	1	9.06	7.94	pg/g
PCM-14	PCM-14DS-081211	PCB-009	1	9.06	8.6	pg/g
PCM-14	PCM-14DS-081211	PCB-010	1	9.06	4.43	pg/g
PCM-14	PCM-14DS-081211	PCB-012/013	1	18.1	8.47	pg/g
PCM-14	PCM-14DS-081211	PCB-014	1	9.06	7.73	pg/g
PCM-14	PCM-14DS-081211	PCB-023	1	9.06	5.57	pg/g
PCM-14	PCM-14DS-081211	PCB-024	1	9.06	2.37	pg/g
PCM-14	PCM-14DS-081211	PCB-034	1	9.06	6.1	pg/g
PCM-14	PCM-14DS-081211	PCB-035	1	9.06	6.07	pg/g
PCM-14	PCM-14DS-081211	PCB-036	1	9.06	5.62	pg/g
PCM-14	PCM-14DS-081211	PCB-038	1	9.06	5.7	pg/g
PCM-14	PCM-14DS-081211	PCB-039	1	9.06	5.04	pg/g
PCM-14	PCM-14DS-081211	PCB-055	1	9.06	6.68	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-14	PCM-14DS-081211	PCB-057	1	9.06	6.93	pg/g
PCM-14	PCM-14DS-081211	PCB-058	1	9.06	6.63	pg/g
PCM-14	PCM-14DS-081211	PCB-067	1	9.06	5.97	pg/g
PCM-14	PCM-14DS-081211	PCB-068	1	9.06	5.96	pg/g
PCM-14	PCM-14DS-081211	PCB-072	1	9.06	7.49	pg/g
PCM-14	PCM-14DS-081211	PCB-078	1	9.06	8.7	pg/g
PCM-14	PCM-14DS-081211	PCB-079	1	9.06	7.14	pg/g
PCM-14	PCM-14DS-081211	PCB-080	1	9.06	6.11	pg/g
PCM-14	PCM-14DS-081211	PCB-081	1	9.06	8.05	pg/g
PCM-14	PCM-14DS-081211	PCB-083	1	9.06	8.86	pg/g
PCM-14	PCM-14DS-081211	PCB-088	1	9.06	8.52	pg/g
PCM-14	PCM-14DS-081211	PCB-089	1	9.06	9.6	pg/g
PCM-14	PCM-14DS-081211	PCB-094	1	9.06	8.21	pg/g
PCM-14	PCM-14DS-081211	PCB-098	1	9.06	8.65	pg/g
PCM-14	PCM-14DS-081211	PCB-104	1	9.06	2.18	pg/g
PCM-14	PCM-14DS-081211	PCB-106	1	9.06	6.7	pg/g
PCM-14	PCM-14DS-081211	PCB-111	1	9.06	5.71	pg/g
PCM-14	PCM-14DS-081211	PCB-112	1	9.06	5.71	pg/g
PCM-14	PCM-14DS-081211	PCB-115	1	9.06	5.63	pg/g
PCM-14	PCM-14DS-081211	PCB-120	1	9.06	5.65	pg/g
PCM-14	PCM-14DS-081211	PCB-121	1	9.06	5.63	pg/g
PCM-14	PCM-14DS-081211	PCB-122	1	9.06	7.08	pg/g
PCM-14	PCM-14DS-081211	PCB-123	1	9.06	6.2	pg/g
PCM-14	PCM-14DS-081211	PCB-126	1	9.06	5.66	pg/g
PCM-14	PCM-14DS-081211	PCB-127	1	9.06	6.72	pg/g
PCM-14	PCM-14DS-081211	PCB-142	1	9.06	2.99	pg/g
PCM-14	PCM-14DS-081211	PCB-143	1	9.06	2.81	pg/g
PCM-14	PCM-14DS-081211	PCB-145	1	9.06	2.14	pg/g
PCM-14	PCM-14DS-081211	PCB-148	1	9.06	2.76	pg/g
PCM-14	PCM-14DS-081211	PCB-150	1	9.06	2.01	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-14	PCM-14DS-081211	PCB-152	1	9.06	2.36	pg/g
PCM-14	PCM-14DS-081211	PCB-155	1	9.06	2.04	pg/g
PCM-14	PCM-14DS-081211	PCB-160	1	9.06	2.25	pg/g
PCM-14	PCM-14DS-081211	PCB-161	1	9.06	2.23	pg/g
PCM-14	PCM-14DS-081211	PCB-162	1	9.06	5.6	pg/g
PCM-14	PCM-14DS-081211	PCB-165	1	9.06	2.49	pg/g
PCM-14	PCM-14DS-081211	PCB-169	1	9.06	5.84	pg/g
PCM-14	PCM-14DS-081211	PCB-182	1	9.06	5.02	pg/g
PCM-14	PCM-14DS-081211	PCB-184	1	9.06	2.47	pg/g
PCM-14	PCM-14DS-081211	PCB-185	1	9.06	4.59	pg/g
PCM-14	PCM-14DS-081211	PCB-186	1	9.06	2.04	pg/g
PCM-14	PCM-14DS-081211	PCB-188	1	9.06	1.97	pg/g
PCM-14	PCM-14DS-081211	PCB-192	1	9.06	4.17	pg/g
PCM-14	PCM-14DS-081211	PCB-204	1	9.06	3.42	pg/g
PCM-14	PCM-14DS-081211	Pentachlorophenol	5	12	8	µg/kg
PCM-14	PCM-14DS-081211	Phenol	30	180	12	µg/kg
PCM-14	PCM-14DS-081211	Styrene	1	2.3	0.18	µg/kg
PCM-14	PCM-14DS-081211	Sulfide	0.2	1.3	0.13	mg/kg
PCM-14	PCM-14DS-081211	Tetrabutyltin (ion)	1	2.3	1.1	µg/kg
PCM-14	PCM-14DS-081211	Tetrachloroethene	1	2.3	0.28	µg/kg
PCM-14	PCM-14DS-081211	Toluene	1	2.3	0.1	µg/kg
PCM-14	PCM-14DS-081211	Toxaphene	50	140	140	µg/kg
PCM-14	PCM-14DS-081211	trans-1,4-Dichloro-2-butene	2	12	1.3	µg/kg
PCM-14	PCM-14DS-081211	trans-Nonachlor	1	1.2	0.16	µg/kg
PCM-14	PCM-14DS-081211	Trichloroethene	1	2.3	0.3	µg/kg
PCM-14	PCM-14DS-081211	Trichlorofluoromethane (Fluorotrichloromethane)	1	5.7	0.13	µg/kg
PCM-14	PCM-14DS-081211	Vinyl acetate	1	12	1.4	µg/kg
PCM-14	PCM-14DS-081211	Vinyl chloride	1	2.3	0.13	µg/kg
PCM-15	PCM-15DS-081211	1,1,1,2-Tetrachloroethane	1	2.4	0.43	µg/kg
PCM-15	PCM-15DS-081211	1,1,1-Trichloroethane	1	2.4	0.36	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	1,1,2,2-Tetrachloroethane	1	2.4	0.21	µg/kg
PCM-15	PCM-15DS-081211	1,1'-Dichloroethane	1	2.4	0.12	µg/kg
PCM-15	PCM-15DS-081211	1,1'-Dichloroethene	1	2.4	0.17	µg/kg
PCM-15	PCM-15DS-081211	1,2,3-Trichloropropane	1	12	0.64	µg/kg
PCM-15	PCM-15DS-081211	1,2,4-Trichlorobenzene	10	12	3.1	µg/kg
PCM-15	PCM-15DS-081211	1,2-Dichlorobenzene	10	12	3.5	µg/kg
PCM-15	PCM-15DS-081211	1,2-Dichloroethane	1	2.4	0.13	µg/kg
PCM-15	PCM-15DS-081211	1,2-Dichloroethene, trans-	1	2.4	0.12	µg/kg
PCM-15	PCM-15DS-081211	1,2-Dichloropropane	1	2.4	0.16	µg/kg
PCM-15	PCM-15DS-081211	1,3-Dichlorobenzene	10	12	3.6	µg/kg
PCM-15	PCM-15DS-081211	1,3-Dichloropropene, cis-	1	2.4	0.073	µg/kg
PCM-15	PCM-15DS-081211	1,3-Dichloropropene, trans-	1	5.9	0.24	µg/kg
PCM-15	PCM-15DS-081211	2,2-Dichloropropionic acid (Dalapon)	50	300	190	µg/kg
PCM-15	PCM-15DS-081211	2,3,4,5-Tetrachlorophenol	5	12	7.1	µg/kg
PCM-15	PCM-15DS-081211	2,3,5,6-Tetrachlorophenol	5	12	8.8	µg/kg
PCM-15	PCM-15DS-081211	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	50	300	24	µg/kg
PCM-15	PCM-15DS-081211	2,4,5-TP (Silvex)	50	300	22	µg/kg
PCM-15	PCM-15DS-081211	2,4,5-Trichlorophenol	5	12	1.8	µg/kg
PCM-15	PCM-15DS-081211	2,4,6-Trichlorophenol	5	12	6.4	µg/kg
PCM-15	PCM-15DS-081211	2,4-D (2,4-Dichlorophenoxyacetic acid)	50	300	23	µg/kg
PCM-15	PCM-15DS-081211	2,4-DB (2,4-D derivative)	50	300	42	µg/kg
PCM-15	PCM-15DS-081211	2,4'-DDE (o,p'-DDE)	1	1.2	1.2	µg/kg
PCM-15	PCM-15DS-081211	2,4-Dichlorophenol	10	12	1.2	µg/kg
PCM-15	PCM-15DS-081211	2,4-Dimethylphenol	20	60	6.6	µg/kg
PCM-15	PCM-15DS-081211	2,4-Dinitrophenol	200	240	21	µg/kg
PCM-15	PCM-15DS-081211	2,4-Dinitrotoluene	10	12	1.8	µg/kg
PCM-15	PCM-15DS-081211	2,6-Dinitrotoluene	10	12	2.4	µg/kg
PCM-15	PCM-15DS-081211	2-Butanone (MEK)	4	24	3.8	µg/kg
PCM-15	PCM-15DS-081211	2-Chloroethylvinyl ether	2	5.9	0.73	µg/kg
PCM-15	PCM-15DS-081211	2-Chloronaphthalene	10	12	1.9	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	2-Chlorophenol	10	12	2.4	µg/kg
PCM-15	PCM-15DS-081211	2-Hexanone (Methyl butyl ketone)	2	9.4	1.9	µg/kg
PCM-15	PCM-15DS-081211	2-Methylphenol (o-Cresol)	10	12	1.8	µg/kg
PCM-15	PCM-15DS-081211	2-Nitroaniline	20	24	3.8	µg/kg
PCM-15	PCM-15DS-081211	2-Nitrophenol	10	12	1.8	µg/kg
PCM-15	PCM-15DS-081211	3,3'-Dichlorobenzidine	100	120	4.4	µg/kg
PCM-15	PCM-15DS-081211	3-Nitroaniline	20	24	3	µg/kg
PCM-15	PCM-15DS-081211	4-Bromophenyl-phenyl ether	10	12	1.9	µg/kg
PCM-15	PCM-15DS-081211	4-Chloro-3-methylphenol	10	12	1.7	µg/kg
PCM-15	PCM-15DS-081211	4-Chloroaniline	10	12	2.3	µg/kg
PCM-15	PCM-15DS-081211	4-Chlorophenyl phenyl ether	10	12	1.7	µg/kg
PCM-15	PCM-15DS-081211	4-Methylphenol (p-Cresol)	10	12	1.8	µg/kg
PCM-15	PCM-15DS-081211	4-Nitroaniline	20	24	2.2	µg/kg
PCM-15	PCM-15DS-081211	4-Nitrophenol	100	120	22	µg/kg
PCM-15	PCM-15DS-081211	Acetone	10	24	6.8	µg/kg
PCM-15	PCM-15DS-081211	Acrolein	2.5	9300	640	µg/kg
PCM-15	PCM-15DS-081211	Acrylonitrile	2	4.7	2.4	µg/kg
PCM-15	PCM-15DS-081211	Aldrin	1	1.2	0.74	µg/kg
PCM-15	PCM-15DS-081211	alpha-BHC	1	1.2	0.33	µg/kg
PCM-15	PCM-15DS-081211	alpha-Chlordane (cis-Chlordane)	1	3	3	µg/kg
PCM-15	PCM-15DS-081211	Aniline	20	24	1.8	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1016	10	12	3.6	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1221	10	35	35	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1232	10	12	3.4	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1242	10	12	1.6	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1248	10	12	3.3	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1254	10	24	24	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1260	10	12	3.9	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1262	10	12	3.4	µg/kg
PCM-15	PCM-15DS-081211	Aroclor 1268	10	12	3.7	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	Benzene	1	2.4	0.33	µg/kg
PCM-15	PCM-15DS-081211	Benzoic acid	200	240	120	µg/kg
PCM-15	PCM-15DS-081211	Benzyl alcohol	10	24	2.5	µg/kg
PCM-15	PCM-15DS-081211	beta-BHC	1	1.2	1.2	µg/kg
PCM-15	PCM-15DS-081211	bis(2-Chloroethoxy)methane	10	12	1.8	µg/kg
PCM-15	PCM-15DS-081211	bis(2-Chloroethyl)ether	10	12	2.3	µg/kg
PCM-15	PCM-15DS-081211	Bromochloromethane	1	2.4	0.59	µg/kg
PCM-15	PCM-15DS-081211	Bromodichloromethane	1	5.9	0.11	µg/kg
PCM-15	PCM-15DS-081211	Bromoform	1	5.9	0.59	µg/kg
PCM-15	PCM-15DS-081211	Bromomethane	1	5.9	0.99	µg/kg
PCM-15	PCM-15DS-081211	Butylbenzyl phthalate	10	12	3.8	µg/kg
PCM-15	PCM-15DS-081211	Carbon disulfide	1	2.4	0.13	µg/kg
PCM-15	PCM-15DS-081211	Carbon tetrachloride	1	5.9	0.19	µg/kg
PCM-15	PCM-15DS-081211	Chlorobenzene	1	2.4	0.13	µg/kg
PCM-15	PCM-15DS-081211	Chloroethane	1	2.4	0.71	µg/kg
PCM-15	PCM-15DS-081211	Chloroform	1	2.4	0.12	µg/kg
PCM-15	PCM-15DS-081211	Chloromethane	1	2.4	0.14	µg/kg
PCM-15	PCM-15DS-081211	Chromium VI	0.5	1.3	0.015	mg/kg
PCM-15	PCM-15DS-081211	cis-Nonachlor	1	1.2	1.2	µg/kg
PCM-15	PCM-15DS-081211	delta-BHC	1	1.2	0.22	µg/kg
PCM-15	PCM-15DS-081211	Dibromochloromethane	1	2.4	0.38	µg/kg
PCM-15	PCM-15DS-081211	Dibromomethane	1	2.4	0.43	µg/kg
PCM-15	PCM-15DS-081211	Dicamba	50	300	21	µg/kg
PCM-15	PCM-15DS-081211	Dichlorodifluoromethane	1	5.9	0.17	µg/kg
PCM-15	PCM-15DS-081211	Dichloromethane (Methylene chloride)	5	12	0.33	µg/kg
PCM-15	PCM-15DS-081211	Dichlorprop	50	300	18	µg/kg
PCM-15	PCM-15DS-081211	Dieldrin	1	1.2	0.35	µg/kg
PCM-15	PCM-15DS-081211	Diethyl phthalate	10	12	1.6	µg/kg
PCM-15	PCM-15DS-081211	Dimethyl phthalate	10	12	1.2	µg/kg
PCM-15	PCM-15DS-081211	Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	100	120	1.7	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	Di-n-octyl phthalate	10	12	2.1	µg/kg
PCM-15	PCM-15DS-081211	Dinoseb	80	300	38	µg/kg
PCM-15	PCM-15DS-081211	Endosulfan sulfate	1	1.2	1.2	µg/kg
PCM-15	PCM-15DS-081211	Endosulfan-alpha (I)	1	1.2	0.21	µg/kg
PCM-15	PCM-15DS-081211	Endosulfan-beta (II)	1	1.2	0.3	µg/kg
PCM-15	PCM-15DS-081211	Endrin	1	1.2	0.31	µg/kg
PCM-15	PCM-15DS-081211	Endrin aldehyde	1	1.2	0.063	µg/kg
PCM-15	PCM-15DS-081211	Endrin ketone	1	1.2	0.097	µg/kg
PCM-15	PCM-15DS-081211	Ethylbenzene	1	2.4	0.097	µg/kg
PCM-15	PCM-15DS-081211	Ethylene dibromide (1,2-Dibromoethane)	1	2.4	0.45	µg/kg
PCM-15	PCM-15DS-081211	gamma-BHC (Lindane)	1	1.7	1.7	µg/kg
PCM-15	PCM-15DS-081211	gamma-Chlordane	1	1.2	1.2	µg/kg
PCM-15	PCM-15DS-081211	Gasoline Range	10	15	4.5	mg/kg
PCM-15	PCM-15DS-081211	Heptachlor	1	1.2	1.2	µg/kg
PCM-15	PCM-15DS-081211	Heptachlor epoxide	1	1.2	0.16	µg/kg
PCM-15	PCM-15DS-081211	Hexachlorocyclopentadiene	50	60	35	µg/kg
PCM-15	PCM-15DS-081211	Iodomethane (Methyl iodide)	2	24	1.4	µg/kg
PCM-15	PCM-15DS-081211	Isophorone	10	12	1.2	µg/kg
PCM-15	PCM-15DS-081211	Isopropylbenzene (Cumene)	1	2.4	0.073	µg/kg
PCM-15	PCM-15DS-081211	m,p-Xylene	1	4.7	0.22	µg/kg
PCM-15	PCM-15DS-081211	MCPA	10000	60000	60000	µg/kg
PCM-15	PCM-15DS-081211	Mecoprop (MCPP)	10000	60000	1500	µg/kg
PCM-15	PCM-15DS-081211	Methoxychlor	1	1.2	0.12	µg/kg
PCM-15	PCM-15DS-081211	Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	2	12	0.57	µg/kg
PCM-15	PCM-15DS-081211	Methyl tert-butyl ether (MTBE)	1	9.4	0.19	µg/kg
PCM-15	PCM-15DS-081211	Mirex	1	1.2	0.075	µg/kg
PCM-15	PCM-15DS-081211	Nitrobenzene	10	12	2.7	µg/kg
PCM-15	PCM-15DS-081211	N-Nitrosodi-N-propylamine	10	12	2.9	µg/kg
PCM-15	PCM-15DS-081211	N-Nitrosodiphenylamine	10	12	1.9	µg/kg
PCM-15	PCM-15DS-081211	Oxychlordane	1	1.2	0.069	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	o-Xylene	1	2.4	0.14	µg/kg
PCM-15	PCM-15DS-081211	PCB-001	1	9.73	17.3	pg/g
PCM-15	PCM-15DS-081211	PCB-005	1	9.73	5.92	pg/g
PCM-15	PCM-15DS-081211	PCB-007	1	9.73	5.67	pg/g
PCM-15	PCM-15DS-081211	PCB-009	1	9.73	6.14	pg/g
PCM-15	PCM-15DS-081211	PCB-010	1	9.73	3.94	pg/g
PCM-15	PCM-15DS-081211	PCB-012/013	1	19.5	6.05	pg/g
PCM-15	PCM-15DS-081211	PCB-014	1	9.73	5.52	pg/g
PCM-15	PCM-15DS-081211	PCB-023	1	9.73	4.86	pg/g
PCM-15	PCM-15DS-081211	PCB-024	1	9.73	2.28	pg/g
PCM-15	PCM-15DS-081211	PCB-034	1	9.73	5.33	pg/g
PCM-15	PCM-15DS-081211	PCB-036	1	9.73	4.91	pg/g
PCM-15	PCM-15DS-081211	PCB-038	1	9.73	4.98	pg/g
PCM-15	PCM-15DS-081211	PCB-039	1	9.73	4.4	pg/g
PCM-15	PCM-15DS-081211	PCB-043	1	9.73	6.53	pg/g
PCM-15	PCM-15DS-081211	PCB-055	1	9.73	8.48	pg/g
PCM-15	PCM-15DS-081211	PCB-057	1	9.73	8.81	pg/g
PCM-15	PCM-15DS-081211	PCB-058	1	9.73	8.42	pg/g
PCM-15	PCM-15DS-081211	PCB-068	1	9.73	7.58	pg/g
PCM-15	PCM-15DS-081211	PCB-072	1	9.73	9.51	pg/g
PCM-15	PCM-15DS-081211	PCB-073	1	9.73	4.71	pg/g
PCM-15	PCM-15DS-081211	PCB-078	1	9.73	11.1	pg/g
PCM-15	PCM-15DS-081211	PCB-079	1	9.73	9.07	pg/g
PCM-15	PCM-15DS-081211	PCB-080	1	9.73	7.76	pg/g
PCM-15	PCM-15DS-081211	PCB-081	1	9.73	10.2	pg/g
PCM-15	PCM-15DS-081211	PCB-088	1	9.73	8.94	pg/g
PCM-15	PCM-15DS-081211	PCB-094	1	9.73	8.62	pg/g
PCM-15	PCM-15DS-081211	PCB-098	1	9.73	9.08	pg/g
PCM-15	PCM-15DS-081211	PCB-104	1	9.73	2.03	pg/g
PCM-15	PCM-15DS-081211	PCB-106	1	9.73	7.04	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	PCB-111	1	9.73	5.99	pg/g
PCM-15	PCM-15DS-081211	PCB-112	1	9.73	5.99	pg/g
PCM-15	PCM-15DS-081211	PCB-114	1	9.73	7.24	pg/g
PCM-15	PCM-15DS-081211	PCB-115	1	9.73	5.92	pg/g
PCM-15	PCM-15DS-081211	PCB-117	1	9.73	6.32	pg/g
PCM-15	PCM-15DS-081211	PCB-120	1	9.73	5.93	pg/g
PCM-15	PCM-15DS-081211	PCB-121	1	9.73	5.92	pg/g
PCM-15	PCM-15DS-081211	PCB-122	1	9.73	8.63	pg/g
PCM-15	PCM-15DS-081211	PCB-126	1	9.73	6.39	pg/g
PCM-15	PCM-15DS-081211	PCB-127	1	9.73	6.85	pg/g
PCM-15	PCM-15DS-081211	PCB-131	1	9.73	3.24	pg/g
PCM-15	PCM-15DS-081211	PCB-142	1	9.73	3.32	pg/g
PCM-15	PCM-15DS-081211	PCB-143	1	9.73	3.12	pg/g
PCM-15	PCM-15DS-081211	PCB-145	1	9.73	2.49	pg/g
PCM-15	PCM-15DS-081211	PCB-148	1	9.73	3.07	pg/g
PCM-15	PCM-15DS-081211	PCB-152	1	9.73	2.76	pg/g
PCM-15	PCM-15DS-081211	PCB-155	1	9.73	2.38	pg/g
PCM-15	PCM-15DS-081211	PCB-160	1	9.73	2.5	pg/g
PCM-15	PCM-15DS-081211	PCB-161	1	9.73	2.48	pg/g
PCM-15	PCM-15DS-081211	PCB-162	1	9.73	4	pg/g
PCM-15	PCM-15DS-081211	PCB-165	1	9.73	2.77	pg/g
PCM-15	PCM-15DS-081211	PCB-169	1	9.73	5.03	pg/g
PCM-15	PCM-15DS-081211	PCB-182	1	9.73	4.03	pg/g
PCM-15	PCM-15DS-081211	PCB-184	1	9.73	3.06	pg/g
PCM-15	PCM-15DS-081211	PCB-186	1	9.73	2.53	pg/g
PCM-15	PCM-15DS-081211	PCB-188	1	9.73	2.44	pg/g
PCM-15	PCM-15DS-081211	PCB-192	1	9.73	3.34	pg/g
PCM-15	PCM-15DS-081211	PCB-204	1	9.73	3.25	pg/g
PCM-15	PCM-15DS-081211	PCB-205	1	9.73	6.08	pg/g
PCM-15	PCM-15DS-081211	Pentachlorophenol	5	12	8.3	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-15	PCM-15DS-081211	Phenol	30	36	2.4	µg/kg
PCM-15	PCM-15DS-081211	Styrene	1	2.4	0.18	µg/kg
PCM-15	PCM-15DS-081211	Tetrabutyltin (ion)	1	2.4	1.1	µg/kg
PCM-15	PCM-15DS-081211	Tetrachloroethene	1	2.4	0.29	µg/kg
PCM-15	PCM-15DS-081211	Toluene	1	2.4	0.11	µg/kg
PCM-15	PCM-15DS-081211	Toxaphene	50	64	64	µg/kg
PCM-15	PCM-15DS-081211	trans-1,4-Dichloro-2-butene	2	12	1.3	µg/kg
PCM-15	PCM-15DS-081211	trans-Nonachlor	1	1.2	0.36	µg/kg
PCM-15	PCM-15DS-081211	Trichloroethene	1	2.4	0.31	µg/kg
PCM-15	PCM-15DS-081211	Trichlorofluoromethane (Fluorotrichloromethane)	1	5.9	0.13	µg/kg
PCM-15	PCM-15DS-081211	Vinyl acetate	1	12	1.5	µg/kg
PCM-15	PCM-15DS-081211	Vinyl chloride	1	2.4	0.14	µg/kg
PCM-22	PCM-22DS-081211	1,1,1,2-Tetrachloroethane	1	2.5	0.45	µg/kg
PCM-22	PCM-22DS-081211	1,1,1-Trichloroethane	1	2.5	0.38	µg/kg
PCM-22	PCM-22DS-081211	1,1,2,2-Tetrachloroethane	1	2.5	0.23	µg/kg
PCM-22	PCM-22DS-081211	1,1'-Dichloroethane	1	2.5	0.12	µg/kg
PCM-22	PCM-22DS-081211	1,1'-Dichloroethene	1	2.5	0.18	µg/kg
PCM-22	PCM-22DS-081211	1,2,3-Trichloropropane	1	13	0.67	µg/kg
PCM-22	PCM-22DS-081211	1,2,4-Trichlorobenzene	10	63	17	µg/kg
PCM-22	PCM-22DS-081211	1,2-Dichlorobenzene	10	63	19	µg/kg
PCM-22	PCM-22DS-081211	1,2-Dichloroethane	1	2.5	0.14	µg/kg
PCM-22	PCM-22DS-081211	1,2-Dichloroethene, trans-	1	2.5	0.12	µg/kg
PCM-22	PCM-22DS-081211	1,2-Dichloropropane	1	2.5	0.17	µg/kg
PCM-22	PCM-22DS-081211	1,3-Dichlorobenzene	10	63	19	µg/kg
PCM-22	PCM-22DS-081211	1,3-Dichloropropene, cis-	1	2.5	0.077	µg/kg
PCM-22	PCM-22DS-081211	1,3-Dichloropropene, trans-	1	6.2	0.25	µg/kg
PCM-22	PCM-22DS-081211	2,2-Dichloropropionic acid (Dalapon)	50	320	200	µg/kg
PCM-22	PCM-22DS-081211	2,3,4,5-Tetrachlorophenol	5	13	7.5	µg/kg
PCM-22	PCM-22DS-081211	2,3,5,6-Tetrachlorophenol	5	13	9.2	µg/kg
PCM-22	PCM-22DS-081211	2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	50	320	25	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-22	PCM-22DS-081211	2,4,5-TP (Silvex)	50	320	23	µg/kg
PCM-22	PCM-22DS-081211	2,4,5-Trichlorophenol	5	63	9.4	µg/kg
PCM-22	PCM-22DS-081211	2,4,6-Trichlorophenol	5	13	6.8	µg/kg
PCM-22	PCM-22DS-081211	2,4-D (2,4-Dichlorophenoxyacetic acid)	50	320	24	µg/kg
PCM-22	PCM-22DS-081211	2,4-DB (2,4-D derivative)	50	320	44	µg/kg
PCM-22	PCM-22DS-081211	2,4'-DDE (o,p'-DDE)	1	1.3	0.54	µg/kg
PCM-22	PCM-22DS-081211	2,4'-DDT (o,p'-DDT)	1	1.3	1.2	µg/kg
PCM-22	PCM-22DS-081211	2,4-Dichlorophenol	10	63	6.3	µg/kg
PCM-22	PCM-22DS-081211	2,4-Dimethylphenol	20	320	35	µg/kg
PCM-22	PCM-22DS-081211	2,4-Dinitrophenol	200	1300	110	µg/kg
PCM-22	PCM-22DS-081211	2,4-Dinitrotoluene	10	63	9.4	µg/kg
PCM-22	PCM-22DS-081211	2,6-Dinitrotoluene	10	63	13	µg/kg
PCM-22	PCM-22DS-081211	2-Butanone (MEK)	4	25	4	µg/kg
PCM-22	PCM-22DS-081211	2-Chloroethylvinyl ether	2	6.2	0.77	µg/kg
PCM-22	PCM-22DS-081211	2-Chloronaphthalene	10	63	10	µg/kg
PCM-22	PCM-22DS-081211	2-Chlorophenol	10	63	13	µg/kg
PCM-22	PCM-22DS-081211	2-Hexanone (Methyl butyl ketone)	2	10	2	µg/kg
PCM-22	PCM-22DS-081211	2-Methylphenol (o-Cresol)	10	63	9.4	µg/kg
PCM-22	PCM-22DS-081211	2-Nitroaniline	20	130	20	µg/kg
PCM-22	PCM-22DS-081211	2-Nitrophenol	10	63	9.4	µg/kg
PCM-22	PCM-22DS-081211	3,3'-Dichlorobenzidine	100	630	24	µg/kg
PCM-22	PCM-22DS-081211	3-Nitroaniline	20	130	16	µg/kg
PCM-22	PCM-22DS-081211	4-Bromophenyl-phenyl ether	10	63	10	µg/kg
PCM-22	PCM-22DS-081211	4-Chloro-3-methylphenol	10	63	8.8	µg/kg
PCM-22	PCM-22DS-081211	4-Chloroaniline	10	63	12	µg/kg
PCM-22	PCM-22DS-081211	4-Chlorophenyl phenyl ether	10	63	8.8	µg/kg
PCM-22	PCM-22DS-081211	4-Methylphenol (p-Cresol)	10	63	9.4	µg/kg
PCM-22	PCM-22DS-081211	4-Nitroaniline	20	130	12	µg/kg
PCM-22	PCM-22DS-081211	4-Nitrophenol	100	630	120	µg/kg
PCM-22	PCM-22DS-081211	Acetone	10	25	7.2	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-22	PCM-22DS-081211	Acrolein	2.5	9900	680	µg/kg
PCM-22	PCM-22DS-081211	Acrylonitrile	2	5	2.5	µg/kg
PCM-22	PCM-22DS-081211	Aldrin	1	1.3	0.19	µg/kg
PCM-22	PCM-22DS-081211	alpha-BHC	1	1.3	0.33	µg/kg
PCM-22	PCM-22DS-081211	alpha-Chlordane (cis-Chlordane)	1	4.1	4.1	µg/kg
PCM-22	PCM-22DS-081211	Aniline	20	130	9.4	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1016	10	13	1.7	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1221	10	69	69	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1232	10	20	20	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1242	10	13	3.1	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1248	10	13	6.3	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1254	10	21	21	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1260	10	13	4.9	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1262	10	13	4.8	µg/kg
PCM-22	PCM-22DS-081211	Aroclor 1268	10	13	4.2	µg/kg
PCM-22	PCM-22DS-081211	Benzoic acid	200	1300	600	µg/kg
PCM-22	PCM-22DS-081211	Benzyl alcohol	10	130	14	µg/kg
PCM-22	PCM-22DS-081211	beta-BHC	1	1.3	0.38	µg/kg
PCM-22	PCM-22DS-081211	bis(2-Chloroethoxy)methane	10	63	9.4	µg/kg
PCM-22	PCM-22DS-081211	bis(2-Chloroethyl)ether	10	63	12	µg/kg
PCM-22	PCM-22DS-081211	Bromochloromethane	1	2.5	0.62	µg/kg
PCM-22	PCM-22DS-081211	Bromodichloromethane	1	6.2	0.11	µg/kg
PCM-22	PCM-22DS-081211	Bromoform	1	6.2	0.62	µg/kg
PCM-22	PCM-22DS-081211	Bromomethane	1	6.2	1.1	µg/kg
PCM-22	PCM-22DS-081211	Butylbenzyl phthalate	10	63	20	µg/kg
PCM-22	PCM-22DS-081211	Carbon disulfide	1	2.5	0.14	µg/kg
PCM-22	PCM-22DS-081211	Carbon tetrachloride	1	6.2	0.2	µg/kg
PCM-22	PCM-22DS-081211	Chlorobenzene	1	2.5	0.14	µg/kg
PCM-22	PCM-22DS-081211	Chloroethane	1	2.5	0.75	µg/kg
PCM-22	PCM-22DS-081211	Chloroform	1	2.5	0.12	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-22	PCM-22DS-081211	Chloromethane	1	2.5	0.15	µg/kg
PCM-22	PCM-22DS-081211	Chromium VI	0.5	1.3	0.015	mg/kg
PCM-22	PCM-22DS-081211	cis-Nonachlor	1	1.8	1.8	µg/kg
PCM-22	PCM-22DS-081211	delta-BHC	1	1.3	0.31	µg/kg
PCM-22	PCM-22DS-081211	Dibromochloromethane	1	2.5	0.4	µg/kg
PCM-22	PCM-22DS-081211	Dibromomethane	1	2.5	0.45	µg/kg
PCM-22	PCM-22DS-081211	Dicamba	50	320	22	µg/kg
PCM-22	PCM-22DS-081211	Dichlorodifluoromethane	1	6.2	0.18	µg/kg
PCM-22	PCM-22DS-081211	Dichloromethane (Methylene chloride)	5	13	0.35	µg/kg
PCM-22	PCM-22DS-081211	Dichlorprop	50	320	19	µg/kg
PCM-22	PCM-22DS-081211	Dieldrin	1	1.3	0.36	µg/kg
PCM-22	PCM-22DS-081211	Diethyl phthalate	10	63	8.1	µg/kg
PCM-22	PCM-22DS-081211	Dimethyl phthalate	10	63	6.3	µg/kg
PCM-22	PCM-22DS-081211	Di-n-butyl phthalate	10	130	50	µg/kg
PCM-22	PCM-22DS-081211	Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	100	630	8.8	µg/kg
PCM-22	PCM-22DS-081211	Di-n-octyl phthalate	10	63	11	µg/kg
PCM-22	PCM-22DS-081211	Dinoseb	80	320	40	µg/kg
PCM-22	PCM-22DS-081211	Endosulfan sulfate	1	1.3	1.3	µg/kg
PCM-22	PCM-22DS-081211	Endosulfan-alpha (I)	1	1.3	0.21	µg/kg
PCM-22	PCM-22DS-081211	Endosulfan-beta (II)	1	1.3	0.24	µg/kg
PCM-22	PCM-22DS-081211	Endrin	1	1.3	0.25	µg/kg
PCM-22	PCM-22DS-081211	Endrin aldehyde	1	1.3	0.66	µg/kg
PCM-22	PCM-22DS-081211	Endrin ketone	1	1.3	0.11	µg/kg
PCM-22	PCM-22DS-081211	Ethylene dibromide (1,2-Dibromoethane)	1	2.5	0.48	µg/kg
PCM-22	PCM-22DS-081211	gamma-BHC (Lindane)	1	2.8	2.8	µg/kg
PCM-22	PCM-22DS-081211	gamma-Chlordane	1	1.3	0.08	µg/kg
PCM-22	PCM-22DS-081211	Heptachlor epoxide	1	1.3	0.23	µg/kg
PCM-22	PCM-22DS-081211	Hexachlorocyclopentadiene	50	320	190	µg/kg
PCM-22	PCM-22DS-081211	Iodomethane (Methyl iodide)	2	25	1.5	µg/kg
PCM-22	PCM-22DS-081211	Isophorone	10	63	6.3	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-22	PCM-22DS-081211	MCPA	10000	63000	63000	µg/kg
PCM-22	PCM-22DS-081211	Mecoprop (MCPP)	10000	63000	1600	µg/kg
PCM-22	PCM-22DS-081211	Methoxychlor	1	1.3	0.13	µg/kg
PCM-22	PCM-22DS-081211	Methyl isobutyl ketone (4-Methyl-2-pentanone or (MIBK))	2	13	0.6	µg/kg
PCM-22	PCM-22DS-081211	Methyl tert-butyl ether (MTBE)	1	10	0.2	µg/kg
PCM-22	PCM-22DS-081211	Mirex	1	1.3	0.5	µg/kg
PCM-22	PCM-22DS-081211	Nitrobenzene	10	63	14	µg/kg
PCM-22	PCM-22DS-081211	N-Nitrosodi-N-propylamine	10	63	15	µg/kg
PCM-22	PCM-22DS-081211	N-Nitrosodiphenylamine	10	63	10	µg/kg
PCM-22	PCM-22DS-081211	Oxychlordane	1	1.3	0.072	µg/kg
PCM-22	PCM-22DS-081211	PCB-001	1	9.57	2.93	pg/g
PCM-22	PCM-22DS-081211	PCB-005	1	9.57	2.09	pg/g
PCM-22	PCM-22DS-081211	PCB-007	1	9.57	2	pg/g
PCM-22	PCM-22DS-081211	PCB-009	1	9.57	2.17	pg/g
PCM-22	PCM-22DS-081211	PCB-010	1	9.57	1.36	pg/g
PCM-22	PCM-22DS-081211	PCB-014	1	9.57	1.95	pg/g
PCM-22	PCM-22DS-081211	PCB-023	1	9.57	2.16	pg/g
PCM-22	PCM-22DS-081211	PCB-024	1	9.57	0.894	pg/g
PCM-22	PCM-22DS-081211	PCB-034	1	9.57	2.36	pg/g
PCM-22	PCM-22DS-081211	PCB-036	1	9.57	2.18	pg/g
PCM-22	PCM-22DS-081211	PCB-038	1	9.57	2.21	pg/g
PCM-22	PCM-22DS-081211	PCB-039	1	9.57	1.95	pg/g
PCM-22	PCM-22DS-081211	PCB-057	1	9.57	2.62	pg/g
PCM-22	PCM-22DS-081211	PCB-058	1	9.57	2.5	pg/g
PCM-22	PCM-22DS-081211	PCB-078	1	9.57	3.29	pg/g
PCM-22	PCM-22DS-081211	PCB-079	1	9.57	2.69	pg/g
PCM-22	PCM-22DS-081211	PCB-080	1	9.57	2.31	pg/g
PCM-22	PCM-22DS-081211	PCB-081	1	9.57	3.04	pg/g
PCM-22	PCM-22DS-081211	PCB-083	1	9.57	4.3	pg/g
PCM-22	PCM-22DS-081211	PCB-088	1	9.57	4.13	pg/g

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-22	PCM-22DS-081211	PCB-098	1	9.57	4.19	pg/g
PCM-22	PCM-22DS-081211	PCB-106	1	9.57	3.25	pg/g
PCM-22	PCM-22DS-081211	PCB-111	1	9.57	2.77	pg/g
PCM-22	PCM-22DS-081211	PCB-112	1	9.57	2.77	pg/g
PCM-22	PCM-22DS-081211	PCB-115	1	9.57	2.73	pg/g
PCM-22	PCM-22DS-081211	PCB-117	1	9.57	2.92	pg/g
PCM-22	PCM-22DS-081211	PCB-121	1	9.57	2.73	pg/g
PCM-22	PCM-22DS-081211	PCB-126	1	9.57	3.09	pg/g
PCM-22	PCM-22DS-081211	PCB-127	1	9.57	3.12	pg/g
PCM-22	PCM-22DS-081211	PCB-142	1	9.57	1.01	pg/g
PCM-22	PCM-22DS-081211	PCB-143	1	9.57	0.952	pg/g
PCM-22	PCM-22DS-081211	PCB-145	1	9.57	0.72	pg/g
PCM-22	PCM-22DS-081211	PCB-148	1	9.57	0.936	pg/g
PCM-22	PCM-22DS-081211	PCB-155	1	9.57	0.686	pg/g
PCM-22	PCM-22DS-081211	PCB-160	1	9.57	0.762	pg/g
PCM-22	PCM-22DS-081211	PCB-161	1	9.57	0.756	pg/g
PCM-22	PCM-22DS-081211	PCB-165	1	9.57	0.845	pg/g
PCM-22	PCM-22DS-081211	PCB-184	1	9.57	0.793	pg/g
PCM-22	PCM-22DS-081211	PCB-186	1	9.57	0.655	pg/g
PCM-22	PCM-22DS-081211	PCB-192	1	9.57	1.85	pg/g
PCM-22	PCM-22DS-081211	PCB-204	1	9.57	1.25	pg/g
PCM-22	PCM-22DS-081211	Pentachlorophenol	5	13	8.7	µg/kg
PCM-22	PCM-22DS-081211	Phenol	30	190	13	µg/kg
PCM-22	PCM-22DS-081211	Styrene	1	2.5	0.19	µg/kg
PCM-22	PCM-22DS-081211	Tetrabutyltin (ion)	1	2.5	1.2	µg/kg
PCM-22	PCM-22DS-081211	Tetrachloroethene	1	2.5	0.3	µg/kg
PCM-22	PCM-22DS-081211	Toxaphene	50	65	65	µg/kg
PCM-22	PCM-22DS-081211	trans-1,4-Dichloro-2-butene	2	13	1.4	µg/kg
PCM-22	PCM-22DS-081211	trans-Nonachlor	1	1.3	0.34	µg/kg
PCM-22	PCM-22DS-081211	Trichloroethene	1	2.5	0.33	µg/kg

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-22	PCM-22DS-081211	Trichlorofluoromethane (Fluorotrichloromethane)	1	6.2	0.14	µg/kg
PCM-22	PCM-22DS-081211	Vinyl acetate	1	13	1.5	µg/kg
PCM-22	PCM-22DS-081211	Vinyl chloride	1	2.5	0.15	µg/kg
Discrete Near-Bottom Surface Water						
PCM-01	PCM-1DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-01	PCM-1DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-01	PCM-1DSW-081211	Total Suspended Solids	1	5	5	mg/L
PCM-02	PCM-02DSW-081211	Acenaphthylene	0.02	0.022	0.0037	µg/L
PCM-02	PCM-02DSW-081211	Anthracene	0.02	0.022	0.0039	µg/L
PCM-02	PCM-02DSW-081211	Benzo(a)pyrene	0.02	0.022	0.0046	µg/L
PCM-02	PCM-02DSW-081211	Fluorene	0.02	0.022	0.0041	µg/L
PCM-03	PCM-03DSW-081211	Acenaphthylene	0.02	0.021	0.0036	µg/L
PCM-03	PCM-03DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-03	PCM-03DSW-081211	Anthracene	0.02	0.021	0.0038	µg/L
PCM-03	PCM-03DSW-081211	Benzo(a)pyrene	0.02	0.021	0.0045	µg/L
PCM-03	PCM-03DSW-081211	Benzo(g,h,i)perylene	0.02	0.021	0.0031	µg/L
PCM-03	PCM-03DSW-081211	Benzo(k)fluoranthene	0.02	0.021	0.0027	µg/L
PCM-03	PCM-03DSW-081211	Chrysene	0.02	0.021	0.0036	µg/L
PCM-03	PCM-03DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-03	PCM-03DSW-081211	Dibenzo(a,h)anthracene	0.02	0.021	0.0027	µg/L
PCM-03	PCM-03DSW-081211	Fluorene	0.02	0.021	0.004	µg/L
PCM-03	PCM-03DSW-081211	Indeno(1,2,3-c,d)pyrene	0.02	0.021	0.0028	µg/L
PCM-05	PCM-05DSW-081211	Acenaphthene	0.02	0.022	0.0048	µg/L
PCM-05	PCM-05DSW-081211	Acenaphthylene	0.02	0.022	0.0037	µg/L
PCM-05	PCM-05DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-05	PCM-05DSW-081211	Anthracene	0.02	0.022	0.0039	µg/L
PCM-05	PCM-05DSW-081211	Benzo(a)pyrene	0.02	0.022	0.0047	µg/L
PCM-05	PCM-05DSW-081211	Benzo(b)fluoranthene	0.02	0.022	0.0025	µg/L
PCM-05	PCM-05DSW-081211	Benzo(g,h,i)perylene	0.02	0.022	0.0032	µg/L
PCM-05	PCM-05DSW-081211	Benzo(k)fluoranthene	0.02	0.022	0.0027	µg/L

Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-05	PCM-05DSW-081211	Chrysene	0.02	0.022	0.0037	µg/L
PCM-05	PCM-05DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-05	PCM-05DSW-081211	Dibenzo(a,h)anthracene	0.02	0.022	0.0027	µg/L
PCM-05	PCM-05DSW-081211	Fluorene	0.02	0.022	0.0041	µg/L
PCM-05	PCM-05DSW-081211	Indeno(1,2,3-c,d)pyrene	0.02	0.022	0.0028	µg/L
PCM-05	PCM-05DSW-081211	Naphthalene	0.02	0.022	0.0033	µg/L
PCM-05	PCM-05DSW-081211	Phenanthrene	0.02	0.022	0.0054	µg/L
PCM-06	PCM-06DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-06	PCM-06DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-08	PCM-08DSW-081211	Acenaphthylene	0.02	0.024	0.004	µg/L
PCM-08	PCM-08DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-08	PCM-08DSW-081211	Anthracene	0.02	0.024	0.0043	µg/L
PCM-08	PCM-08DSW-081211	Benzo(a)pyrene	0.02	0.024	0.0051	µg/L
PCM-08	PCM-08DSW-081211	Benzo(k)fluoranthene	0.02	0.024	0.003	µg/L
PCM-08	PCM-08DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-08	PCM-08DSW-081211	Dibenzo(a,h)anthracene	0.02	0.024	0.003	µg/L
PCM-08	PCM-08DSW-081211	Fluorene	0.02	0.024	0.0045	µg/L
PCM-09	PCM-09DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-09	PCM-09DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-10	PCM-10DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-13	PCM-13DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-13	PCM-13DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-19	PCM-19DSW-081211	Acenaphthene	0.02	0.022	0.0047	µg/L
PCM-19	PCM-19DSW-081211	Acenaphthylene	0.02	0.022	0.0036	µg/L
PCM-19	PCM-19DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-19	PCM-19DSW-081211	Anthracene	0.02	0.022	0.0038	µg/L
PCM-19	PCM-19DSW-081211	Benzo(a)anthracene	0.02	0.022	0.0028	µg/L
PCM-19	PCM-19DSW-081211	Benzo(a)pyrene	0.02	0.022	0.0046	µg/L
PCM-19	PCM-19DSW-081211	Benzo(b)fluoranthene	0.02	0.022	0.0025	µg/L
PCM-19	PCM-19DSW-081211	Benzo(g,h,i)perylene	0.02	0.022	0.0031	µg/L

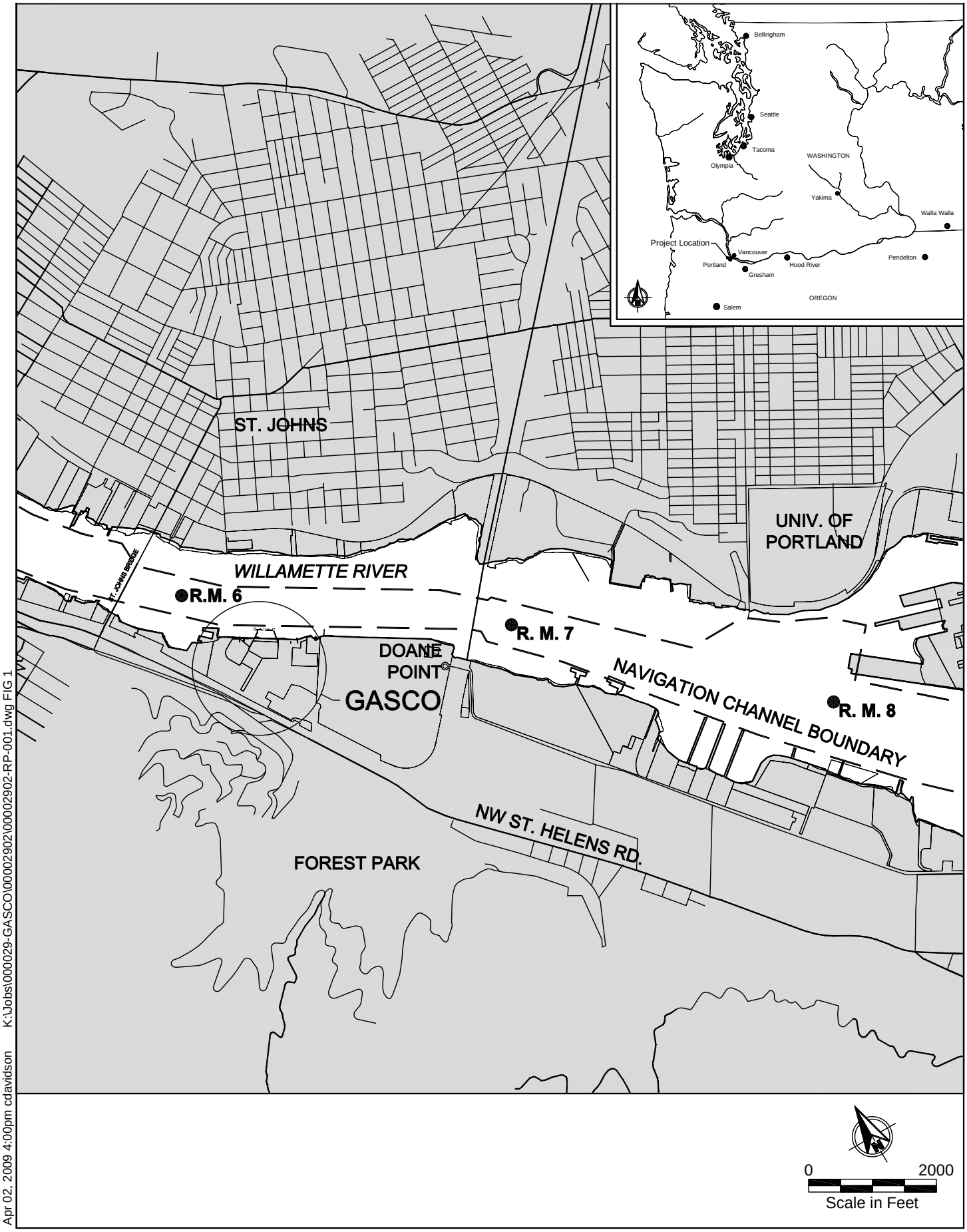
Table 5
Target Analytes with Laboratory Reporting Limits Above the Target Reporting Limits

Location ID	Sample ID	Chemical Name	Target Method Reporting Limit	Reported Method Reporting Limit	Reported Method Detection Limit	Units
PCM-19	PCM-19DSW-081211	Benzo(k)fluoranthene	0.02	0.022	0.0027	µg/L
PCM-19	PCM-19DSW-081211	Chrysene	0.02	0.022	0.0036	µg/L
PCM-19	PCM-19DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-19	PCM-19DSW-081211	Dibenzo(a,h)anthracene	0.02	0.022	0.0027	µg/L
PCM-19	PCM-19DSW-081211	Fluoranthene	0.02	0.022	0.0047	µg/L
PCM-19	PCM-19DSW-081211	Indeno(1,2,3-c,d)pyrene	0.02	0.022	0.0028	µg/L
PCM-19	PCM-19DSW-081211	Naphthalene	0.02	0.022	0.0032	µg/L
PCM-19	PCM-19DSW-081211	Phenanthrene	0.02	0.022	0.0053	µg/L
PCM-19	PCM-19DSW-081211	Pyrene	0.02	0.022	0.0037	µg/L
PCM-19	PCM-19DSW-081211	Total Suspended Solids	1	5	5	mg/L
PCM-20	PCM-20DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-20	PCM-20DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L
PCM-21	PCM-21DSW-081211	Amenable Cyanide	0.0052	0.01	0.002	mg/L
PCM-21	PCM-21DSW-081211	Cyanide	0.0052	0.01	0.002	mg/L

Notes:

µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
pg/g = picograms per gram
mg/L = milligrams per liter

FIGURES



Apr 02, 2009 4:00pm cdavidson K:\Jobs\000029-GASCO\00002902\00002902-RP-001.dwg FIG 1

ANCHOR QEA

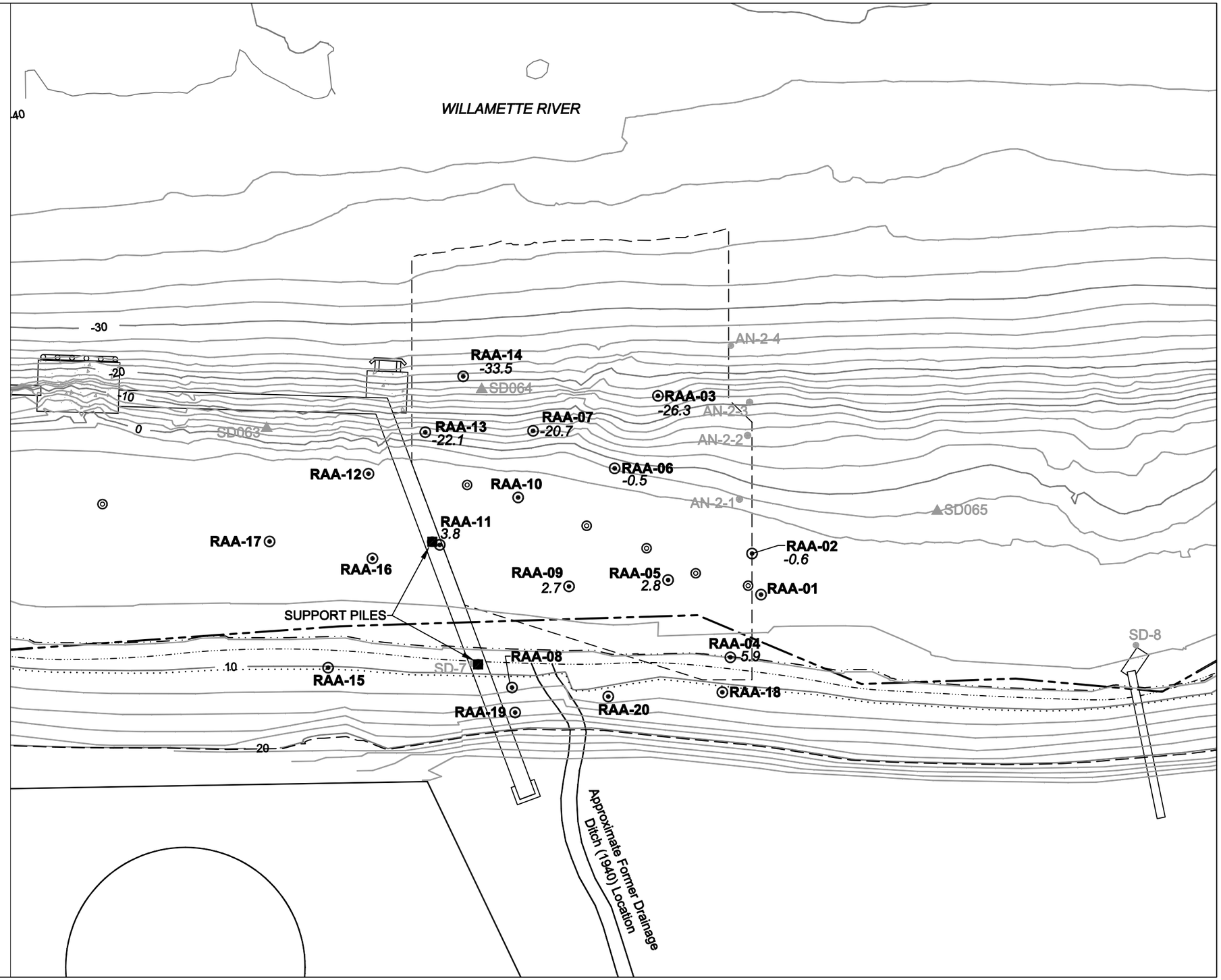
Figure 1
Vicinity Map
NW Natural "Gasco" Site
Portland, Oregon

Legend:

- Lateral Extents of Suface Tar Body in Removal Action Area
- RAA-01 — Design Characterization Sediment Core Location (Anchor 2004)
- -33.5 — Bottom Elevation of Surface Tar Body in Removal Action Area (ft NAVD 88)
- Pile Location (surveyed August 2004)
- AN-2-1 — Previous Sediment Core Location (Anchor 2002)
- SD063 — Previous Sediment Core Location (Weston 1998)
- SD-7 — Previous Sediment Core Location (HAI 1996)
- Support Pile Locations (to be protected during dredging)
- Property Line
- OHW = 20.41 ft NAVD 88
- OLW = 7.91 ft NAVD 88
- 50% River Stage Elevation = 10.23 ft NAVD 88
- Topographic and Bathymetric Contours (2 ft. Interval)

0 50
Scale in Feet

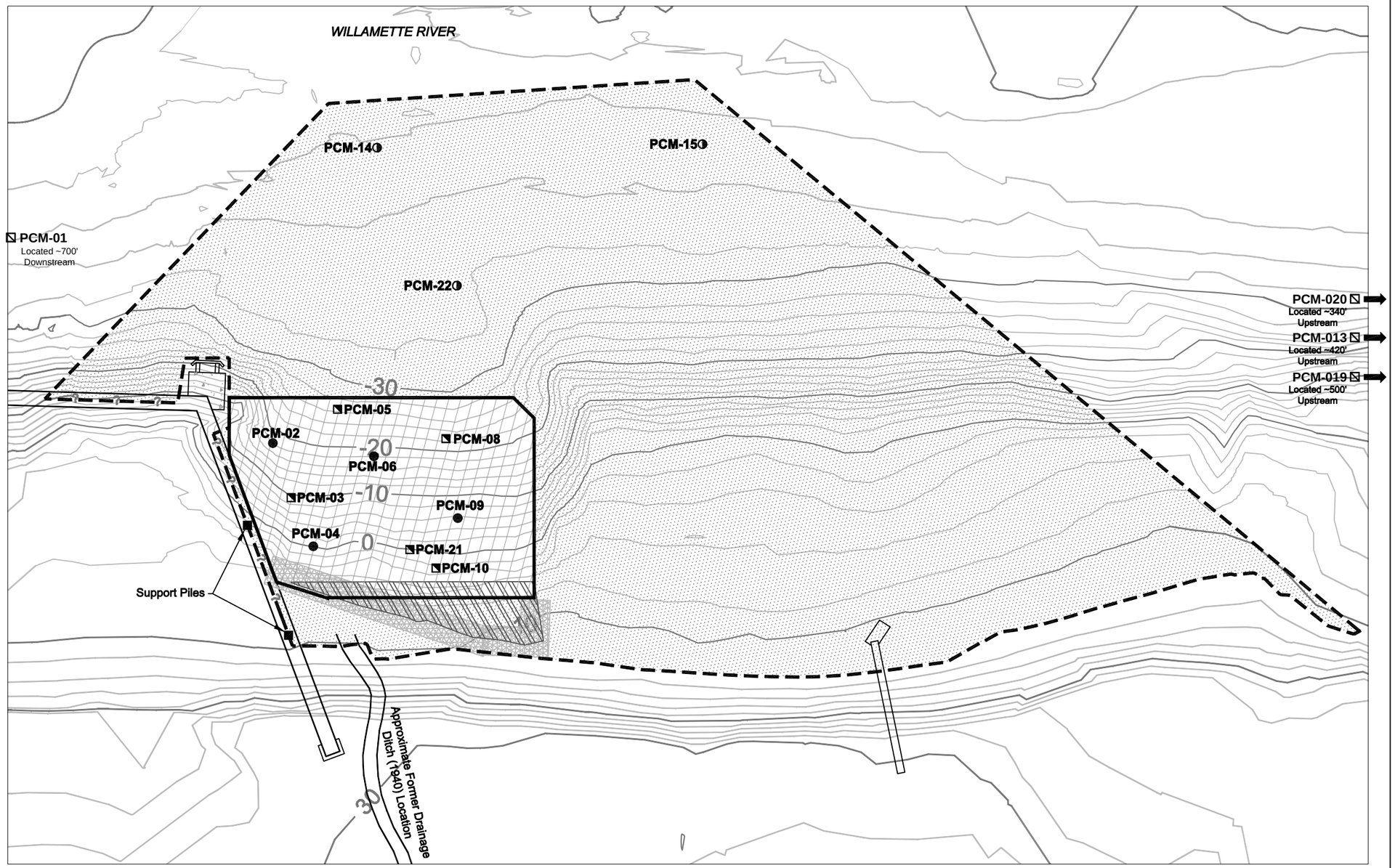
Notes:
1. Bathymetric contours provided by the Lower Willamette Group as part of the Portland Harbor Superfund Site study (2003).
2. Horizontal Datum: Oregon State Plane North NAD 83 (International Feet).
3. Vertical Datum: NAVD 88 (ft).
4. Former Drainage Ditch location from Phase 1 Remedial Investigation Summary Report (HAI 1998).



Apr 02, 2009 4:01pm cdavidson K:\Jobs\000029-GASCO\00002902\00002902-RP-002.dwg FIG 2

ANCHOR QEA

Figure 2
Former Pre-Removal Lateral and Vertical Extents of Surface Tar Body
NW Natural "Gasco" Site



Legend:

- Support Pile Location
- Extent and Elevation of 18 in Thick Cap
- Extent and Elevation of 6 in Thick Cover
- Reactive Organo-Clay Mat (RCM) Location
- Lateral Extents of Surf Zone Armoring d50 = 3 inches
- **PCM-01** Background Near-Bottom Surface Water Sample
- **PCM-14** Fringe Cover Depositional Surface Sediment Sample
- **PCM-03** Near-Bottom Surface Water Sample
- **PCM-02** Co-Located Depositional Surface Sediment & Near-Bottom Surface Water Sample
- Topographic and Bathymetric Contours (2 ft. Interval)

0 60
Scale in Feet

Notes:
1. Post-cap bathymetric contours produced from survey provided by Blue Water Engineering dated January 2009.
2. Horizontal Datum: Oregon State Plane North NAD 83 (International Feet).
3. Vertical Datum: NAVD 88 (ft).
4. Former Drainage Ditch location from Phase 1 Remedial Investigation Summary Report (HAI 1998).

Apr 09, 2009 11:21am cdavidson K:\Jobs\000029-GASCO\00002902\00002902-RP-023.dwg FIG 3

ANCHOR QEA

Figure 3
Actual Year 2 Event 2 Long-Term Monitoring Stations
NW Natural "Gasco" Site

Legend:

- Extent and Elevation of 18 in Thick Cap
- Extent and Elevation of 6 in Thick Cover
- Topographic and Bathymetric Contours (2 ft. Interval)
- Property Line

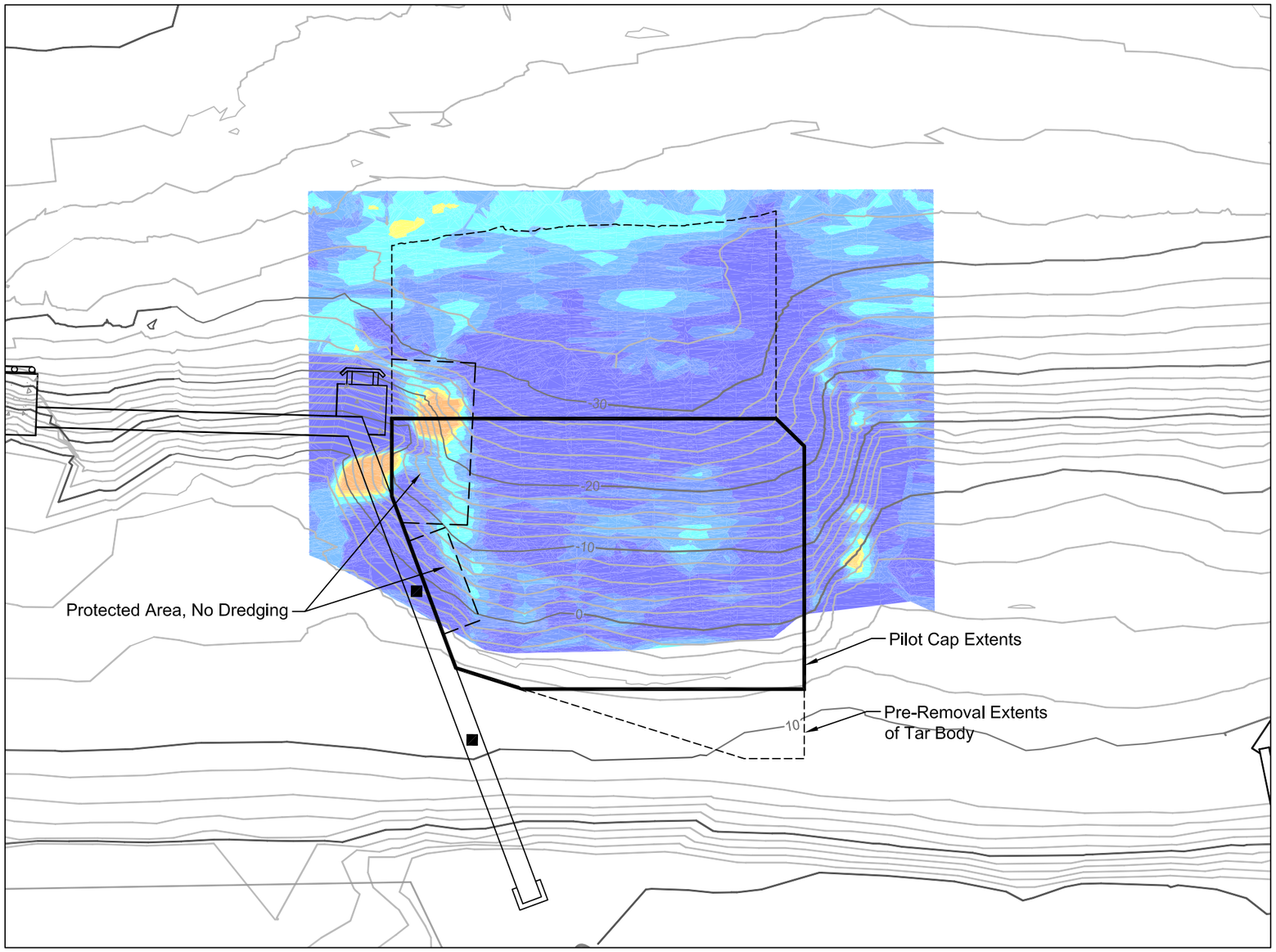
0 150
Scale in Feet

Notes:
1. Post-cap bathymetric contours produced from survey provided by Blue Water Engineering dated January 2009.
2. Horizontal Datum: Oregon State Plane North NAD 83 (International Feet).
3. Vertical Datum: NAVD 88 (ft).

Apr 09, 2009 11:21am cdavidson K:\Jobs\000029-GASCO\00002902\00002902-RP-024.dwg FIG 4

ANCHOR QEA

Figure 4
Year 2 Event 2 Bathymetry
NW Natural "Gasco" Site



Legend:

Topographic and Bathymetric Contours
(2 ft. Interval)

Color	Range Beg.	Range End
	<-2.00	-1.50
	-1.50	-1.00
	-1.00	-0.50
	-0.50	0.50
	0.50	1.00
	1.00	1.50
	1.50	>2.00

0 50
Scale in Feet

Notes:
1. Post-cap bathymetric contours produced from surveys provided by Blue Water Engineering dated October 2005 and January 2009.
2. Horizontal Datum: Oregon State Plane North NAD 83 (International Feet).
3. Vertical Datum: NAVD 88 (ft).

Apr 02, 2009 4:05pm cdavidson K:\Jobs\000029-GASCO\00002902\00002902-RP-025.dwg FIG 5

ANCHOR QEA

Figure 5
Isopach Comparing Post-Cap October 2005 and January 2009 Bathymetry Surveys
NW Natural "Gasco" Site

APPENDIX A

VISUAL MONITORING COLLECTION FORMS

Visual Observations Log Form

Date	October 16, 2008		
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco	**Project Number:**	000029-02 BG17 T4
Monitoring Period:	Monthly(Year 1)—October 2008		
Time Observations Started:	October 16, 2008 @ 0800	**Time Observation Concluded:**	October 16, 2008 @ 1600
Weather Conditions:	Partly Cloudy, 68 degrees F, light wind from the northwest		
Wave Action Observations:	Calm with small wind-generated waves (0.1-0.2 feet in height)		
Photographs Taken:	(Yes) No		

Tidal Conditions:

River level elevation on 10/16/08 ranged from 4.43 to 8.29 ft (City of Portland Datum)

The water level elevation allowed visual observation of the shoreward extent the pilot cap.

Observations of Erosion/Deposition:

No erosion/deposition is evident along the shoreline; however, the organo-clay mat material and associated staking is visible at multiple locations along the shoreward extent of the cap area (Photo 1)

Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)

During the inspection, the Fuel and Marine Marketing (FAMM) oil boom was positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the area to mariners have been installed to protect the sediment cap from prop wash and other disturbances that may be caused by marine traffic in the cap vicinity. The position of the boom, the newly installed buoys, and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in the vicinity of the cap area. Photo 3 shows the water surface and shoreline immediately upriver of the FAMM dock structure.

Recorded by: **Timothy Stone/Doug Laffoon**

Photo 1—*exposed segments of the organo-clay mat material (10/16/08)*

Photo 2—*general overview of site shoreline and position of FAMM oil boom (10/16/08)*

Photo 3—*close-up view of shoreline condition immediately upriver from FAMM dock (10/16/08)*

Visual Observations Log Form

Date	November 10, 2008		
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco	**Project Number:**	000029-02 BG17 T4
Monitoring Period:	Monthly(Year 1)—November 2008		
Time Observations Started:	November 10, 2008 @ 1330	**Time Observation Concluded:**	November 10, 2008 @ 1630
Weather Conditions:	Cloudy, 50-55 degrees F, little to no wind		
Wave Action Observations:	Calm no waves (<0.1 feet in height)		
Photographs Taken:	(Yes) No		

Tidal Conditions:

River level elevation on 11/10/08 ranged from 5.60 to 8.80 ft (City of Portland Datum)

Observations of Erosion/Deposition:

The water level elevation did not allow visual observation of the shoreward extent the pilot cap (Photo 1).

No erosion/deposition is evident along the shoreline.

Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)

During the inspection, the Fuel and Marine Marketing (FAMM) oil boom was positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). The position of the boom, mariner-notification buoys and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen was evident in the vicinity of the cap area. Photo 3 shows the water surface and shoreline immediately upriver of the FAMM dock structure.

Recorded by: **Timothy Stone/Doug Laffoon**

Photo 1—shoreline and water level conditions at pilot cap *(11/10/08)*

Photo 2—*general overview of site shoreline and position of FAMM oil boom (11/10/08)*

Photo 3—*view of shoreline condition immediately upriver from FAMM dock (11/10/08)*

Visual Observations Log Form

Date	December 16, 2008		
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco	**Project Number:**	000029-02 BG17 T4
Monitoring Period:	Monthly (Year 1)—December 2008		
Time Observations Started:	December 16, 2008 @ 1430	**Time Observation Concluded:**	December 16, 2008 @ 1700
Weather Conditions:	Clear, approx. 27 degrees F, light wind from the northwest		
Wave Action Observations:	Calm with small wind-generated waves (0.0-0.2 feet in height), no boat traffic		
Photographs Taken:	(Yes) No		

Tidal Conditions:

River level elevation on 12/16/08 ranged from 2.76 to 5.54 ft (City of Portland Datum)

The water level elevation allowed visual observation of the shoreward extent the pilot cap.

Observations of Erosion/Deposition:

No erosion/deposition is evident along the shoreline; however, the organo-clay mat material and associated staking is visible at multiple locations along the shoreward extent of the cap area (Photo 1). Exposed mat appears to be in similar condition to October's observation.

Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)

During the Monitoring event, the Fuel and Marine Marketing (FAMM) oil boom was positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the area to mariners have been installed to protect the sediment cap from prop wash and other disturbances (anchors) that may be caused by marine traffic in the cap vicinity. The position of the boom, the newly installed buoys, and a general overview of the site shoreline are shown in Photo 2.

Other Comments:
No sheen is evident in the vicinity of the cap area. Photo 3 shows the water surface and shoreline immediately upriver of the FAMM dock structure.

Recorded by: **Doug Laffoon**

Photo 1—*exposed segments of the organo-clay mat material (12/16/08)*

Photo 2—*general overview of site shoreline and position of FAMM oil boom (12/16/08)*

Photo 3—*view of shoreline condition immediately upriver from FAMM dock (12/16/08)*

Visual Observations Log Form

Date	January 28, 2009		
Location:	NW Natural "Gasco" Site		
Project Name:	NW Natural – Gasco	**Project Number:**	000029-02 BG17 T4
Monitoring Period:	Monthly (Year 1)—January 2009		
Time Observations Started:	January 26, 2009 @ 1000	**Time Observation Concluded:**	January 26, 2009 @ 1100
Weather Conditions:	Clear, approx. 32 degrees F, light wind from the east		
Wave Action Observations:	Calm with small wind-generated waves (0.0-0.1 feet in height), limited boat traffic		
Photographs Taken:	(Yes) No		

Tidal Conditions:

River level elevation on 1/26/09 ranged from 4.82 to 7.07 ft (City of Portland Datum)

The water level elevation allowed visual observation of the shoreward extent the pilot cap.

Observations of Erosion/Deposition:

No erosion/deposition is evident along the shoreline; however, the organo-clay mat material and associated staking is visible at multiple locations along the shoreward extent of the cap area (Photo 1 and Photo 2). Exposed mat appears to be in similar condition to December's observation.

Observations of Long-term Controls (i.e., oil booms, organo-clay mat, etc.)

During the Monitoring event, the Fuel and Marine Marketing (FAMM) oil boom was positioned across the cap area, between the upriver corner of the ship dock and the wooden dolphin (near the upriver extent of the site and near the Siltronic Corporation outfall). Buoys that identify the area to mariners have been installed to protect the sediment cap from prop wash and other disturbances (anchors) that may be caused by marine traffic in the cap vicinity. The position of the boom, warning buoys, and a general overview of the site shoreline are shown in Photo 3.

Other Comments:
No sheen is evident in the vicinity of the cap area. Photo 4 shows the water surface and shoreline immediately upriver of the FAMM dock structure.

Recorded by: **Timothy Stone**

Photo 1—*exposed segments of the organo-clay mat material (1/26/09)*

Photo 2— *exposed segments of the organo-clay mat material (1/26/09)*

Photo3—*overview of cap area from shoreline (1/26/09*

Photo4—*conditions immediately downriver of cap area (1/26/09)*

APPENDIX B

DEPOSITIONAL SURFACE SEDIMENT COLLECTION FORMS

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-02DS

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08
Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services
Weather: Overcast, Sl. breeze, river looks to be flowing upstream
Station Coordinates: N / Lat. on STN
E / W / Long. on STN
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-02DS-081211
Analysis: Metals / SVOCs / VOCs / PCBs / Pest
TS / Grain Size / TOC / Ammonia / Sulfides
(Circle Appropriate Analyses) Full Portland Harbor List
Other:
Other:

Grab Number: 1 Water Depth: 29 ft Grab Recovery: 8 cm Time: 1350
Tide Level: Sample Interval: 8 cm cm
Bioassay / Chemistry Depth MLLW:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none 1 sheen	No R.B. 12/11/08
gravel	gray	slight	Petroleum	slight spot on	Good grab.
sand C M (F) <10%	black	moderate	other:	moderate	
silt clay	brown	strong → Mothball		heavy surface	
organic matter some scattered twigs, leaves	brown surface ~1mm	overwhelming			

Grab Number: Water Depth: Grab Recovery: cm Time:
Tide Level: Sample Interval: cm
Bioassay / Chemistry Depth MLLW:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number: Water Depth: Grab Recovery: cm Time:
Tide Level: Sample Interval: cm
Bioassay / Chemistry Depth MLLW:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number: Water Depth: Grab Recovery: cm Time:
Tide Level: Sample Interval: cm
Bioassay / Chemistry Depth MLLW:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Date/Time Lab Drop Off:

Recorded by: Ryan Barth

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-04

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08
Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services
Weather: Overcast, no breeze
Station Coordinates: N / Lat. on STN
E / W / Long. on STN
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-04DS-081211
Analysis: Metals / SVOCs / VOCs / PCBs / Pest
TS / Grain Size / TOC / Ammonia / Sulfides
(Circle Appropriate Analyses) Full Portland Harbor List
Other:
Other:

Grab Number: 1 Water Depth: - Grab Recovery: 9 cm Time: 1410
Tide Level: - Sample Interval: 3 cm
Bioassay / Chemistry Depth MLLW: -

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none spotty	Insuff. material to sample overlying dep. sed. w/out also sampling underlying fringe-sand
gravel	gray	slight	Petroleum	slight on surface	
sand C M F Bottom 7cm	black	moderate	other:	moderate	
silt clay Surface 1cm	brown	strong mothball		heavy	
organic matter	brown surface ~1mm	overwhelming			

Grab Number: 2 Water Depth: - Grab Recovery: 9 cm Time:
Tide Level: - Sample Interval: 3 cm
Bioassay / Chemistry Depth MLLW: -

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	2ND sample identical so abandoned sample due to insuff. material
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

SAME AS ABOVE

Grab Number: Water Depth: Grab Recovery: cm Time:
Tide Level: Sample Interval: cm
Bioassay / Chemistry Depth MLLW:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

R. Barth

Grab Number: Water Depth: Grab Recovery: cm Time:
Tide Level: Sample Interval: cm
Bioassay / Chemistry Depth MLLW:

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Date/Time Lab Drop Off:

Recorded by: Regan Barth

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-06

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08 Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services Weather: Overcast, no breeze
Station Coordinates: N / Lat. ON STN
E / W / Long. ON STN
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-06DS-081211
Analysis: Metals / SVOCs / VOCs / PCBs / Pest Other:
TS / Grain Size / TOC / Ammonia / Sulfides Other:
(Circle Appropriate Analyses) Full Portland Harbor List

Grab Number: 1	Water Depth: 27 ft	Grab Recovery: 7 cm	Time: 1420	
	Tide Level:	Sample Interval: 7 cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none spotty	No fringe cover layer/sand encountered
gravel	gray	slight Petroleum	slight upon	
sand C M F ~35%	black	moderate other:	moderate mixing	
silt clay	brown	strong → mothball	heavy	
organic matter <5% turgid	brown surface ~1mm	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Date/Time Lab Drop Off:

Recorded by: Ryan Barth

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-09

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08 Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services Weather: St. overcast, no breeze
Station Coordinates: N / Lat. on STN
E / W / Long. on STN
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-09DS-081201
Analysis: Metals / SVOCs / VOCs / PCBs / Pest Other:
TS / Grain Size / TOC / Ammonia / Sulfides Other:
(Circle Appropriate Analyses) Full Portland Harbor list

Grab Number: 1	Water Depth: —	Grab Recovery: 9cm cm	Time: 1440	
	Tide Level: —	Sample Interval: 9cm cm		
Bioassay / Chemistry	Depth MLLW: —			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	Good grab. No fringe cover Sand encountered in grab.
gravel	gray	slight mothball Petroleum	slight	
sand C M F ~20% grained, not layers	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface ~1mm	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

R. Barth

Date/Time Lab Drop Off:

Recorded by: Ryan Brunt

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-14

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08
Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services
Weather: overcast, no breeze
Station Coordinates: N / Lat. ON STN
E / W / Long. ON STN
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-14DS-081211
Analysis: Metals / SVOCs / VOCs / PCBs / Pest
TS / Grain Size / TOC / Ammonia / Sulfides
(Circle Appropriate Analyses) Full Portland Harbor List
Other:
Other:

Grab Number: 1	Water Depth: -	Grab Recovery: 41 cm	Time: 1520	
	Tide Level: -	Sample Interval: 3 cm		
Bioassay / Chemistry	Depth MLLW: -			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F - fringe cover	black	moderate other:	moderate	
silt clay overlying	brown silt	strong	heavy	
organic matter	brown surface 1/mm	overwhelming		

Grab Number: 2	Water Depth: -	Grab Recovery: 8 cm	Time: 1535	
	Tide Level: -	Sample Interval: 3 cm		
Bioassay / Chemistry	Depth MLLW: -			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

SAME AS ABOVE

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

Grab Number:	Water Depth:	Grab Recovery: cm	Time:	
	Tide Level:	Sample Interval: cm		
Bioassay / Chemistry	Depth MLLW:			
Sediment Type:	Sediment Color:	Sediment Odor:	Sheen:	Comments:
cobble	D.O.	none H2S	none	
gravel	gray	slight Petroleum	slight	
sand C M F	black	moderate other:	moderate	
silt clay	brown	strong	heavy	
organic matter	brown surface	overwhelming		

R. Pickering

Date/Time Lab Drop Off:

Recorded by: Ryan Barth

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-15

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08
Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services
Weather: overcast, no breeze
Station Coordinates: N / Lat. ON STN
E / W / Long. on stn
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-15DS-081211
Analysis: Metals / SVOCs / VOCs / PCBs / Pest
TS / Grain Size / TOC / Ammonia / Sulfides
(Circle Appropriate Analyses) Full Portland Harbor List
Other:
Other:

Grab Number: 1	Water Depth: -	Grab Recovery: 8 cm	Time: 1545
	Tide Level: -	Sample Interval: 3 cm	
Bioassay / Chemistry	Depth MLLW:		

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	good grab, but interface not so good, collected
gravel	gray fringe over	slight	Petroleum	slight	
sand C M F fringe over	black	moderate	other:	moderate	
silt clay overlying	brown silt	strong		heavy	
organic matter	brown surface 1mm	overwhelming			

Grab Number: 2	Water Depth: -	Grab Recovery: 8 cm	Time: 1555
	Tide Level: -	Sample Interval: 3 cm	
Bioassay / Chemistry	Depth MLLW: -		

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

SAME AS ABOVE

Grab Number:	Water Depth:	Grab Recovery: cm	Time:
	Tide Level:	Sample Interval: cm	
Bioassay / Chemistry	Depth MLLW:		

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number:	Water Depth:	Grab Recovery: cm	Time:
	Tide Level:	Sample Interval: cm	
Bioassay / Chemistry	Depth MLLW:		

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Date/Time Lab Drop Off:

Recorded by:

ANCHOR ENVIRONMENTAL, L.L.C.

Surface Sediment Field Sample Record

Project Name: Gasco Y2E2 LT Cap Monitoring Project No: 000029-02 BG17 **Station ID:** PCM-22

Sampling Crew: R. Barth and R. Pickering
Sample Date: 11-Dec-08
Sampling Method: Diver slide sampler
Sampling Vessel: RSS 36' Aluminum boat
Subcontractor(s): Research Support Services
Weather: Overcast, Sl. breeze, 40°F
Station Coordinates: N / Lat. on STN
E / W / Long. on STN
Datum: NAD 83 / WGS 84 Zone:

Sample ID: PCM-22DS-081211
Analysis: Metals / SVOCs / VOCs / PCBs / Pest
TS / Grain Size / TOC / Ammonia / Sulfides
(Circle Appropriate Analyses) Full Portland Harbor List
Other:
Other:

Grab Number: 1 Water Depth: - Grab Recovery: 10 cm Time: 1530
Tide Level: - Sample Interval: 10 cm
Bioassay / Chemistry Depth MLLW: -

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	No fringe cover sand encountered
gravel	gray	slight mothball	Petroleum	slight	
sand C M F <10% interm	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface ~2mm	overwhelming			

Grab Number: _____ Water Depth: _____ Grab Recovery: _____ cm Time: _____
Tide Level: _____ Sample Interval: _____ cm
Bioassay / Chemistry Depth MLLW: _____

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number: _____ Water Depth: _____ Grab Recovery: _____ cm Time: _____
Tide Level: _____ Sample Interval: _____ cm
Bioassay / Chemistry Depth MLLW: _____

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

Grab Number: _____ Water Depth: _____ Grab Recovery: _____ cm Time: _____
Tide Level: _____ Sample Interval: _____ cm
Bioassay / Chemistry Depth MLLW: _____

Sediment Type:	Sediment Color:	Sediment Odor:		Sheen:	Comments:
cobble	D.O.	none	H2S	none	
gravel	gray	slight	Petroleum	slight	
sand C M F	black	moderate	other:	moderate	
silt clay	brown	strong		heavy	
organic matter	brown surface	overwhelming			

R. Barth

Date/Time Lab Drop Off:

Recorded by: Ryan Barth

APPENDIX C
CHAIN-OF-CUSTODY FORMS

Columbia Analytical Services™

CHAIN OF CUSTODY

SR#: _____

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE _____ OF _____ COC # _____

PROJECT NAME: Gasco Long Term Pilot Cap Monitoring - Year 2 Event 2
PROJECT NUMBER: 000029-02 B6 17 T4
PROJECT MANAGER: Ryan Barth
COMPANY/ADDRESS: Anchor Environmental, 1423 3rd Ave Suite 300
CITY/STATE/ZIP: Seattle, WA. 98101
E-MAIL ADDRESS:
PHONE #: (206) 287-9130 FAX #: (206) 287-9131
SAMPLER'S SIGNATURE: Ryan Barth

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☒	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Fuel Fingerprint (FIQ) NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☒	Metals: Total or Dissolved (See list below) Total, Fe+ only	Cyanide☒ Hex-Chrom☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, (TOC) DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	Full Portland Harbor List (See Lab Scope)	DOC + Dissolved Fe	Sulfide	REMARKS
PCM-DSRB-081212	12/12/08	1115		H_2O	13														X				*lab needs to filter.
PCM-FB-081212		1115			13														X				
PCM-DRB-081212		1145			7		X						X	X	X								
PCM-02DS-081211	12/11/08	1350		SED	6														X				
PCM-06DS-081211		1420																	X				
PCM-09DS-081217		1440																	X				
PCM-14DS-081211		1520																	X				
PCM-15DS-081211		1545																	X				
PCM-22DS-081211		1530																	X	RB 12/12/08			
PCM-01DSW-081211		0920		H_2O	11		X						X	X	X		X				X	X	→ No bottles for this so no analysis for dissolved

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date _____

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Attn: ~~Data Specialist~~ Lab Manager. Please email/fax the sample confirmation receipt to labdata@anchorenv.com ASAP

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Ryan Barth Date/Time: 12/12/08 1200	Signature: [illegible] Date/Time: 12/12/08 1200	Signature: Date/Time:	Signature: Date/Time:
Printed Name: Ryan Barth Firm: Anchor	Printed Name: [illegible] Firm: [illegible]	Printed Name: Firm:	Printed Name: Firm:

RCOC #1 06/08

Columbia Analytical Services

CHAIN OF CUSTODY

SR#: _____

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE _____ OF _____ COC # _____

PROJECT NAME: Gasco Long Term Pilot Cap Monitoring - Year 2 Event 2
PROJECT NUMBER: 000029-02 B617 T4
PROJECT MANAGER: Ryan Barth
COMPANY/ADDRESS: Anchor Environmental, 1423 3rd Ave. Suite 300
CITY/STATE/ZIP: Seattle, WA. 98101
E-MAIL ADDRESS:
PHONE #: (206) 287-9130 FAX #: (206) 287-9130
SAMPLER'S SIGNATURE: Ryan Barth

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☒	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☒	Metals, Total or Dissolved (See list below) Cyanide☒ Total Fe Hex-Chrom☐ Fe2+	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020☐ AOX 1650☐ 506☐	Metal dissolved (Fe only)	DOC	~~Bromide~~ RB 12/12/08	Sulfide	REMARKS
PCM-02DSW-081211	12/11/08			H2O	11			X					X	X	X				X	X	X		Not for this sample RB 12/12/08
PCM-03DSW-081211								X											X	X			
PCM-04DSW-081211																							
PCM-05DSW-081211																							
PCM-06DSW-081211																							
PCM-21DSW-081211																							
PCM-08DSW-081211																							
PCM-09DSW-081211																							
PCM-10DSW-081211																							
PCM-13DSW-081211																							
PCM-14DSW-081211																							
PCM-20DSW-081211																							

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
X IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:
Attn: Lynda Huckestein. Please email fax the sample confirmation receipt to lab-data@anchorenv.com ASAP. All samples on this COC should include dissolved Fe & DOC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Ryan Barth	Signature: [illegible]	Signature:	Signature:
Date/Time: 12/12/08 1200	Date/Time: 12/12/08 1200	Date/Time:	Date/Time:
Printed Name: Ryan Barth	Printed Name: [illegible]	Printed Name:	Printed Name:
Firm: Anchor	Firm: [illegible]	Firm:	Firm:

RCOC #1 06/08

APPENDIX D
DATA VALIDATION REPORTS

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Anchor Environmental, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101-2226
ATTN: Ms. Joy Dunay

February 6, 2009

SUBJECT: NW Natural Gasco Site, Data Validation

Dear Ms. Dunay,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on January 21, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20212:

SDG #	Fraction
K0812106, K0812114	Volatiles, Semivolatiles, Polynuclear Aromatic Hydrocarbons, Chlorinated Pesticides, Polychlorinated Biphenyls, Metals, Herbicides, Wet Chemistry, Butyltins, Phenols

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Stella Cuenco

Stella S. Cuenco
Project Manager/Senior Chemist

V:\LOGIN\Anchor\Gasco\20212COV.wpd

Attachment 1

4,287 Pages-EX

LDC #20212 (Anchor Environmental-Seattle WA / NW Natural - Gasco Cyanide Treatment Study)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		BTEX (8260B)		SVOA (8270C)		PAHs (8270C -SIM)		Pest. (8081A)		PCBs (8082)		Metals (SW846)		Fe (6010B)		Diss. Fe (6010B)		Herbs. (8151A)		Chlor. Phenols (8151M)		Butyl -tins (Krone)											
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	K0812106	01/21/09	02/11/09	-	-	14	0	-	-	13	0	-	-	-	-	-	-	13	0	12	0	-	-	-	-	-	-										
B	K0812114	01/21/09	02/11/09	2	0	1	0	2	0	1	0	2	0	2	0	2	0	1	0	-	-	2	0	2	0	2	0										
Total	T/SC			2	0	15	0	2	0	14	0	2	0	2	0	2	0	14	0	13	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	72

LDC #20212 (Anchor Environmental-Seattle WA / NW Natural - Gasco Cyanide Treatment Study)

LDC	SDG#	DATE REC'D	(3) DATE DUE	T.CN- (4500)		Free CN- (D4282)		Amen. CN- (4500)		S= (9030M /4500)		DOC (5310C)		TOC (5310C)		TSS (2540D)																					
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	K0812106	01/21/09	02/11/09	12	0	12	0	12	0	12	0	12	0	13	0	13	0																				
B	K0812114	01/21/09	02/11/09	2	0	2	0	2	0	-	-	-	-	-	-	-	-																				
Total	T/SC			14	0	14	0	14	0	12	0	12	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS, MSD, or DUP's.

20212ST.wpd

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Volatiles
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812106

Sample Identification

PCM-02DSW-081211
PCM-03DSW-081211
PCM-04DSW-081211
PCM-05DSW-081211
PCM-06DSW-081211
PCM-21DSW-081211
PCM-08DSW-081211
PCM-09DSW-081211
PCM-10DSW-081211
PCM-13DSW-081211
PCM-19DSW-081211
PCM-20DSW-081211
PCM-1DSW-081211
Trip Blank

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within method and validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within method and validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0813608-3	12/22/08	Toluene	0.050 ug/L	All samples in SDG K0812106

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
PCM-02DSW-081211	Toluene	0.070 ug/L	0.50U ug/L
PCM-03DSW-081211	Toluene	0.050 ug/L	0.50U ug/L
PCM-04DSW-081211	Toluene	0.050 ug/L	0.50U ug/L
PCM-05DSW-081211	Toluene	0.050 ug/L	0.50U ug/L
PCM-21DSW-081211	Toluene	0.080 ug/L	0.50U ug/L
PCM-08DSW-081211	Toluene	0.050 ug/L	0.50U ug/L
PCM-10DSW-081211	Toluene	0.060 ug/L	0.50U ug/L
PCM-19DSW-081211	Toluene	0.060 ug/L	0.50U ug/L
PCM-1DSW-081211	Toluene	0.070 ug/L	0.50U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to method blank contamination problems, toluene results were qualified as not detected in nine samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample "Trip Blank" was identified as a trip blank. No volatile contaminants were found in this blank.

NW Natural Gasco Site
Volatiles - Data Qualification Summary - SDG K0812106

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG K0812106

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
K0812106	PCM-02DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-03DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-04DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-05DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-21DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-08DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-10DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-19DSW-081211	Toluene	0.50U ug/L	A
K0812106	PCM-1DSW-081211	Toluene	0.50U ug/L	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-02DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.080**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.070**	J	0.50U 0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	96	80-128	12/23/08	Acceptable
Dibromofluoromethane	102	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	83	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-03DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.060**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.050**	J 0.50U7	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	96	80-128	12/23/08	Acceptable
Dibromofluoromethane	105	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	83	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-04DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.15**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.050**	J	0.5047 0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	97	80-128	12/23/08	Acceptable
Dibromofluoromethane	105	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	82	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-05DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.050**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.050**	J 0.50UJ	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	95	80-128	12/23/08	Acceptable
Dibromofluoromethane	104	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	82	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-06DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.060**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	ND	U	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	96	80-128	12/23/08	Acceptable
Dibromofluoromethane	105	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	83	75-117	12/23/08	Acceptable

Comments:

Ee 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-21DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.080**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.080**	J 0.50UJ	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	97	80-128	12/23/08	Acceptable
Dibromofluoromethane	107	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	82	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-08DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.080**	J		0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.050**	J	0.50U7	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U		0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U		0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U		0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	95	80-128	12/23/08	Acceptable
Dibromofluoromethane	106	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	81	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-09DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.080**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	ND	U	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	95	80-128	12/23/08	Acceptable
Dibromofluoromethane	108	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	78	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-10DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.080**	J	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.060**	J	0.50 U 7 0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	95	80-128	12/23/08	Acceptable
Dibromofluoromethane	109	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	79	75-117	12/23/08	Acceptable

Comments:

FC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-13DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	ND	U	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	98	80-128	12/23/08	Acceptable
Dibromofluoromethane	109	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	80	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-19DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.050**	J		0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.060**	J	0.50U7	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U		0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U		0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U		0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	97	80-128	12/23/08	Acceptable
Dibromofluoromethane	108	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	81	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-20DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	ND	U	0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	97	80-128	12/23/08	Acceptable
Dibromofluoromethane	107	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	82	75-117	12/23/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-1DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-013	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.070**	J	0.50U7 0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	96	80-128	12/23/08	Acceptable
Dibromofluoromethane	110	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	81	75-117	12/23/08	Acceptable

Comments:

ec 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	Trip Blank	**Units:**	ug/L
Lab Code:	K0812106-014	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.045	1	12/22/08	12/22/08	KWG0813608	
Toluene	ND	U	0.50	0.048	1	12/22/08	12/22/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/22/08	12/22/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/22/08	12/22/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/22/08	12/22/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	96	80-128	12/22/08	Acceptable
Dibromofluoromethane	102	75-120	12/22/08	Acceptable
4-Bromofluorobenzene	84	75-117	12/22/08	Acceptable

Comments:

EC 2/4/09

LDC #: 20212A1

SDG #: K0812106

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/29/09

Page: 1 of 1

Reviewer: FT

2nd Reviewer: ~~K~~

METHOD: GC/MS Volatiles (BTEX)(EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r^2 ≥ 0.990 RRF no SPCC
IV.	Continuing calibration/ICV	A	ICV ≤ 25
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	ND	TB = 14

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

Water

1	PCM-02DSW-081211	11	PCM-19DSW-081211	21	KWG0813608-	31	
2	PCM-03DSW-081211	12	PCM-20DSW-081211	22		32	
3	PCM-04DSW-081211	13	PCM-1DSW-081211	23		33	
4	PCM-05DSW-081211	14	Trip Blank	24		34	
5	PCM-06DSW-081211	15		25		35	
6	PCM-21DSW-081211	16		26		36	
7	PCM-08DSW-081211	17		27		37	
8	PCM-09DSW-081211	18		28		38	
9	PCM-10DSW-081211	19		29		39	
10	PCM-13DSW-081211	20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20212A1
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: EZ
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 12/22/08
Conc. units: ug/L
Associated Samples: All

Compound	Blank ID	Sample Identification								
	KWG081	3608-3	1	2	3	4	6	7	9	11
~~Methylene chloride~~ CC	0.050		0.070/0.50U	0.050/0.50U	0.050/0.50U	0.050/0.50U	0.080/0.50U	0.050/0.50U	0.060/0.50U	0.060/0.50U
~~Acetone~~										
CRQL										

Blank analysis date: 12/22/08
Conc. units: ug/L
Associated Samples: All

Compound	Blank ID	Sample Identification								
	↓	13								
~~Methylene chloride~~ CC	0.050	0.070/0.50U								
~~Acetone~~										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Volatiles
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212
PCM-DRB-081212

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
12/5/08	Acrolein Vinyl acetate 2-Butanone	0.0299 (≥0.05) 0.0433 (≥0.05) 0.0164 (≥0.05)	PCM-DSRB-081212 PCM-FB-081212 KWG0813648-5	J (all detects) UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/23/08	2-Chloroethylvinyl ether	41	PCM-DSRB-081212 PCM-FB-081212 KWG0813648-5	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/6/08	Acrolein	28	PCM-DSRB-081212 PCM-FB-081212 KWG0813648-5	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
12/23/08	Acrolein Vinyl acetate 2-Butanone	0.0361 (≥0.05) 0.0439 (≥0.05) 0.0178 (≥0.05)	PCM-DSRB-081212 PCM-FB-081212 KWG0813648-5	J (all detects) UJ (all non-detects)	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0813608-3	12/22/08	Toluene	0.050 ug/L	PCM-DRB-081212
KWG0813648-5	12/23/08	Acetone	4.6 ug/L	PCM-DSRB-081212 PCM-FB-081212

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
PCM-DRB-081212	Toluene	0.070 ug/L	0.50U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0813648-3/4 (PCM-DSRB-081212 PCM-FB-081212 KWG0813648-5)	2-Chloroethylvinyl ether	36 (60-130)	43 (60-130)	-	J (all detects) UJ (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to calibration RRF and %D, and LCS/LCSD %R problems, data were qualified as estimated in two samples.

Due to method blank contamination problems, a toluene result was qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Samples PCM-DSRB-081212 and PCM-DRB-081212 were identified as rinsate blanks. No volatile contaminants were found in these blanks with the following exceptions:

Rinsate Blank ID	Compound	Concentration (ug/L)
PCM-DSRB-081212	Methylene chloride Chloroform Toluene	0.91 0.36 0.15
PCM-DRB-081212	Toluene	0.070

Sample PCM-FB-081212 was identified as a field blank. No volatile contaminants were found in this blank with the following exceptions:

Field Blank ID	Compound	Concentration (ug/L)
PCM-FB-081212	Methylene chloride Chloroform Toluene	0.40 0.33 0.21

NW Natural Gasco Site
Volatiles - Data Qualification Summary - SDG K0812114

SDG	Sample	Compound	Flag	A or P	Reason
K0812114	PCM-DSRB-081212 PCM-FB-081212	Acrolein Vinyl acetate 2-Butanone	J (all detects) UJ (all non-detects)	A	Initial calibration (RRF)
K0812114	PCM-DSRB-081212 PCM-FB-081212	2-Chloroethylvinyl ether	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
K0812114	PCM-DSRB-081212 PCM-FB-081212	Acrolein	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
K0812114	PCM-DSRB-081212 PCM-FB-081212	Acrolein Vinyl acetate 2-Butanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (RRF)
K0812114	PCM-DSRB-081212 PCM-FB-081212	2-Chloroethylvinyl ether	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

NW Natural Gasco Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG K0812114

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
K0812114	PCM-DRB-081212	Toluene	0.50U ug/L	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U	UJ 5	20	2.0	1	12/24/08	12/24/08	KWG0813648	
Iodomethane	ND	U		5.0	0.27	1	12/24/08	12/24/08	KWG0813648	
Methyl tert-Butyl Ether	ND	U		0.50	0.070	1	12/24/08	12/24/08	KWG0813648	
Acrylonitrile	ND	U		5.0	0.31	1	12/24/08	12/24/08	KWG0813648	
Vinyl Acetate	ND	U	UJ 5	5.0	0.91	1	12/24/08	12/24/08	KWG0813648	
1,2-Dichloropropane	ND	U		0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
Dibromomethane	ND	U		0.50	0.089	1	12/24/08	12/24/08	KWG0813648	
2-Chloroethyl Vinyl Ether	ND	U	UJ 5,10	5.0	0.19	1	12/24/08	12/24/08	KWG0813648	*
1,2-Dibromoethane (EDB)	ND	U		2.0	0.084	1	12/24/08	12/24/08	KWG0813648	
1,1,1,2-Tetrachloroethane	ND	U		0.50	0.047	1	12/24/08	12/24/08	KWG0813648	
1,2,3-Trichloropropane	ND	U		0.50	0.14	1	12/24/08	12/24/08	KWG0813648	
trans-1,4-Dichloro-2-butene	ND	U		10	0.20	1	12/24/08	12/24/08	KWG0813648	
Dichlorodifluoromethane	ND	U		0.50	0.083	1	12/24/08	12/24/08	KWG0813648	
Chloromethane	ND	U		0.50	0.053	1	12/24/08	12/24/08	KWG0813648	
Vinyl Chloride	ND	U		0.50	0.071	1	12/24/08	12/24/08	KWG0813648	
Bromomethane	ND	U		0.50	0.072	1	12/24/08	12/24/08	KWG0813648	
Chloroethane	ND	U		0.50	0.13	1	12/24/08	12/24/08	KWG0813648	
Trichlorofluoromethane	ND	U		0.50	0.086	1	12/24/08	12/24/08	KWG0813648	
Acetone	ND	U		20	2.5	1	12/24/08	12/24/08	KWG0813648	
1,1-Dichloroethene	ND	U		0.50	0.10	1	12/24/08	12/24/08	KWG0813648	
Carbon Disulfide	ND	U		0.50	0.045	1	12/24/08	12/24/08	KWG0813648	
Methylene Chloride	**0.91**	J		2.0	0.23	1	12/24/08	12/24/08	KWG0813648	
trans-1,2-Dichloroethene	ND	U		0.50	0.048	1	12/24/08	12/24/08	KWG0813648	
1,1-Dichloroethane	ND	U		0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
2-Butanone (MEK)	ND	U	UJ 5	20	3.8	1	12/24/08	12/24/08	KWG0813648	
Chloroform	**0.36**	J		0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
1,1,1-Trichloroethane (TCA)	ND	U		0.50	0.050	1	12/24/08	12/24/08	KWG0813648	
Carbon Tetrachloride	ND	U		0.50	0.068	1	12/24/08	12/24/08	KWG0813648	
1,2-Dichloroethane (EDC)	ND	U		0.50	0.073	1	12/24/08	12/24/08	KWG0813648	
Benzene	ND	U		0.50	0.045	1	12/24/08	12/24/08	KWG0813648	
Trichloroethene (TCE)	ND	U		0.50	0.061	1	12/24/08	12/24/08	KWG0813648	
Bromodichloromethane	ND	U		0.50	0.036	1	12/24/08	12/24/08	KWG0813648	
2-Hexanone	ND	U		20	2.9	1	12/24/08	12/24/08	KWG0813648	

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
cis-1,3-Dichloropropene	ND	U	0.50	0.038	1	12/24/08	12/24/08	KWG0813648	
Toluene	**0.15**	J	0.50	0.048	1	12/24/08	12/24/08	KWG0813648	
trans-1,3-Dichloropropene	ND	U	0.50	0.041	1	12/24/08	12/24/08	KWG0813648	
1,1,2-Trichloroethane	ND	U	0.50	0.061	1	12/24/08	12/24/08	KWG0813648	
4-Methyl-2-pentanone (MIBK)	ND	U	20	3.0	1	12/24/08	12/24/08	KWG0813648	
Bromochloromethane	ND	U	0.50	0.091	1	12/24/08	12/24/08	KWG0813648	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	12/24/08	12/24/08	KWG0813648	
Dibromochloromethane	ND	U	0.50	0.057	1	12/24/08	12/24/08	KWG0813648	
Chlorobenzene	ND	U	0.50	0.045	1	12/24/08	12/24/08	KWG0813648	
Ethylbenzene	ND	U	0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
m,p-Xylenes	ND	U	0.50	0.078	1	12/24/08	12/24/08	KWG0813648	
o-Xylene	ND	U	0.50	0.037	1	12/24/08	12/24/08	KWG0813648	
Styrene	ND	U	0.50	0.039	1	12/24/08	12/24/08	KWG0813648	
Bromoform	ND	U	0.50	0.080	1	12/24/08	12/24/08	KWG0813648	
Isopropylbenzene	ND	U	2.0	0.031	1	12/24/08	12/24/08	KWG0813648	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	12/24/08	12/24/08	KWG0813648	
1,4-Dichlorobenzene	ND	U	0.50	0.054	1	12/24/08	12/24/08	KWG0813648	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	108	75-120	12/24/08	Acceptable
Toluene-d8	94	80-128	12/24/08	Acceptable
4-Bromofluorobenzene	79	75-117	12/24/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U	UJ 5	20	2.0	1	12/24/08	12/24/08	KWG0813648	
Iodomethane	ND	U		5.0	0.27	1	12/24/08	12/24/08	KWG0813648	
Methyl tert-Butyl Ether	ND	U		0.50	0.070	1	12/24/08	12/24/08	KWG0813648	
Acrylonitrile	ND	U		5.0	0.31	1	12/24/08	12/24/08	KWG0813648	
Vinyl Acetate	ND	U	UJ 5	5.0	0.91	1	12/24/08	12/24/08	KWG0813648	
1,2-Dichloropropane	ND	U		0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
Dibromomethane	ND	U		0.50	0.089	1	12/24/08	12/24/08	KWG0813648	
2-Chloroethyl Vinyl Ether	ND	U	UJ 5,10	5.0	0.19	1	12/24/08	12/24/08	KWG0813648	*
1,2-Dibromoethane (EDB)	ND	U		2.0	0.084	1	12/24/08	12/24/08	KWG0813648	
1,1,1,2-Tetrachloroethane	ND	U		0.50	0.047	1	12/24/08	12/24/08	KWG0813648	
1,2,3-Trichloropropane	ND	U		0.50	0.14	1	12/24/08	12/24/08	KWG0813648	
trans-1,4-Dichloro-2-butene	ND	U		10	0.20	1	12/24/08	12/24/08	KWG0813648	
Dichlorodifluoromethane	ND	U		0.50	0.083	1	12/24/08	12/24/08	KWG0813648	
Chloromethane	ND	U		0.50	0.053	1	12/24/08	12/24/08	KWG0813648	
Vinyl Chloride	ND	U		0.50	0.071	1	12/24/08	12/24/08	KWG0813648	
Bromomethane	ND	U		0.50	0.072	1	12/24/08	12/24/08	KWG0813648	
Chloroethane	ND	U		0.50	0.13	1	12/24/08	12/24/08	KWG0813648	
Trichlorofluoromethane	ND	U		0.50	0.086	1	12/24/08	12/24/08	KWG0813648	
Acetone	ND	U		20	2.5	1	12/24/08	12/24/08	KWG0813648	
1,1-Dichloroethene	ND	U		0.50	0.10	1	12/24/08	12/24/08	KWG0813648	
Carbon Disulfide	ND	U		0.50	0.045	1	12/24/08	12/24/08	KWG0813648	
Methylene Chloride	**0.40**	J		2.0	0.23	1	12/24/08	12/24/08	KWG0813648	
trans-1,2-Dichloroethene	ND	U		0.50	0.048	1	12/24/08	12/24/08	KWG0813648	
1,1-Dichloroethane	ND	U		0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
2-Butanone (MEK)	ND	U	UJ 5	20	3.8	1	12/24/08	12/24/08	KWG0813648	
Chloroform	**0.33**	J		0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
1,1,1-Trichloroethane (TCA)	ND	U		0.50	0.050	1	12/24/08	12/24/08	KWG0813648	
Carbon Tetrachloride	ND	U		0.50	0.068	1	12/24/08	12/24/08	KWG0813648	
1,2-Dichloroethane (EDC)	ND	U		0.50	0.073	1	12/24/08	12/24/08	KWG0813648	
Benzene	ND	U		0.50	0.045	1	12/24/08	12/24/08	KWG0813648	
Trichloroethene (TCE)	ND	U		0.50	0.061	1	12/24/08	12/24/08	KWG0813648	
Bromodichloromethane	ND	U		0.50	0.036	1	12/24/08	12/24/08	KWG0813648	
2-Hexanone	ND	U		20	2.9	1	12/24/08	12/24/08	KWG0813648	

Comments:

TC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
cis-1,3-Dichloropropene	ND	U	0.50	0.038	1	12/24/08	12/24/08	KWG0813648	
Toluene	**0.21**	J	0.50	0.048	1	12/24/08	12/24/08	KWG0813648	
trans-1,3-Dichloropropene	ND	U	0.50	0.041	1	12/24/08	12/24/08	KWG0813648	
1,1,2-Trichloroethane	ND	U	0.50	0.061	1	12/24/08	12/24/08	KWG0813648	
4-Methyl-2-pentanone (MIBK)	ND	U	20	3.0	1	12/24/08	12/24/08	KWG0813648	
Bromochloromethane	ND	U	0.50	0.091	1	12/24/08	12/24/08	KWG0813648	
Tetrachloroethene (PCE)	ND	U	0.50	0.077	1	12/24/08	12/24/08	KWG0813648	
Dibromochloromethane	ND	U	0.50	0.057	1	12/24/08	12/24/08	KWG0813648	
Chlorobenzene	ND	U	0.50	0.045	1	12/24/08	12/24/08	KWG0813648	
Ethylbenzene	ND	U	0.50	0.042	1	12/24/08	12/24/08	KWG0813648	
m,p-Xylenes	ND	U	0.50	0.078	1	12/24/08	12/24/08	KWG0813648	
o-Xylene	ND	U	0.50	0.037	1	12/24/08	12/24/08	KWG0813648	
Styrene	ND	U	0.50	0.039	1	12/24/08	12/24/08	KWG0813648	
Bromoform	ND	U	0.50	0.080	1	12/24/08	12/24/08	KWG0813648	
Isopropylbenzene	ND	U	2.0	0.031	1	12/24/08	12/24/08	KWG0813648	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.064	1	12/24/08	12/24/08	KWG0813648	
1,4-Dichlorobenzene	ND	U	0.50	0.054	1	12/24/08	12/24/08	KWG0813648	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	107	75-120	12/24/08	Acceptable
Toluene-d8	97	80-128	12/24/08	Acceptable
4-Bromofluorobenzene	79	75-117	12/24/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Volatile Organics by GC/MS

Sample Name:	PCM-DRB-081212	**Units:**	ug/L
Lab Code:	K0812114-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.045	1	12/23/08	12/23/08	KWG0813608	
Toluene	**0.070**	J	0.50 U 7 0.50	0.048	1	12/23/08	12/23/08	KWG0813608	
Ethylbenzene	ND	U	0.50	0.042	1	12/23/08	12/23/08	KWG0813608	
m,p-Xylenes	ND	U	0.50	0.078	1	12/23/08	12/23/08	KWG0813608	
o-Xylene	ND	U	0.50	0.037	1	12/23/08	12/23/08	KWG0813608	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Toluene-d8	99	80-128	12/23/08	Acceptable
Dibromofluoromethane	110	75-120	12/23/08	Acceptable
4-Bromofluorobenzene	81	75-117	12/23/08	Acceptable

Comments:

RC 2/4/09

LDC #: 20212B1

SDG #: K0812114

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/29/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	% RSD, $r^2 \geq 0.990$
IV.	Continuing calibration	SW	10V ≤ 25
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	SW	LCS/LP
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	FB = 2 RB = 1, 3

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

water

1 1	PCM-DSRB-081212	11 1	KWG0813648	21 5		31	
2 1	PCM-FB-081212	12 2	KWG0813608	22 3		32	
3 2	PCM-DRB-081212	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN.
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

*** = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.**

LDC #: 20212B1
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: FT
2nd Reviewer: R

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
Y N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/5/08	CAL 8016	FFFF		0.0299	KWG0813648-5,	J/UJ/A
			HH		0.0433	1, 2	↓
			M		0.0164	↓	↓

INICAL.1SB

SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET

Continuing Calibration

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?

Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: <25.0%)	Finding RRF (Limit: >0.05)	Associated Samples	Qualifications
	12/6/08	CAL8016-ICV	FFFF	28		KWG0813648-5, 1, 2	J/UJ/A
	12/23/08	1223F012	FFFF		0.0361	↓	↓
			HH		0.0439		
			II	41			
			M		0.0178		

CONCAL.1SB

LDC #: 20212B1
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: FZ
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 12/22/08
Conc. units: ug/L
Associated Samples: 3

Compound	Blank ID	Sample Identification								
	KWG08	3608-3		3						
~~Methylene chloride~~ CC	0.050			0.070 / 0.504						
~~Acetone~~										
CRQL										

Blank analysis date: 12/23/08
Conc. units: ug/L
Associated Samples: 1, 2 (ND)

Compound	Blank ID	Sample Identification								
	KWG08	3648-5								
~~Methylene chloride~~ F	4.6									
~~Acetone~~										
CRQL										

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 20212B1
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		KWG0813648-3/4	II	36 (60-130)	43 (60-130)	( )	KWG0813648-5, 1, 2	J/UJ/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		

LDC #: 20212B1
SDG #: pe cover

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: F7
2nd reviewer: M

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds detected in the field blanks?

Sample: 1 Field Blank / Trip Blank / Rinsate / Other RB (circle one)

Compound	Concentration Units (ug/L)
E	0.91
K	0.36
cc	0.15

Sample: 2 Field Blank / Trip Blank / Rinsate / Other FB (circle one)

Compound	Concentration Units (ug/L)
E	0.40
K	0.33
cc	0.21

Sample: 3 Field Blank / Trip Blank / Rinsate / Other RB (circle one)

Compound	Concentration Units (ug/L)
cc	0.070

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Semivolatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Semivolatiles
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were greater than or equal to 0.05 .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0813481-3	12/18/08	Phenol Di-n-butylphthalate	0.40 ug/L 0.15 ug/L	All samples in SDG K0812114

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
PCM-DSRB-081212	Phenol Di-n-butylphthalate	0.28 ug/L 0.50 ug/L	0.60U ug/L 0.50U ug/L
PCM-FB-081212	Di-n-butylphthalate	0.44 ug/L	0.44U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0813481-1/2 (All samples in SDG K0812114)	2,4-Dinitrophenol	-	-	47 (≤30)	J (all detects) UJ (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to LCS/LCSD RPD problems, 2,4-dinitroiphenol results were qualified as estimated in two samples.

Due to method blank contamination problems, phenol and di-n-butylphthalate results were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No semivolatile contaminants were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No semivolatile contaminants were found in this blank with the following exceptions:

Field Blank ID	Compound	Concentration (ug/L)
PCM-FB-081212	Benzyl alcohol Diethylphthalate Di-n-butylphthalate	0.077 0.18 0.44

NW Natural Gasco Site
Semivolatiles - Data Qualification Summary - SDG K0812114

SDG	Sample	Compound	Flag	A or P	Reason
K0812114	PCM-DSRB-081212 PCM-FB-081212	2,4-Dinitrophenol	J (all detects) UJ (all non-detects)	P	Laboratory control samples (RPD)

NW Natural Gasco Site
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG K0812114

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
K0812114	PCM-DSRB-081212	Phenol Di-n-butylphthalate	0.60U ug/L 0.50U ug/L	A
K0812114	PCM-FB-081212	Di-n-butylphthalate	0.44U ug/L	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.24	0.042	1	12/18/08	12/30/08	KWG0813481	
Phenol	**0.28**	J	0.6007 0.60	0.075	1	12/18/08	12/30/08	KWG0813481	
Aniline	ND	U	1.2	0.052	1	12/18/08	12/30/08	KWG0813481	
2-Chlorophenol	ND	U	0.60	0.065	1	12/18/08	12/30/08	KWG0813481	
1,3-Dichlorobenzene	ND	U	0.24	0.025	1	12/18/08	12/30/08	KWG0813481	
1,4-Dichlorobenzene	ND	U	0.24	0.035	1	12/18/08	12/30/08	KWG0813481	
1,2-Dichlorobenzene	ND	U	0.24	0.027	1	12/18/08	12/30/08	KWG0813481	
Benzyl Alcohol	**0.12**	J	0.60	0.087	1	12/18/08	12/30/08	KWG0813481	
Bis(2-chloroisopropyl) Ether	ND	U	0.24	0.031	1	12/18/08	12/30/08	KWG0813481	
2-Methylphenol	ND	U	0.60	0.14	1	12/18/08	12/30/08	KWG0813481	
Hexachloroethane	ND	U	0.24	0.029	1	12/18/08	12/30/08	KWG0813481	
N-Nitrosodi-n-propylamine	ND	U	0.24	0.045	1	12/18/08	12/30/08	KWG0813481	
4-Methylphenol†	ND	U	0.60	0.15	1	12/18/08	12/30/08	KWG0813481	
Nitrobenzene	ND	U	0.24	0.034	1	12/18/08	12/30/08	KWG0813481	
Isophorone	ND	U	0.24	0.020	1	12/18/08	12/30/08	KWG0813481	
2-Nitrophenol	ND	U	0.60	0.075	1	12/18/08	12/30/08	KWG0813481	
2,4-Dimethylphenol	ND	U	4.8	2.7	1	12/18/08	12/30/08	KWG0813481	
Bis(2-chloroethoxy)methane	ND	U	0.24	0.029	1	12/18/08	12/30/08	KWG0813481	
2,4-Dichlorophenol	ND	U	0.60	0.056	1	12/18/08	12/30/08	KWG0813481	
Benzoic Acid	ND	U	6.0	1.4	1	12/18/08	12/30/08	KWG0813481	
1,2,4-Trichlorobenzene	ND	U	0.24	0.020	1	12/18/08	12/30/08	KWG0813481	
Naphthalene	ND	U	0.24	0.027	1	12/18/08	12/30/08	KWG0813481	
4-Chloroaniline	ND	U	0.24	0.030	1	12/18/08	12/30/08	KWG0813481	
Hexachlorobutadiene	ND	U	0.24	0.033	1	12/18/08	12/30/08	KWG0813481	
4-Chloro-3-methylphenol	ND	U	0.60	0.045	1	12/18/08	12/30/08	KWG0813481	
Hexachlorocyclopentadiene	ND	U	1.2	0.23	1	12/18/08	12/30/08	KWG0813481	
2,4,6-Trichlorophenol	ND	U	0.60	0.070	1	12/18/08	12/30/08	KWG0813481	
2,4,5-Trichlorophenol	ND	U	0.60	0.037	1	12/18/08	12/30/08	KWG0813481	
2-Chloronaphthalene	ND	U	0.24	0.049	1	12/18/08	12/30/08	KWG0813481	
2-Nitroaniline	ND	U	0.24	0.029	1	12/18/08	12/30/08	KWG0813481	
Acenaphthylene	ND	U	0.24	0.018	1	12/18/08	12/30/08	KWG0813481	
Dimethyl Phthalate	ND	U	0.24	0.025	1	12/18/08	12/30/08	KWG0813481	
2,6-Dinitrotoluene	ND	U	0.24	0.040	1	12/18/08	12/30/08	KWG0813481	

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.24	0.031	1	12/18/08	12/30/08	KWG0813481	
3-Nitroaniline	ND	U	1.2	0.035	1	12/18/08	12/30/08	KWG0813481	
2,4-Dinitrophenol	ND	U UJ TO	4.8	0.21	1	12/18/08	12/30/08	KWG0813481	
Dibenzofuran	ND	U	0.24	0.022	1	12/18/08	12/30/08	KWG0813481	
4-Nitrophenol	ND	U	2.4	0.34	1	12/18/08	12/30/08	KWG0813481	
2,4-Dinitrotoluene	ND	U	0.24	0.022	1	12/18/08	12/30/08	KWG0813481	
Fluorene	ND	U	0.24	0.033	1	12/18/08	12/30/08	KWG0813481	
4-Chlorophenyl Phenyl Ether	ND	U	0.24	0.033	1	12/18/08	12/30/08	KWG0813481	
Diethyl Phthalate	**0.20**	J	0.24	0.015	1	12/18/08	12/30/08	KWG0813481	
4-Nitroaniline	ND	U	1.2	0.023	1	12/18/08	12/30/08	KWG0813481	
2-Methyl-4,6-dinitrophenol	ND	U	2.4	0.030	1	12/18/08	12/30/08	KWG0813481	
N-Nitrosodiphenylamine	ND	U	0.24	0.058	1	12/18/08	12/30/08	KWG0813481	
Azobenzene†	ND	U	0.24	0.025	1	12/18/08	12/30/08	KWG0813481	
4-Bromophenyl Phenyl Ether	ND	U	0.24	0.031	1	12/18/08	12/30/08	KWG0813481	
Hexachlorobenzene	ND	U	0.24	0.027	1	12/18/08	12/30/08	KWG0813481	
Phenanthrene	ND	U	0.24	0.027	1	12/18/08	12/30/08	KWG0813481	
Anthracene	ND	U	0.24	0.029	1	12/18/08	12/30/08	KWG0813481	
Carbazole	ND	U	0.24	0.022	1	12/18/08	12/30/08	KWG0813481	
Fluoranthene	ND	U	0.24	0.024	1	12/18/08	12/30/08	KWG0813481	
Pyrene	ND	U	0.24	0.023	1	12/18/08	12/30/08	KWG0813481	
Di-n-butyl Phthalate	**0.50**	~~0.50~~ UJ	0.24	0.028	1	12/18/08	12/30/08	KWG0813481	
Butyl Benzyl Phthalate	**0.19**	J	0.24	0.022	1	12/18/08	12/30/08	KWG0813481	
3,3'-Dichlorobenzidine	ND	U	2.4	0.51	1	12/18/08	12/30/08	KWG0813481	
Benz(a)anthracene	ND	U	0.24	0.022	1	12/18/08	12/30/08	KWG0813481	
Chrysene	ND	U	0.24	0.034	1	12/18/08	12/30/08	KWG0813481	
Bis(2-ethylhexyl) Phthalate	ND	U	1.2	0.16	1	12/18/08	12/30/08	KWG0813481	
Di-n-octyl Phthalate	ND	U	0.24	0.022	1	12/18/08	12/30/08	KWG0813481	
Benzo(b)fluoranthene	ND	U	0.24	0.021	1	12/18/08	12/30/08	KWG0813481	
Benzo(k)fluoranthene	ND	U	0.24	0.029	1	12/18/08	12/30/08	KWG0813481	
Benzo(a)pyrene	ND	U	0.24	0.037	1	12/18/08	12/30/08	KWG0813481	
Indeno(1,2,3-cd)pyrene	ND	U	0.24	0.025	1	12/18/08	12/30/08	KWG0813481	
Dibenz(a,h)anthracene	ND	U	0.24	0.021	1	12/18/08	12/30/08	KWG0813481	
Benzo(g,h,i)perylene	ND	U	0.24	0.023	1	12/18/08	12/30/08	KWG0813481	

Comments:

SC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	61	21-119	12/30/08	Acceptable
Phenol-d6	71	31-121	12/30/08	Acceptable
Nitrobenzene-d5	87	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	83	25-109	12/30/08	Acceptable
2,4,6-Tribromophenol	68	30-131	12/30/08	Acceptable
Terphenyl-d14	100	20-140	12/30/08	Acceptable

† **Analyte Comments**

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	12/18/08	12/30/08	KWG0813481	
Phenol	ND	U	0.50	0.063	1	12/18/08	12/30/08	KWG0813481	
Aniline	ND	U	1.0	0.043	1	12/18/08	12/30/08	KWG0813481	
2-Chlorophenol	ND	U	0.50	0.054	1	12/18/08	12/30/08	KWG0813481	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	12/18/08	12/30/08	KWG0813481	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	12/18/08	12/30/08	KWG0813481	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813481	
Benzyl Alcohol	**0.077**	J	0.50	0.073	1	12/18/08	12/30/08	KWG0813481	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813481	
2-Methylphenol	ND	U	0.50	0.11	1	12/18/08	12/30/08	KWG0813481	
Hexachloroethane	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813481	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	12/18/08	12/30/08	KWG0813481	
4-Methylphenol†	ND	U	0.50	0.12	1	12/18/08	12/30/08	KWG0813481	
Nitrobenzene	ND	U	0.20	0.028	1	12/18/08	12/30/08	KWG0813481	
Isophorone	ND	U	0.20	0.016	1	12/18/08	12/30/08	KWG0813481	
2-Nitrophenol	ND	U	0.50	0.063	1	12/18/08	12/30/08	KWG0813481	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	12/18/08	12/30/08	KWG0813481	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813481	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	12/18/08	12/30/08	KWG0813481	
Benzoic Acid	ND	U	5.0	1.1	1	12/18/08	12/30/08	KWG0813481	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	12/18/08	12/30/08	KWG0813481	
Naphthalene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813481	
4-Chloroaniline	ND	U	0.20	0.025	1	12/18/08	12/30/08	KWG0813481	
Hexachlorobutadiene	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813481	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	12/18/08	12/30/08	KWG0813481	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	12/18/08	12/30/08	KWG0813481	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	12/18/08	12/30/08	KWG0813481	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	12/18/08	12/30/08	KWG0813481	
2-Chloronaphthalene	ND	U	0.20	0.041	1	12/18/08	12/30/08	KWG0813481	
2-Nitroaniline	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813481	
Acenaphthylene	ND	U	0.20	0.015	1	12/18/08	12/30/08	KWG0813481	
Dimethyl Phthalate	ND	U	0.20	0.021	1	12/18/08	12/30/08	KWG0813481	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	12/18/08	12/30/08	KWG0813481	

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U		0.20	0.026	1	12/18/08	12/30/08	KWG0813481	
3-Nitroaniline	ND	U		1.0	0.029	1	12/18/08	12/30/08	KWG0813481	
2,4-Dinitrophenol	ND	U	UJ 10	4.0	0.17	1	12/18/08	12/30/08	KWG0813481	
Dibenzofuran	ND	U		0.20	0.018	1	12/18/08	12/30/08	KWG0813481	
4-Nitrophenol	ND	U		2.0	0.28	1	12/18/08	12/30/08	KWG0813481	
2,4-Dinitrotoluene	ND	U		0.20	0.018	1	12/18/08	12/30/08	KWG0813481	
Fluorene	ND	U		0.20	0.027	1	12/18/08	12/30/08	KWG0813481	
4-Chlorophenyl Phenyl Ether	ND	U		0.20	0.027	1	12/18/08	12/30/08	KWG0813481	
Diethyl Phthalate	**0.18**	J		0.20	0.012	1	12/18/08	12/30/08	KWG0813481	
4-Nitroaniline	ND	U		1.0	0.019	1	12/18/08	12/30/08	KWG0813481	
2-Methyl-4,6-dinitrophenol	ND	U		2.0	0.025	1	12/18/08	12/30/08	KWG0813481	
N-Nitrosodiphenylamine	ND	U		0.20	0.048	1	12/18/08	12/30/08	KWG0813481	
Azobenzene†	ND	U		0.20	0.021	1	12/18/08	12/30/08	KWG0813481	
4-Bromophenyl Phenyl Ether	ND	U		0.20	0.026	1	12/18/08	12/30/08	KWG0813481	
Hexachlorobenzene	ND	U		0.20	0.022	1	12/18/08	12/30/08	KWG0813481	
Phenanthrene	ND	U		0.20	0.022	1	12/18/08	12/30/08	KWG0813481	
Anthracene	ND	U		0.20	0.024	1	12/18/08	12/30/08	KWG0813481	
Carbazole	ND	U		0.20	0.018	1	12/18/08	12/30/08	KWG0813481	
Fluoranthene	ND	U		0.20	0.020	1	12/18/08	12/30/08	KWG0813481	
Pyrene	ND	U		0.20	0.019	1	12/18/08	12/30/08	KWG0813481	
Di-n-butyl Phthalate	**0.44**	~~BJ~~ U7		0.20	0.023	1	12/18/08	12/30/08	KWG0813481	
Butyl Benzyl Phthalate	ND	U		0.20	0.018	1	12/18/08	12/30/08	KWG0813481	
3,3'-Dichlorobenzidine	ND	U		2.0	0.43	1	12/18/08	12/30/08	KWG0813481	
Benz(a)anthracene	ND	U		0.20	0.018	1	12/18/08	12/30/08	KWG0813481	
Chrysene	ND	U		0.20	0.028	1	12/18/08	12/30/08	KWG0813481	
Bis(2-ethylhexyl) Phthalate	ND	U		1.0	0.13	1	12/18/08	12/30/08	KWG0813481	
Di-n-octyl Phthalate	ND	U		0.20	0.018	1	12/18/08	12/30/08	KWG0813481	
Benzo(b)fluoranthene	ND	U		0.20	0.017	1	12/18/08	12/30/08	KWG0813481	
Benzo(k)fluoranthene	ND	U		0.20	0.024	1	12/18/08	12/30/08	KWG0813481	
Benzo(a)pyrene	ND	U		0.20	0.031	1	12/18/08	12/30/08	KWG0813481	
Indeno(1,2,3-cd)pyrene	ND	U		0.20	0.021	1	12/18/08	12/30/08	KWG0813481	
Dibenz(a,h)anthracene	ND	U		0.20	0.017	1	12/18/08	12/30/08	KWG0813481	
Benzo(g,h,i)perylene	ND	U		0.20	0.019	1	12/18/08	12/30/08	KWG0813481	

Comments:

EC 2/4/09

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	66	21-119	12/30/08	Acceptable
Phenol-d6	71	31-121	12/30/08	Acceptable
Nitrobenzene-d5	81	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	76	25-109	12/30/08	Acceptable
2,4,6-Tribromophenol	77	30-131	12/30/08	Acceptable
Terphenyl-d14	98	20-140	12/30/08	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments:

ec 2/4/09

LDC #: 20212B2a

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/29/09

SDG #: K0812114

Page: 1 of 1

Laboratory: Columbia Analytical Services

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r^2 ≥ 0.990
IV.	Continuing calibration	A	
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	SW	LCS/D
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	FB = 2 RB = 1

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

* 1	PCM-DSRB-081212 water	11	KWG0813481-3	21		31	
2	PCM-FB-081212	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Notes: * = System performance check compound (SPCC) for RRF; ** = Calibration check compound (CCC) for %RSD.

COMPNDL

LDC #: 20212B2a
SDG #: pel cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 12/18/08 **Blank analysis date:** 12/30/08
Conc. units: ug/L Associated Samples: All

Compound	Blank ID	Sample Identification								
	KWG0813481-3			1		2				
A	0.40			0.28/0.60U		–				
XX	0.15			0.50/U		0.44/U				

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 20212B2a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: K

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		KWG0813481-1/2	HH	( )	( )	47 (30)	All + BLK	J/UJ/P
				( )	( )	( )		
				( )	( )	( )	— — —	—
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 202/2B2a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds identified in the field blanks?

Sample: 2 Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units (ug/L)
QQQ	0.077
LL	0.18
XX	0.44

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Polynuclear Aromatic Hydrocarbons

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Polynuclear Aromatic Hydrocarbons
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812106

Sample Identification

PCM-02DSW-081211
PCM-03DSW-081211
PCM-04DSW-081211
PCM-05DSW-081211
PCM-06DSW-081211
PCM-21DSW-081211
PCM-08DSW-081211
PCM-09DSW-081211
PCM-10DSW-081211
PCM-13DSW-081211
PCM-19DSW-081211
PCM-20DSW-081211
PCM-1DSW-081211

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per a modification of EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for Polynuclear Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polynuclear aromatic hydrocarbon contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0813459-3	12/17/08	Naphthalene	0.0036 ug/L	All samples in SDG K0812106

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
PCM-05DSW-081211	Naphthalene	0.017 ug/L	0.022U ug/L
PCM-13DSW-081211	Naphthalene	0.0083 ug/L	0.020U ug/L
PCM-19DSW-081211	Naphthalene	0.0089 ug/L	0.022U ug/L
PCM-20DSW-081211	Naphthalene	0.0069 ug/L	0.020U ug/L
PCM-1DSW-081211	Naphthalene	0.015 ug/L	0.020U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to method blank contamination problems, naphthalene results were qualified as not detected in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG K0812106

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG K0812106

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
K0812106	PCM-05DSW-081211	Naphthalene	0.022U ug/L	A
K0812106	PCM-13DSW-081211	Naphthalene	0.020U ug/L	A
K0812106	PCM-19DSW-081211	Naphthalene	0.022U ug/L	A
K0812106	PCM-20DSW-081211	Naphthalene	0.020U ug/L	A
K0812106	PCM-1DSW-081211	Naphthalene	0.020U ug/L	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-02DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.047**		0.022	0.0032	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0046**	J	0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.0064**	J	0.022	0.0047	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.022	0.0041	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.0079**	J	0.022	0.0054	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.022	0.0039	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.0087**	J	0.022	0.0047	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.0074**	J	0.022	0.0038	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0074**	J	0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.0046**	J	0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.0051**	J	0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	**0.0041**	J	0.022	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.022	0.0046	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.0047**	J	0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	**0.0039**	J	0.022	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.0054**	J	0.022	0.0031	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	63	39-122	12/31/08	Acceptable
Fluoranthene-d10	68	36-132	12/31/08	Acceptable
Terphenyl-d14	74	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-03DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.068**		0.021	0.0032	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0057**	J	0.021	0.0024	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.021	0.0036	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.0077**	J	0.021	0.0046	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.021	0.0040	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.010**	J	0.021	0.0053	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.021	0.0038	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.0070**	J	0.021	0.0046	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.0071**	J	0.021	0.0037	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0051**	J	0.021	0.0028	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U	0.021	0.0036	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.0025**	J	0.021	0.0024	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.021	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.021	0.0045	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U	0.021	0.0028	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.021	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U	0.021	0.0031	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	47	39-122	12/31/08	Acceptable
Fluoranthene-d10	52	36-132	12/31/08	Acceptable
Terphenyl-d14	55	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-04DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-003	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.055**		0.020	0.0030	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0068**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.011**	J	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Fluorene	**0.0067**	J	0.020	0.0038	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.016**	J	0.020	0.0050	1	12/17/08	12/31/08	KWG0813459	
Anthracene	**0.0050**	J	0.020	0.0036	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.023**		0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.022**		0.020	0.0035	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0093**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.0083**	J	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.010**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	**0.0029**	J	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	**0.0089**	J	0.020	0.0043	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.0073**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.0083**	J	0.020	0.0029	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	61	39-122	12/31/08	Acceptable
Fluoranthene-d10	67	36-132	12/31/08	Acceptable
Terphenyl-d14	65	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-05DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-004	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.017**	J 0.0224	0.022	0.0033	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0036**	J	0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	ND	U	0.022	0.0048	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.022	0.0041	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	ND	U	0.022	0.0054	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.022	0.0039	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.0059**	J	0.022	0.0048	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.0044**	J	0.022	0.0038	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0034**	J	0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U	0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	ND	U	0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.022	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.022	0.0047	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U	0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.022	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U	0.022	0.0032	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	52	39-122	12/31/08	Acceptable
Fluoranthene-d10	58	36-132	12/31/08	Acceptable
Terphenyl-d14	57	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-06DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-005	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.030**		0.020	0.0030	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0056**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.0060**	J	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.020	0.0038	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.015**	J	0.020	0.0050	1	12/17/08	12/31/08	KWG0813459	
Anthracene	**0.0050**	J	0.020	0.0036	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.015**	J	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.017**	J	0.020	0.0035	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0070**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.0062**	J	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.0054**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	**0.0057**	J	0.020	0.0043	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.0041**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.0047**	J	0.020	0.0029	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	49	39-122	12/31/08	Acceptable
Fluoranthene-d10	51	36-132	12/31/08	Acceptable
Terphenyl-d14	53	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-21DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-006	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.15**		0.024	0.0035	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.022**	J	0.024	0.0027	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	**0.020**	J	0.024	0.0040	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.053**		0.024	0.0052	1	12/17/08	12/31/08	KWG0813459	
Fluorene	**0.021**	J	0.024	0.0045	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.093**		0.024	0.0059	1	12/17/08	12/31/08	KWG0813459	
Anthracene	**0.032**		0.024	0.0042	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.13**		0.024	0.0052	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.15**		0.024	0.0041	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.041**		0.024	0.0031	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.070**		0.024	0.0040	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.053**		0.024	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	**0.019**	J	0.024	0.0030	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	**0.056**		0.024	0.0050	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.043**		0.024	0.0031	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	**0.0049**	J	0.024	0.0030	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.054**		0.024	0.0034	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	50	39-122	12/31/08	Acceptable
Fluoranthene-d10	53	36-132	12/31/08	Acceptable
Terphenyl-d14	56	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-08DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-007	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.028**		0.024	0.0036	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0053**	J	0.024	0.0028	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.024	0.0040	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.0065**	J	0.024	0.0052	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.024	0.0045	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.012**	J	0.024	0.0059	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.024	0.0043	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.012**	J	0.024	0.0052	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.012**	J	0.024	0.0042	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0057**	J	0.024	0.0031	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.0046**	J	0.024	0.0040	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.0042**	J	0.024	0.0028	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.024	0.0030	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.024	0.0051	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.0031**	J	0.024	0.0031	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.024	0.0030	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.0036**	J	0.024	0.0035	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	54	39-122	12/31/08	Acceptable
Fluoranthene-d10	57	36-132	12/31/08	Acceptable
Terphenyl-d14	60	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-09DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-008	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.092**		0.020	0.0030	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.011**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	**0.0091**	J	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.023**		0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Fluorene	**0.011**	J	0.020	0.0038	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.042**		0.020	0.0050	1	12/17/08	12/31/08	KWG0813459	
Anthracene	**0.011**	J	0.020	0.0036	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.052**		0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.056**		0.020	0.0035	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.018**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.020**		0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.019**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	**0.0066**	J	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	**0.019**	J	0.020	0.0043	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.015**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.018**	J	0.020	0.0029	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	54	39-122	12/31/08	Acceptable
Fluoranthene-d10	58	36-132	12/31/08	Acceptable
Terphenyl-d14	59	31-140	12/31/08	Acceptable

Comments:

ec 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-10DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-009	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.24**		0.021	0.0031	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.027**		0.021	0.0024	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	**0.027**		0.021	0.0036	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	**0.080**		0.021	0.0046	1	12/17/08	12/31/08	KWG0813459	
Fluorene	**0.028**		0.021	0.0040	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.11**		0.021	0.0052	1	12/17/08	12/31/08	KWG0813459	
Anthracene	**0.058**		0.021	0.0038	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.18**		0.021	0.0046	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.20**		0.021	0.0037	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.058**		0.021	0.0027	1	12/17/08	12/31/08	KWG0813459	
Chrysene	**0.11**		0.021	0.0036	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	**0.076**		0.021	0.0024	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	**0.026**		0.021	0.0026	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	**0.079**		0.021	0.0045	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	**0.059**		0.021	0.0027	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	**0.0066**	J	0.021	0.0026	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	**0.075**		0.021	0.0030	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	51	39-122	12/31/08	Acceptable
Fluoranthene-d10	59	36-132	12/31/08	Acceptable
Terphenyl-d14	61	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-13DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-010	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0083**	J 0.020 U	0.020	0.0030	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0036**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	ND	U	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.020	0.0038	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	ND	U	0.020	0.0050	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.020	0.0036	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	ND	U	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Pyrene	ND	U	0.020	0.0035	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0028**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	ND	U	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	56	39-122	12/31/08	Acceptable
Fluoranthene-d10	55	36-132	12/31/08	Acceptable
Terphenyl-d14	55	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-19DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-011	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0089**	J 0.022 UJ	0.022	0.0032	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0030**	J	0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.022	0.0036	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	ND	U	0.022	0.0047	1	12/17/08	12/31/08	KWG0813459	
Fluorene	**0.0041**	J	0.022	0.0040	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	ND	U	0.022	0.0053	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.022	0.0038	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	ND	U	0.022	0.0047	1	12/17/08	12/31/08	KWG0813459	
Pyrene	ND	U	0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	ND	U	0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U	0.022	0.0036	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	ND	U	0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.022	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.022	0.0046	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U	0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.022	0.0027	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U	0.022	0.0031	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	53	39-122	12/31/08	Acceptable
Fluoranthene-d10	56	36-132	12/31/08	Acceptable
Terphenyl-d14	58	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-20DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-012	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0069**	J	0.020 U 0.020	0.0030	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0026**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	ND	U	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.020	0.0038	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	**0.0057**	J	0.020	0.0050	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.020	0.0036	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.0044**	J	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Pyrene	ND	U	0.020	0.0035	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0031**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	ND	U	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	50	39-122	12/31/08	Acceptable
Fluoranthene-d10	52	36-132	12/31/08	Acceptable
Terphenyl-d14	56	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812106
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B617 T4	**Date Collected:**	12/11/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-1DSW-081211	**Units:**	ug/L
Lab Code:	K0812106-013	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.015**	J	0.020 0.020	0.0030	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0038**	J	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	ND	U	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U	0.020	0.0038	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	ND	U	0.020	0.0050	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U	0.020	0.0036	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	**0.0050**	J	0.020	0.0044	1	12/17/08	12/31/08	KWG0813459	
Pyrene	**0.0039**	J	0.020	0.0035	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	**0.0028**	J	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U	0.020	0.0034	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	ND	U	0.020	0.0023	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U	0.020	0.0043	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.0026	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U	0.020	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U	0.020	0.0029	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	55	39-122	12/31/08	Acceptable
Fluoranthene-d10	58	36-132	12/31/08	Acceptable
Terphenyl-d14	60	31-140	12/31/08	Acceptable

Comments:

EC 2/4/09

LDC #: 20212A2b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/29/09

SDG #: K0812106

Page: 1 of 1

Laboratory: Columbia Analytical Services

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 25
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS ID
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-02DSW-081211	11	PCM-19DSW-081211	21	KWG0813459-31	3	
2	PCM-03DSW-081211	12	PCM-20DSW-081211	22		32	
3	PCM-04DSW-081211	13	PCM-1DSW-081211	23		33	
4	PCM-05DSW-081211	14		24		34	
5	PCM-06DSW-081211	15		25		35	
6	PCM-21DSW-081211	16		26		36	
7	PCM-08DSW-081211	17		27		37	
8	PCM-09DSW-081211	18		28		38	
9	PCM-10DSW-081211	19		29		39	
10	PCM-13DSW-081211	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Notes: * = System performance check compound (SPCC) for RRF; ** = Calibration check compound (CCC) for %RSD.

LDC #: 20212A2b
SDG #: per coney

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 12/17/08 **Blank analysis date:** 12/31/08
Conc. units: ug/L Associated Samples: All

Compound	Blank ID	5X	Sample Identification							
	KWG08	3459-3	#4	10	11	12	13			
S	0.0036	0.0180	0.017 / 0.022U	0.0083 / 0.020U	0.0089 / 0.022U	0.0069 / 0.020U	0.015 / 0.020U			

Blank extraction date:_____ **Blank analysis date:**_____
Conc. units:_____ Associated Samples:_____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	February 3, 2009
Matrix:	Water
Parameters:	Polynuclear Aromatic Hydrocarbons
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DRB-081212

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per a modification of EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for Polynuclear Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polynuclear aromatic hydrocarbon contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0813459-3	12/17/08	Naphthalene	0.0036 ug/L	All samples in SDG K0812114

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
PCM-DRB-081212	Naphthalene	0.0092 ug/L	0.022U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to method blank contamination problems, the naphthalene result was qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample PCM-DRB-081212 was identified as a rinsate blank. No polynuclear aromatic hydrocarbon contaminants were found in this blank with the following exceptions:

Rinsate Blank ID	Compound	Concentration (ug/L)
PCM-DRB-081212	Naphthalene 2-Methylnaphthalene	0.0092 0.0038

NW Natural Gasco Site
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG K0812114

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
K0812114	PCM-DRB-081212	Naphthalene	0.022U ug/L	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-DRB-081212	**Units:**	ug/L
Lab Code:	K0812114-003	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0092**	J	0.022 U	0.022	0.0033	1	12/17/08	12/31/08	KWG0813459	
2-Methylnaphthalene	**0.0038**	J		0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Acenaphthylene	ND	U		0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Acenaphthene	ND	U		0.022	0.0048	1	12/17/08	12/31/08	KWG0813459	
Fluorene	ND	U		0.022	0.0042	1	12/17/08	12/31/08	KWG0813459	
Phenanthrene	ND	U		0.022	0.0055	1	12/17/08	12/31/08	KWG0813459	
Anthracene	ND	U		0.022	0.0040	1	12/17/08	12/31/08	KWG0813459	
Fluoranthene	ND	U		0.022	0.0048	1	12/17/08	12/31/08	KWG0813459	
Pyrene	ND	U		0.022	0.0039	1	12/17/08	12/31/08	KWG0813459	
Benz(a)anthracene	ND	U		0.022	0.0029	1	12/17/08	12/31/08	KWG0813459	
Chrysene	ND	U		0.022	0.0037	1	12/17/08	12/31/08	KWG0813459	
Benzo(b)fluoranthene	ND	U		0.022	0.0025	1	12/17/08	12/31/08	KWG0813459	
Benzo(k)fluoranthene	ND	U		0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Benzo(a)pyrene	ND	U		0.022	0.0047	1	12/17/08	12/31/08	KWG0813459	
Indeno(1,2,3-cd)pyrene	ND	U		0.022	0.0029	1	12/17/08	12/31/08	KWG0813459	
Dibenz(a,h)anthracene	ND	U		0.022	0.0028	1	12/17/08	12/31/08	KWG0813459	
Benzo(g,h,i)perylene	ND	U		0.022	0.0032	1	12/17/08	12/31/08	KWG0813459	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	58	39-122	12/31/08	Acceptable
Fluoranthene-d10	60	36-132	12/31/08	Acceptable
Terphenyl-d14	62	31-140	12/31/08	Acceptable

Comments:

RC 2/4/09

LDC #: 20212B2b

VALIDATION COMPLETENESS WORKSHEET

Level III

SDG #: K0812114

Laboratory: Columbia Analytical Services

Date: 1/29/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 25
V.	Blanks	SW A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS ID
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	SW	RB = 1

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: water

1	PCM-DRB-081212	11	KWG0813459/3	21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Notes:* = System performance check compound (SPCC) for RRF; ** = Calibration check compound (CCC) for %RSD.

LDC #: 20212B2b
SDG #: pl conay

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank analyzed for each matrix?
Y N N/A Was a method blank analyzed for each concentration preparation level?
Y N N/A Was a method blank associated with every sample?
Y N N/A Was the blank contaminated? If yes, please see qualification below.

Blank extraction date: 12/17/08 **Blank analysis date:** 12/31/08
Conc. units: ug/l Associated Samples: 1

Compound	Blank ID	Sample Identification								
	KW G08 13459-3	1								
S	0.0036			0.0092	0.0224					

Blank extraction date: _____ **Blank analysis date:** _____
Conc. units: _____ Associated Samples: _____

Compound	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Common contaminants such as the phthalates and TICs noted above that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 20212B2b
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target compounds identified in the field blanks?

Sample: RB Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units (ug/L)
S	0.0092
W	0.0038

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

Sample: _____ Field Blank / Trip Blank / Rinsate (circle one)

Compound	Concentration Units ( )

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Chlorinated Pesticides

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Chlorinated Pesticides
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081A for Chlorinated Pesticides.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of single and multicomponent compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
1/8/09	0108F002-006	DB-35MS	Hexachlorobenzene	15.26	KWG0813416-9	J (all detects) UJ (all non-detects)	P
			beta-BHC	16			
			Endrin	18			
			Endosulfan II	31			
			4,4'-DDD	27			
			Endrin aldehyde	37			
			Endosulfan sulfate	50			
			4,4'-DDT	37			
			Endrin ketone	43			
			Methoxychlor	50			
			Toxaphene	27			
			Oxychlordane	18			
			cis-Nonachlor	19			
			trans-Nonachlor	18			

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
1/8/09	CAL8130-ICV	DB-35MS	Toxaphene	40	KWG0813416-9	J (all detects) UJ (all non-detects)	A

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No chlorinated pesticide contaminants were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No chlorinated pesticide contaminants were found in this blank.

NW Natural Gasco Site
Chlorinated Pesticides - Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.012	0.00037	1	12/16/08	01/06/09	KWG0813416	
Hexachlorobenzene	ND	U	0.012	0.00035	1	12/16/08	01/06/09	KWG0813416	
beta-BHC	ND	U	0.012	0.00093	1	12/16/08	01/06/09	KWG0813416	
gamma-BHC (Lindane)	ND	U	0.012	0.00049	1	12/16/08	01/06/09	KWG0813416	
delta-BHC	ND	U	0.012	0.00064	1	12/16/08	01/06/09	KWG0813416	
Heptachlor	ND	U	0.012	0.00040	1	12/16/08	01/06/09	KWG0813416	
Aldrin	ND	U	0.012	0.00045	1	12/16/08	01/06/09	KWG0813416	
Heptachlor Epoxide	ND	U	0.012	0.00036	1	12/16/08	01/06/09	KWG0813416	
gamma-Chlordane†	ND	U	0.012	0.00036	1	12/16/08	01/06/09	KWG0813416	
Endosulfan I	ND	U	0.012	0.00049	1	12/16/08	01/06/09	KWG0813416	
alpha-Chlordane	ND	U	0.012	0.0045	1	12/16/08	01/06/09	KWG0813416	
Dieldrin	ND	U	0.012	0.00039	1	12/16/08	01/06/09	KWG0813416	
4,4'-DDE	ND	U	0.012	0.00040	1	12/16/08	01/06/09	KWG0813416	
Endrin	ND	U	0.012	0.00076	1	12/16/08	01/06/09	KWG0813416	
Endosulfan II	ND	U	0.012	0.00045	1	12/16/08	01/06/09	KWG0813416	
4,4'-DDD	ND	U	0.012	0.0017	1	12/16/08	01/06/09	KWG0813416	
Endrin Aldehyde	ND	U	0.012	0.00052	1	12/16/08	01/06/09	KWG0813416	
Endosulfan Sulfate	ND	U	0.012	0.00053	1	12/16/08	01/06/09	KWG0813416	
4,4'-DDT	ND	U	0.012	0.00065	1	12/16/08	01/06/09	KWG0813416	
Endrin Ketone	ND	U	0.012	0.00074	1	12/16/08	01/06/09	KWG0813416	
Methoxychlor	ND	U	0.012	0.0011	1	12/16/08	01/06/09	KWG0813416	
Toxaphene	ND	U	0.56	0.032	1	12/16/08	01/06/09	KWG0813416	
Oxychlordane	ND	U	0.012	0.0012	1	12/16/08	01/06/09	KWG0813416	
2,4'-DDE	ND	U	0.012	0.00056	1	12/16/08	01/06/09	KWG0813416	
cis-Nonachlor	ND	U	0.012	0.00067	1	12/16/08	01/06/09	KWG0813416	
2,4'-DDD	ND	U	0.012	0.00064	1	12/16/08	01/06/09	KWG0813416	
trans-Nonachlor	ND	U	0.012	0.0011	1	12/16/08	01/06/09	KWG0813416	
2,4'-DDT	ND	U	0.012	0.00066	1	12/16/08	01/06/09	KWG0813416	
Mirex	ND	U	0.012	0.00090	1	12/16/08	01/06/09	KWG0813416	
Hexachloroethane	ND	U	0.012	0.0014	1	12/16/08	01/06/09	KWG0813416	
Hexachlorobutadiene	ND	U	0.012	0.0022	1	12/16/08	01/06/09	KWG0813416	

Comments:

Ec 2/4/09

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	56	10-121	01/06/09	Acceptable
Decachlorobiphenyl	78	17-150	01/06/09	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

Ec 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.010	0.00033	1	12/16/08	01/06/09	KWG0813416	
Hexachlorobenzene	ND	U	0.010	0.00031	1	12/16/08	01/06/09	KWG0813416	
beta-BHC	ND	U	0.010	0.00083	1	12/16/08	01/06/09	KWG0813416	
gamma-BHC (Lindane)	ND	U	0.010	0.00044	1	12/16/08	01/06/09	KWG0813416	
delta-BHC	ND	U	0.010	0.00057	1	12/16/08	01/06/09	KWG0813416	
Heptachlor	ND	Ui	0.010	0.010	1	12/16/08	01/06/09	KWG0813416	
Aldrin	ND	U	0.010	0.00040	1	12/16/08	01/06/09	KWG0813416	
Heptachlor Epoxide	ND	U	0.010	0.00032	1	12/16/08	01/06/09	KWG0813416	
gamma-Chlordane†	ND	U	0.010	0.00032	1	12/16/08	01/06/09	KWG0813416	
Endosulfan I	ND	U	0.010	0.00044	1	12/16/08	01/06/09	KWG0813416	
alpha-Chlordane	ND	U	0.010	0.0040	1	12/16/08	01/06/09	KWG0813416	
Dieldrin	ND	U	0.010	0.00035	1	12/16/08	01/06/09	KWG0813416	
4,4'-DDE	ND	U	0.010	0.00036	1	12/16/08	01/06/09	KWG0813416	
Endrin	ND	U	0.010	0.00068	1	12/16/08	01/06/09	KWG0813416	
Endosulfan II	ND	U	0.010	0.00040	1	12/16/08	01/06/09	KWG0813416	
4,4'-DDD	ND	U	0.010	0.0015	1	12/16/08	01/06/09	KWG0813416	
Endrin Aldehyde	ND	U	0.010	0.00046	1	12/16/08	01/06/09	KWG0813416	
Endosulfan Sulfate	ND	U	0.010	0.00047	1	12/16/08	01/06/09	KWG0813416	
4,4'-DDT	ND	U	0.010	0.00058	1	12/16/08	01/06/09	KWG0813416	
Endrin Ketone	ND	U	0.010	0.00066	1	12/16/08	01/06/09	KWG0813416	
Methoxychlor	ND	U	0.010	0.00093	1	12/16/08	01/06/09	KWG0813416	
Toxaphene	ND	U	0.50	0.028	1	12/16/08	01/06/09	KWG0813416	
Oxychlordane	ND	U	0.010	0.0010	1	12/16/08	01/06/09	KWG0813416	
2,4'-DDE	ND	U	0.010	0.00050	1	12/16/08	01/06/09	KWG0813416	
cis-Nonachlor	ND	U	0.010	0.00060	1	12/16/08	01/06/09	KWG0813416	
2,4'-DDD	ND	U	0.010	0.00057	1	12/16/08	01/06/09	KWG0813416	
trans-Nonachlor	ND	U	0.010	0.00092	1	12/16/08	01/06/09	KWG0813416	
2,4'-DDT	ND	U	0.010	0.00059	1	12/16/08	01/06/09	KWG0813416	
Mirex	ND	U	0.010	0.00081	1	12/16/08	01/06/09	KWG0813416	
Hexachloroethane	ND	U	0.010	0.0012	1	12/16/08	01/06/09	KWG0813416	
Hexachlorobutadiene	ND	U	0.010	0.0019	1	12/16/08	01/06/09	KWG0813416	

Comments:

EC 2/4/09

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	61	10-121	01/06/09	Acceptable
Decachlorobiphenyl	76	17-150	01/06/09	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

EC 2/4/09

LDC #: 20212B3a

SDG #: K0812114

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/30/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	SW	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	client specified
VIII.	Laboratory control samples	A	LCS/D
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	RB = 1 FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

water

1	PCM-DSRB-081212	11	KWG0813416-9	21		31	
2	PCM-FB-081212	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 2021283a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: U

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___RPD
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
		CAS				( )		
	1/8/09	CAL8130-ICV	DB-35MS	U	40	( )	KWG0813416-9	J/UJ/A
						( )		
						( )		
	1/8/09	0108F002-006	DB-35MS	Hexachlorobenzene	15.26	( )		J/UJ/P
				B	16	( )		
				K	18	( )		
				L	31	( )		
				M	27	( )		
				R	37	( )		
				N	50	( )		
				O	37	( )		
				Q	43	( )		
				P	50	( )		
				U	27	( )		
				Oxychlordane	18	( )		
				cis-Nonachlor	19	( )		
				trans-Nonachlor	18	( )		
						( )		
						( )		
						( )		
						( )		

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Polychlorinated Biphenyls

LDC

LDC Report# 20212B3b

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Polychlorinated Biphenyls
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No polychlorinated biphenyl contaminants were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No polychlorinated biphenyl contaminants were found in this blank.

NW Natural Gasco Site
Polychlorinated Biphenyls - Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.23	0.011	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1221	ND	U	0.45	0.023	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1232	ND	U	0.23	0.026	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1242	ND	U	0.23	0.015	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1248	ND	U	0.23	0.0060	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1254	ND	U	0.23	0.0078	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1260	ND	U	0.23	0.0035	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1262	ND	U	0.23	0.0054	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1268	ND	U	0.23	0.0073	1	12/16/08	12/27/08	KWG0813415	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	74	17-140	12/27/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.20	0.0094	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1221	ND	U	0.40	0.020	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1232	ND	U	0.20	0.023	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1242	ND	U	0.20	0.013	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1248	ND	U	0.20	0.0054	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1254	ND	U	0.20	0.0070	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1260	ND	U	0.20	0.0031	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1262	ND	U	0.20	0.0048	1	12/16/08	12/27/08	KWG0813415	
Aroclor 1268	ND	U	0.20	0.0065	1	12/16/08	12/27/08	KWG0813415	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	17-140	12/27/08	Acceptable

Comments:

EC 2/4/09

LDC #: 20212B3b

SDG #: K0812114

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/29/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	A	LCS ID
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	ND	RB = 1 FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: water

1	PCM-DSRB-081212	11	KW G0813415-3	21		31	
2	PCM-FB-081212	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Metals

LDC

LDC Report# 20212A4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Iron
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812106

Sample Identification

PCM-02DSW-081211
PCM-03DSW-081211
PCM-04DSW-081211
PCM-05DSW-081211
PCM-06DSW-081211
PCM-21DSW-081211
PCM-08DSW-081211
PCM-09DSW-081211
PCM-10DSW-081211
PCM-13DSW-081211
PCM-19DSW-081211
PCM-20DSW-081211
PCM-1DSW-081211
PCM-02DSW-081211F
PCM-03DSW-081211F
PCM-04DSW-081211F
PCM-05DSW-081211F
PCM-06DSW-081211F
PCM-21DSW-081211F
PCM-08DSW-081211F
PCM-09DSW-081211F
PCM-10DSW-081211F
PCM-13DSW-081211F
PCM-19DSW-081211F
PCM-20DSW-081211F
PCM-02DSW-081211MS
PCM-02DSW-081211DUP

Sample IDs ending in "F" were analyzed for dissolved Iron

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Iron.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No iron was found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB1	Iron	7.0 ug/L	PCM-02DSW-081211 PCM-03DSW-081211 PCM-04DSW-081211 PCM-05DSW-081211 PCM-06DSW-081211 PCM-21DSW-081211 PCM-08DSW-081211 PCM-09DSW-081211 PCM-10DSW-081211 PCM-13DSW-081211 PCM-19DSW-081211 PCM-20DSW-081211 PCM-1DSW-081211 PCM-02DSW-081211F PCM-03DSW-081211F PCM-04DSW-081211F PCM-05DSW-081211F PCM-06DSW-081211F PCM-21DSW-081211F PCM-08DSW-081211F
ICB/CCB2	Iron	13.8 ug/L	PCM-09DSW-081211F PCM-10DSW-081211F PCM-13DSW-081211F PCM-19DSW-081211F PCM-20DSW-081211F

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
PCM-09DSW-081211F	Iron	51.5 ug/L	51.5U ug/L
PCM-10DSW-081211F	Iron	52.9 ug/L	52.9U ug/L
PCM-13DSW-081211F	Iron	44.9 ug/L	44.9U ug/L
PCM-19DSW-081211F	Iron	49.4 ug/L	49.4U ug/L
PCM-20DSW-081211F	Iron	66.6 ug/L	66.6U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to calibration blank contamination problems, iron results were qualified as not detected in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Iron - Data Qualification Summary - SDG K0812106

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Iron - Laboratory Blank Data Qualification Summary - SDG K0812106

SDG	Sample	Analyte	Modified Final Concentration	A or P
K0812106	PCM-09DSW-081211F	Iron	51.5U ug/L	A
K0812106	PCM-10DSW-081211F	Iron	52.9U ug/L	A
K0812106	PCM-13DSW-081211F	Iron	44.9U ug/L	A
K0812106	PCM-19DSW-081211F	Iron	49.4U ug/L	A
K0812106	PCM-20DSW-081211F	Iron	66.6U ug/L	A

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-02DSW-081211 **Lab Code:** K0812106-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	283		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-02DSW-081211 **Lab Code:** K0812106-001 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	47.5		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-03DSW-081211 **Lab Code:** K0812106-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	317		

% Solids: 0.0

Comments:

qc 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-03DSW-081211 **Lab Code:** K0812106-002 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	47.4		

% Solids: 0.0

Comments:

ec 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-04DSW-081211 **Lab Code:** K0812106-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	305		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-04DSW-081211 **Lab Code:** K0812106-003 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	45.5		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-05DSW-081211 **Lab Code:** K0812106-004

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	286		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-05DSW-081211 **Lab Code:** K0812106-004 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	48.8		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-06DSW-081211 **Lab Code:** K0812106-005

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	323		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-06DSW-081211 **Lab Code:** K0812106-005 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	47.2		

% Solids: 0.0

Comments:

Ec 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-21DSW-081211 **Lab Code:** K0812106-006

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	389		

% Solids: 0.0

Comments:

ec 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-21DSW-081211 **Lab Code:** K0812106-006 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	52.8		

% Solids: 0.0

Comments:

ec 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-08DSW-081211 **Lab Code:** K0812106-007

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	298		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-08DSW-081211 **Lab Code:** K0812106-007 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	45.9		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-09DSW-081211 **Lab Code:** K0812106-008

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	286		

% Solids: 0.0

Comments:

gc 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-09DSW-081211 **Lab Code:** K0812106-008 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	51.5		

~~515~~ 47

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-10DSW-081211 **Lab Code:** K0812106-009

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	452		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-10DSW-081211 **Lab Code:** K0812106-009 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	52.9		

52.9 U7

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-13DSW-081211 **Lab Code:** K0812106-010

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	270		

% Solids: 0.0

Comments:

ec 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-13DSW-081211 **Lab Code:** K0812106-010 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	44.9		

~~24.9~~ U7

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-19DSW-081211 **Lab Code:** K0812106-011

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	280		

% Solids: 0.0

Comments:

Ec 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-19DSW-081211 **Lab Code:** K0812106-011 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	49.4		

49.4 U7

% Solids: 0.0

Comments:

SC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-20DSW-081211 **Lab Code:** K0812106-012

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	336		

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-20DSW-081211 **Lab Code:** K0812106-012 DISS

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	66.6		

~~66.6~~ UJ

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812106
Project No.:	000029-02 B617 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-1DSW-081211 **Lab Code:** K0812106-013

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/05/09	291		

% Solids: 0.0

Comments:

EC 2/4/09

LDC #: 20212A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 1/29/09
SDG #: K0812106 Level III Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Iron (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	~~M~~ A	3MS/Dup
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	3 Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: A2

1	PCM-02DSW-081211	11	PCM-19DSW-081211	21	PCM-09DSW-081211F	11	
2	PCM-03DSW-081211	12	PCM-20DSW-081211	22	PCM-10DSW-081211F	12	
3	PCM-04DSW-081211	13	PCM-1DSW-081211	23	PCM-13DSW-081211F	13	
4	PCM-05DSW-081211	14	PCM-02DSW-081211F	24	PCM-19DSW-081211F	14	
5	PCM-06DSW-081211	15	PCM-03DSW-081211F	25	PCM-20DSW-081211F	15	
6	PCM-21DSW-081211	16	PCM-04DSW-081211F	26	~~PCM-1DSW-081211F~~	16	
7	PCM-08DSW-081211	17	PCM-05DSW-081211F	27	PCM-02DSW-081211MS	17	
8	PCM-09DSW-081211	18	PCM-06DSW-081211F	28	PCM-02DSW-081211DUP	18	
9	PCM-10DSW-081211	19	PCM-21DSW-081211F	29		19	
10	PCM-13DSW-081211	20	PCM-08DSW-081211F	30		20	

Notes: Samples appended with "F" were analyzed for dissolved iron

LDC #: 20212A4

SDG #: See cover

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1

Reviewer: MM

2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____

Sample Concentration units, unless otherwise noted: ug/L Associated Samples: Fe#1 = 1-20, Fe#2 = 21-25

					Sample Identification										
Analyte	Maximum PB* (mg/Kg)	Maximum PB* (ug/L)	Maximum ICB/CCB* (ug/L)	Blank Action Limit	21	22	23	24	25						
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr															Cr
Co															Co
Cu															Cu
Fe			7.0	35.0											Fe
~~Pb~~ Fe#2			13.8	69	51.5	52.9	44.9	49.4	66.6						Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

BLNKSMP.4S2

LDC Report# 20212B4

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Metals
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212
PCM-DRB-081212
PCM-DSRB-081212MS
PCM-DSRB-081212DUP

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B and 6020 for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Nickel, Selenium, Silver, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	0.025 ug/L	PCM-DSRB-081212 PCM-FB-081212
ICB/CCB	Chromium	0.022 ug/L	PCM-DSRB-081212 PCM-FB-081212
ICB/CCB	Iron	13.8 ug/L	All samples in SDG K0812114

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
PCM-DSRB-081212	Chromium	0.066 ug/L	0.200U ug/L
PCM-FB-081212	Chromium	0.043 ug/L	0.200U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

V. Matrix Spike Analysis

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Samples PCM-DSRB-081212 and PCM-DRB-081212 were identified as rinsate blanks. No metal contaminants were found in these blanks with the following exceptions:

Rinsate Blank ID	Analyte	Concentration (ug/L)
PCM-DSRB-081212	Aluminum Chromium Lead Zinc	0.9 0.066 0.004 1.8

Sample PCM-FB-081212 was identified as a field blank. No metal contaminants were found in this blank with the following exceptions:

Field Blank ID	Analyte	Concentration (ug/L)
PCM-FB-081212	Aluminum Chromium Lead Zinc	0.9 0.043 0.005 0.4

NW Natural Gasco Site
Metals - Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Metals - Laboratory Blank Data Qualification Summary - SDG K0812114

SDG	Sample	Analyte	Modified Final Concentration	A or P
K0812114	PCM-DSRB-081212	Chromium	0.200U ug/L	A
K0812114	PCM-FB-081212	Chromium	0.200U ug/L	A

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812114
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/12/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-DSRB-081212 **Lab Code:** K0812114-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6020	2.0	0.5	1.0	12/31/08	01/06/09	0.9	B	
Antimony	6020	0.050	0.005	1.0	12/31/08	01/06/09	0.005	U	
Arsenic	6020	0.50	0.20	1.0	12/31/08	01/06/09	0.20	U	
Cadmium	6020	0.020	0.005	1.0	12/31/08	01/06/09	0.005	U	
Chromium	6020	0.200	0.004	1.0	12/31/08	01/06/09	0.066	B	
Copper	6020	0.10	0.03	1.0	12/31/08	01/06/09	0.03	U	
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	2.0	U	
Lead	6020	0.020	0.003	1.0	12/31/08	01/06/09	0.004	B	
Nickel	6020	0.20	0.07	1.0	12/31/08	01/06/09	0.07	U	
Selenium	6020	1.0	0.4	1.0	12/31/08	01/06/09	0.4	U	
Silver	6020	0.020	0.005	1.0	12/31/08	01/06/09	0.005	U	
Zinc	6020	0.5	0.3	1.0	12/31/08	01/06/09	1.8		

0.200 U7

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812114
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/12/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-FB-081212 **Lab Code:** K0812114-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6020	2.0	0.5	1.0	12/31/08	01/06/09	0.9	B	
Antimony	6020	0.050	0.005	1.0	12/31/08	01/06/09	0.005	U	
Arsenic	6020	0.50	0.20	1.0	12/31/08	01/06/09	0.20	U	
Cadmium	6020	0.020	0.005	1.0	12/31/08	01/06/09	0.005	U	
Chromium	6020	0.200	0.004	1.0	12/31/08	01/06/09	0.043	B	0.200UJ
Copper	6020	0.10	0.03	1.0	12/31/08	01/06/09	0.03	U	
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	2.0	U	
Lead	6020	0.020	0.003	1.0	12/31/08	01/06/09	0.005	B	
Nickel	6020	0.20	0.07	1.0	12/31/08	01/06/09	0.07	U	
Selenium	6020	1.0	0.4	1.0	12/31/08	01/06/09	0.4	U	
Silver	6020	0.020	0.005	1.0	12/31/08	01/06/09	0.005	U	
Zinc	6020	0.5	0.3	1.0	12/31/08	01/06/09	0.4	B	

% Solids: 0.0

Comments:

EC 2/4/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812114
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/12/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	WATER	**Units:**	ug/L
		Basis:	N/A

Sample Name: PCM-DRB-081212 **Lab Code:** K0812114-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Iron	6010B	20.0	2.0	1.0	01/02/09	01/06/09	2.0	U	

% Solids: 0.0

Comments:

LDC #: 20212B4

SDG #: K0812114

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/30/09

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6010B/6020)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	MS/Dup
VI.	Duplicate Sample Analysis	A	Pb, Cr <5xRL.
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not reviewed
IX.	Furnace Atomic Absorption QC	N	Not utilized
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	SW	RB = 1, 3*, FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND* = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-DSRB-081212	11		21		11	
2	PCM-FB-081212	12		22		12	
3	PCM-DRB-081212	13		23		13	
4	PCM-DSRB-081212MS	14		24		14	
5	PCM-DSRB-081212DUP	15		25		15	
6	PB	16		26		16	
7		17		27		17	
8		18		28		18	
9		19		29		19	
10		20		30		20	

Notes:

LDC #: 20717B4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: W
2nd reviewer: M

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1, 2	Air	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
3	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
m#1,3	Air	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-,

Comments: Mercury by CVAA if performed

LDC #: 20212B4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1
Reviewer: MM
2nd Reviewer: K

METHOD: Trace Metals (EPA SW 846 Method 6010/7000) Soil preparation factor applied: _____
Sample Concentration units, unless otherwise noted: ug/L Associated Samples: Cr = 1, 2 ~~Sect~~ Fe = All

					Sample Identification										
Analyte	Maximum PB[a] (mg/Kg)	Maximum PB[a] (ug/L)	Maximum ICB/CCB[a] (ug/L)	Blank Action Limit	1		2								
Al															Al
Sb															Sb
As															As
Ba															Ba
Be															Be
Cd															Cd
Ca															Ca
Cr		0.025	0.022	0.125	0.066/0.200		0.043/0.200								Cr
Co															Co
Cu															Cu
Fe			13.8	79											Fe
Pb															Pb
Mg															Mg
Mn															Mn
Hg															Hg
Ni															Ni
K															K
Se															Se
Ag															Ag
Na															Na
Tl															Tl
V															V
Zn															Zn
B															B
Mo															Mo
Sr															Sr

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

BLNKSMP.4S2

LDC #: 20212B4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Field Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

~~Y~~ N N/A Were field blanks identified in this SDG?
Y N N/A Were target analytes detected in the field blanks?

Sample: 1 Field Blank / Trip Blank / Rinsate / Other RB (circle one)

Analyte	Concentration Units ( ) ug/L
Al	0.9
Cr	0.066
Pb	0.004
Zn	1.8

Sample: 2 Field Blank / Trip Blank / Rinsate / Other FB (circle one)

Analyte	Concentration Units ( ) ug/L
Al	0.9
Cr	0.043
Pb	0.005
Zn	0.4

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Herbicides

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Herbicides
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8151A for Herbicides.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No herbicide contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No herbicide contaminants were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No herbicide contaminants were found in this blank.

NW Natural Gasco Site
Herbicides - Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Herbicides - Laboratory Blank Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	Ui	0.44	0.44	1	12/17/08	01/06/09	KWG0813441	
Dicamba	ND	U	0.22	0.093	1	12/17/08	01/06/09	KWG0813441	
MCPP	ND	U	110	6.9	1	12/17/08	01/06/09	KWG0813441	
MCPA	ND	U	110	9.3	1	12/17/08	01/06/09	KWG0813441	
Dichlorprop	ND	U	0.44	0.18	1	12/17/08	01/06/09	KWG0813441	
2,4-D	ND	U	0.44	0.037	1	12/17/08	01/06/09	KWG0813441	
2,4,5-TP (Silvex)	ND	U	0.22	0.046	1	12/17/08	01/06/09	KWG0813441	
2,4,5-T	ND	U	0.22	0.046	1	12/17/08	01/06/09	KWG0813441	
2,4-DB	ND	Ui	0.44	0.44	1	12/17/08	01/06/09	KWG0813441	
Dinoseb	ND	U	0.22	0.049	1	12/17/08	01/06/09	KWG0813441	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	70	10-132	01/06/09	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	Ui	0.41	0.41	1	12/17/08	01/06/09	KWG0813441	
Dicamba	ND	U	0.21	0.087	1	12/17/08	01/06/09	KWG0813441	
MCPP	ND	U	110	6.5	1	12/17/08	01/06/09	KWG0813441	
MCPA	ND	U	110	8.7	1	12/17/08	01/06/09	KWG0813441	
Dichlorprop	ND	U	0.41	0.17	1	12/17/08	01/06/09	KWG0813441	
2,4-D	ND	U	0.41	0.035	1	12/17/08	01/06/09	KWG0813441	
2,4,5-TP (Silvex)	ND	U	0.21	0.043	1	12/17/08	01/06/09	KWG0813441	
2,4,5-T	ND	U	0.21	0.043	1	12/17/08	01/06/09	KWG0813441	
2,4-DB	ND	Ui	0.41	0.41	1	12/17/08	01/06/09	KWG0813441	
Dinoseb	ND	U	0.21	0.046	1	12/17/08	01/06/09	KWG0813441	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	63	10-132	01/06/09	Acceptable

Comments:

EC 2/4/09

LDC #: 20212B5

SDG #: K0812114

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/29/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
IIa.	Initial calibration	A	% RSD, $r^2 \geq 0.990$
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS ID
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	RB = 1 FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: water

1	PCM-DSRB-081212	11	KWG0813441-3	21		31	
2	PCM-FB-081212	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Wet Chemistry

LDC

Revision 1

LDC Report# 20212A6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: NW Natural Gasco Site

Collection Date: December 11, 2008

LDC Report Date: February 11, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: EPA Level III

Laboratory: Columbia Analytical Services, Inc.

Sample Delivery Group (SDG): K0812106

Sample Identification

PCM-02DSW-081211
PCM-03DSW-081211
PCM-04DSW-081211
PCM-05DSW-081211
PCM-06DSW-081211
PCM-21DSW-081211
PCM-08DSW-081211
PCM-09DSW-081211
PCM-10DSW-081211
PCM-13DSW-081211
PCM-19DSW-081211
PCM-20DSW-081211
PCM-1DSW-081211
PCM-02DSW-081211MS
PCM-02DSW-081211DUP
PCM-03DSW-081211MS
PCM-03DSW-081211DUP
PCM-06DSW-081211DUP

*Indicates change as the result of report review.
V:\LOGIN\ANCHOR\GASCO\20212A6_RV1.DOC

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per Standard Method 4500-CN-E for Total Cyanide and Amenable to Chlorination Cyanide, Standard Method 4500-S2-D for Sulfide, Standard Method 5310C for Dissolved Organic Carbon and Total organic carbon, ASTM Method D2540D for Total Suspended Solids, and ASTM Method D4282-02 for Free Cyanide.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

Revision 1

*I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PCM-04DSW-081211 PCM-10DSW-081211	Amenable to chlorination cyanide	18 days	14 days	J (all detects) UJ (all non-detects)	P
PCM-02DSW-081211 PCM-03DSW-081211 PCM-04DSW-081211 PCM-05DSW-081211 PCM-06DSW-081211 PCM-21DSW-081211 PCM-08DSW-081211 PCM-09DSW-081211 PCM-10DSW-081211 PCM-13DSW-081211 PCM-19DSW-081211 PCM-1DSW-081211 PCM-06DSW-081211DUP	Total suspended solids	8 days	7 days	J (all detects) UJ (all non-detects)	P
PCM-20DSW-081211	Total suspended solids	11 days	7 days	J (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

*Indicates change as the result of report review.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Sulfide analysis was requested for sample PCM-20DSW-081211 on the chain-of-custody but was not performed by the laboratory. The laboratory indicated that a preserved sample bottle was not provided.

Due to analysis holding time problems, amenable to chlorination cyanide results were qualified as estimated in two samples and total suspended solid results were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

Revision 1

***NW Natural Gasco Site**

Wet Chemistry - Data Qualification Summary - SDG K0812106

SDG	Sample	Analyte	Flag	A or P	Reason
K0812106	PCM-04DSW-081211 PCM-10DSW-081211	Amenable to chlorination cyanide	J (all detects) UJ (all non-detects)	P	Technical holding times
*K0812106	**PCM-02DSW-081211** **PCM-03DSW-081211** **PCM-04DSW-081211** **PCM-05DSW-081211** **PCM-06DSW-081211** **PCM-21DSW-081211** **PCM-08DSW-081211** **PCM-09DSW-081211** **PCM-10DSW-081211** **PCM-13DSW-081211** **PCM-19DSW-081211** **PCM-1DSW-081211** **PCM-20DSW-081211**	Total suspended solids	J (all detects) UJ (all non-detects)	P	Technical holding times

NW Natural Gasco Site

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG K0812106

No Sample Data Qualified in this SDG

*Indicates change as the result of report review.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Cyanide, Free

Prep Method : Method
Analysis Method : ASTM D4282-02
Test Notes :

Units : ug/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-03DSW-081211	K0812106-002	10	3	1	12/13/2008	12/13/08	4	J
PCM-04DSW-081211	K0812106-003	10	3	1	12/13/2008	12/13/08	6	J
PCM-05DSW-081211	K0812106-004	10	3	1	12/13/2008	12/13/08	5	J
PCM-06DSW-081211	K0812106-005	10	3	1	12/13/2008	12/13/08	5	J
PCM-21DSW-081211	K0812106-006	10	3	1	12/13/2008	12/13/08	5	J
PCM-08DSW-081211	K0812106-007	10	3	1	12/13/2008	12/13/08	6	J
PCM-09DSW-081211	K0812106-008	10	3	1	12/13/2008	12/13/08	4	J
PCM-10DSW-081211	K0812106-009	10	3	1	12/13/2008	12/13/08	7	J
PCM-13DSW-081211	K0812106-010	10	3	1	12/13/2008	12/13/08	6	J
PCM-19DSW-081211	K0812106-011	10	3	1	12/13/2008	12/13/08	5	J
PCM-20DSW-081211	K0812106-012	10	3	1	12/13/2008	12/13/08	5	J
PCM-1DSW-081211	K0812106-013	10	3	1	12/13/2008	12/13/08	8	J
Method Blank	K0812106-MB	10	3	1	12/13/2008	12/13/08	ND	

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Cyanide, Amenable to Chlorination

Prep Method : 4500-CN G
Analysis Method : SM 4500-CN- E
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-03DSW-081211	K0812106-002	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-04DSW-081211	K0812106-003	0.01	0.002	1	12/20/2008	12/29/08	0.003	J1 J
PCM-05DSW-081211	K0812106-004	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-06DSW-081211	K0812106-005	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-21DSW-081211	K0812106-006	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-08DSW-081211	K0812106-007	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-09DSW-081211	K0812106-008	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-10DSW-081211	K0812106-009	0.01	0.002	1	12/20/2008	12/29/08	ND	UJ1
PCM-13DSW-081211	K0812106-010	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-19DSW-081211	K0812106-011	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-20DSW-081211	K0812106-012	0.01	0.002	1	12/20/2008	12/29/08	ND	
PCM-1DSW-081211	K0812106-013	0.01	0.002	1	12/20/2008	12/29/08	ND	
Method Blank	K0812106-MB	0.01	0.002	1	12/20/2008	12/29/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

1/12/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Cyanide, Total

Prep Method : SM 4500-CN-C
Analysis Method : SM 4500-CN- E
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-03DSW-081211	K0812106-002	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-04DSW-081211	K0812106-003	0.01	0.002	1	12/16/2008	12/18/08	0.003	J
PCM-05DSW-081211	K0812106-004	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-06DSW-081211	K0812106-005	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-21DSW-081211	K0812106-006	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-08DSW-081211	K0812106-007	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-09DSW-081211	K0812106-008	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-10DSW-081211	K0812106-009	0.01	0.002	1	12/16/2008	12/18/08	0.004	J
PCM-13DSW-081211	K0812106-010	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-19DSW-081211	K0812106-011	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-20DSW-081211	K0812106-012	0.01	0.002	1	12/16/2008	12/18/08	ND	
PCM-1DSW-081211	K0812106-013	0.01	0.002	1	12/16/2008	12/18/08	ND	
Method Blank	K0812106-MB	0.01	0.002	1	12/16/2008	12/18/08	ND	
Method Blank	K0812106-MB	0.01	0.002	1	12/16/2008	12/18/08	ND	
Method Blank	K0812106-MB	0.01	0.002	1	12/16/2008	12/18/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Total Sulfide

Prep Method : Method
Analysis Method : SM 4500-S2- D
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-02DSW-081211	K0812106-001	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-03DSW-081211	K0812106-002	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-04DSW-081211	K0812106-003	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-05DSW-081211	K0812106-004	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-06DSW-081211	K0812106-005	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-21DSW-081211	K0812106-006	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-08DSW-081211	K0812106-007	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-09DSW-081211	K0812106-008	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-10DSW-081211	K0812106-009	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-13DSW-081211	K0812106-010	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-19DSW-081211	K0812106-011	0.05	0.004	1	12/16/2008	12/16/08	ND	
PCM-1DSW-081211	K0812106-013	0.05	0.004	1	12/16/2008	12/16/08	ND	
Method Blank	K0812106-MB	0.05	0.004	1	12/16/2008	12/16/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Carbon, Dissolved Organic (DOC)

Analysis Method : SM 5310 C
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
PCM-02DSW-081211	K0812106-001	0.5	0.07	1	12/17/08	1.6	
PCM-03DSW-081211	K0812106-002	0.5	0.07	1	12/17/08	1.3	
PCM-04DSW-081211	K0812106-003	0.5	0.07	1	12/17/08	1.9	
PCM-05DSW-081211	K0812106-004	0.5	0.07	1	12/17/08	1.4	
PCM-06DSW-081211	K0812106-005	0.5	0.07	1	12/17/08	1.2	
PCM-21DSW-081211	K0812106-006	0.5	0.07	1	12/17/08	1.6	
PCM-08DSW-081211	K0812106-007	0.5	0.07	1	12/17/08	1.6	
PCM-09DSW-081211	K0812106-008	0.5	0.07	1	12/17/08	1.4	
PCM-10DSW-081211	K0812106-009	0.5	0.07	1	12/17/08	1.4	
PCM-13DSW-081211	K0812106-010	0.5	0.07	1	12/17/08	1.4	
PCM-19DSW-081211	K0812106-011	0.5	0.07	1	12/17/08	1.5	
PCM-20DSW-081211	K0812106-012	0.5	0.07	1	12/17/08	1.3	
Method Blank	K0812106-MB	0.5	0.07	1	12/17/08	ND	
Method Blank	K0812106-MB	0.5	0.07	1	12/17/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Carbon, Total Organic

Analysis Method : SM 5310 C
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
PCM-02DSW-081211	K0812106-001	0.5	0.07	1	12/17/08	1.9	
PCM-03DSW-081211	K0812106-002	0.5	0.07	1	12/17/08	1.6	
PCM-04DSW-081211	K0812106-003	0.5	0.07	1	12/17/08	2.1	
PCM-05DSW-081211	K0812106-004	0.5	0.07	1	12/17/08	1.6	
PCM-06DSW-081211	K0812106-005	0.5	0.07	1	12/17/08	1.6	
PCM-21DSW-081211	K0812106-006	0.5	0.07	1	12/17/08	2.0	
PCM-08DSW-081211	K0812106-007	0.5	0.07	1	12/17/08	2.1	
PCM-09DSW-081211	K0812106-008	0.5	0.07	1	12/17/08	2.0	
PCM-10DSW-081211	K0812106-009	0.5	0.07	1	12/17/08	1.5	
PCM-13DSW-081211	K0812106-010	0.5	0.07	1	12/17/08	1.7	
PCM-19DSW-081211	K0812106-011	0.5	0.07	1	12/17/08	1.9	
PCM-20DSW-081211	K0812106-012	0.5	0.07	1	12/17/08	1.7	
PCM-1DSW-081211	K0812106-013	0.5	0.07	1	12/17/08	1.6	
Method Blank	K0812106-MB	0.5	0.07	1	12/17/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B617 T4
Sample Matrix : WATER

Service Request : K0812106
Date Collected : 12/11/08
Date Received : 12/12/08

Solids, Total Suspended (TSS)

Analysis Method : SM 2540 D
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes
PCM-02DSW-081211	K0812106-001	5	5	1	12/19/08	5	J
PCM-03DSW-081211	K0812106-002	5	5	1	12/19/08	8	
PCM-04DSW-081211	K0812106-003	5	5	1	12/19/08	6	
PCM-05DSW-081211	K0812106-004	5	5	1	12/19/08	6	
PCM-06DSW-081211	K0812106-005	5	5	1	12/19/08	7	
PCM-21DSW-081211	K0812106-006	5	5	1	12/19/08	10	
PCM-08DSW-081211	K0812106-007	5	5	1	12/19/08	7	
PCM-09DSW-081211	K0812106-008	5	5	1	12/19/08	6	
PCM-10DSW-081211	K0812106-009	5	5	1	12/19/08	9	
PCM-13DSW-081211	K0812106-010	5	5	1	12/19/08	6	
PCM-19DSW-081211	K0812106-011	5	5	1	12/19/08	ND	UJ
PCM-20DSW-081211	K0812106-012	5	5	1	12/22/08	11	J
PCM-1DSW-081211	K0812106-013	5	5	1	12/19/08	ND	UJ
Method Blank	K0812106-MB	5	5	1	12/19/08	ND	
Method Blank	K0812106-MB	5	5	1	12/22/08	ND	

SM Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998.

R 02/2009

EC 2/4/09

Stella Cuenco

From: Lynda Huckestein [lhuckestein@caslab.com]
Sent: Sunday, February 01, 2009 6:37 PM
To: Stella Cuenco
Cc: Joy Dunay
Subject: RE: Anchor Gasco Cyanide Treatment Study 20212

Hi Stella, it looks like we did not receive a sample bottle preserved for sulfide analysis for this particular sample.
Lynda

From: Stella Cuenco [mailto:scuenco@lab-data.com]
Sent: Fri 1/30/2009 9:50 AM
To: Lynda Huckestein
Cc: Joy Dunay
Subject: Anchor Gasco Cyanide Treatment Study 20212

Hi Lynda,

For K0812106, sulfide was requested on the COC for sample PCM-20DSW-081211 (K0812106-012), but it was not reported. Please clarify.

Thanks!

Stella Cuenco
Senior Chemist/Project Manager
Laboratory Data Consultants, Inc.
7750 El Camino Real, Ste. 2L
Carlsbad, CA 92009
(760) 634-0437
LDC hours: M-Th 7am-5pm F 7am-2pm
My hours: M-Th 730am-4pm F 730am-2pm

LDC #: 20212A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 1/30/09
SDG #: K0812106 Level III Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Total Cyanide (SM4500-CN-E), Free Cyanide (ASTM D4282-02), Amenable to Chlorination Cyanide (SM 4500-CN-E), Sulfide (SM4500-S2-D), DOC (SM5310C), TOC (SM5310C), TSS (ASTM D2540D)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 12/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3MS/Dup
V	Duplicates	A	TSS ~ 5x RL, Sulfide ~ RL
VI.	Laboratory control samples	A	LCS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All

1	PCM-02DSW-081211	11	PCM-19DSW-081211	21		31	
2	PCM-03DSW-081211	12	PCM-20DSW-081211	22		32	
3	PCM-04DSW-081211	13	PCM-1DSW-081211	23		33	
4	PCM-05DSW-081211	14	PCM-02DSW-081211MS	24		34	
5	PCM-06DSW-081211	15	PCM-02DSW-081211DUP	25		35	
6	PCM-21DSW-081211	16	PCM-03DSW-081211MS	26		36	
7	PCM-08DSW-081211	17	PCM-03DSW-081211DUP	27		37	
8	PCM-09DSW-081211	18	PCM-06DSW-081211DUP	28		38	
9	PCM-10DSW-081211	19	MB	29		39	
10	PCM-13DSW-081211	20		30		40	

Notes:

LDC #: 20212A1
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MM
2nd reviewer: K

All circled methods are applicable to each sample.

Sample ID	Parameter				
2-13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN NH_3 TKN TOC CR^{6+}	free CN		chloride CN	
1-13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}		TSS		
1-11, 13	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				S
1-12	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				DOC
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
16, 17	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN NH_3 TKN TOC CR^{6+}	free CN			
18	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}		TSS		
14, 15	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}				

Comments:

LDC #: 20212A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: WH
2nd reviewer: K

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		SM 4500-CN-E		ASTM D5907-00			
Parameters:		Amenable CN		TSS			
Technical holding time:		14 days		7 days			
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
3,9 ~~2,13~~	12/11/08	12/29/08	(18 days)				J/UJ/P
1-11, 13, 18	12/11/08			12/19/08	(8 days)		J/UJ/P
12	↓			12/22/08	(11 days)		↓

LDC Report# 20212B6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Wet Chemistry
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-FB-081212
PCM-DRB-081212

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per Standard Method 4500-CN-E for Total Cyanide and Amenable to Chlorination Cyanide, and ASTM Method D4282-02 for Free Cyanide.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PCM-FB-081212 PCM-DRB-081212	Amenable to chlorination cyanide	14 days	17 days	J (all detects) UJ (all non-detects)	P
	Total cyanide	14 days	17 days	J (all detects) UJ (all non-detects)	

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to analysis holding time problems, amenable to chlorination cyanide and total cyanide results were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample PCM-DRB-081212 was identified as a rinsate blank. No contaminant concentrations were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No contaminant concentrations were found in this blank.

NW Natural Gasco Site
Wet Chemistry - Data Qualification Summary - SDG K0812114

SDG	Sample	Analyte	Flag	A or P	Reason
K0812114	PCM-FB-081212 PCM-DRB-081212	Amenable to chlorination cyanide Total cyanide	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Technical holding times

NW Natural Gasco Site
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : WATER

Service Request : K0812114
Date Collected : 12/12/08
Date Received : 12/12/08

Cyanide, Total

Prep Method : SM 4500-CN-C
Analysis Method : SM 4500-CN- E
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-FB-081212	K0812114-002	0.01	0.002	1	12/24/2008	12/29/08	ND	UJ 1
PCM-DRB-081212	K0812114-003	0.01	0.002	1	12/24/2008	12/29/08	ND	UJ 1
Method Blank	K0812114-MB	0.01	0.002	1	12/24/2008	12/29/08	ND	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : WATER

Service Request : K0812114
Date Collected : 12/12/08
Date Received : 12/12/08

Cyanide, Free

Prep Method : Method
Analysis Method : ASTM D4282-02
Test Notes :

Units : ug/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-FB-081212	K0812114-002	10	3	1	12/13/2008	12/13/08	ND	
PCM-DRB-081212	K0812114-003	10	3	1	12/13/2008	12/13/08	ND	
Method Blank	K0812114-MB	10	3	1	12/13/2008	12/13/08	ND	

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : WATER

Service Request : K0812114
Date Collected : 12/12/08
Date Received : 12/12/08

Cyanide, Amenable to Chlorination

Prep Method : SM 4500-CN G
Analysis Method : SM 4500-CN- E
Test Notes :

Units : mg/L
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-FB-081212	K0812114-002	0.01	0.002	1	12/24/2008	12/29/08	ND	UJ 1
PCM-DRB-081212	K0812114-003	0.01	0.002	1	12/24/2008	12/29/08	ND	↓
Method Blank	K0812114-MB	0.01	0.002	1	12/24/2008	12/29/08	ND	

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Ec 1/4/09

LDC #: 20212B6

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/30/09

SDG #: K0812114

Page: 1 of 1

Laboratory: Columbia Analytical Services

Reviewer:

2nd Reviewer:

METHOD: Total Cyanide (SM4500-CN-E), Free Cyanide (ASTM D4282-02), Amenable to Chlorinated Cyanide (SM 4500-CN-E)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 12/12/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	client specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	MB	FB=1, RB=2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-FB-081212	11	MB	21		31	
2	PCM-DRB-081212	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20212B6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: A

All circled methods are applicable to each sample.

Sample ID	Parameter				
1,2	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}	Free CN	Amenable CN		
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN$^-$ NH_3 TKN TOC CR^{6+}				

Comments:

LDC #: 20212B6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: WH
2nd reviewer: K

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	SM4500-CN-E		SM4500-CN-E			
Parameters:	Total CN		Amenable CN			
Technical holding time:	14 days		14 days			

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1, 2	12/12/08	12/29/08	(17 days)				J/UJ/P
	↓						
1, 2				12/29/08	(17 days)		J/UJ/P

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Butyltin

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Butyltins
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per Krone Method for Butyltins.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and the confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of continuing standard mixtures were within the 25.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No butyltin contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No butyltin contaminants were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No butyltin contaminants were found in this blank.

NW Natural Gasco Site
Butyltins - Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Butyltins - Laboratory Blank Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.038	1	12/16/08	12/30/08	KWG0813410	
Tri-n-butyltin	ND	U	0.050	0.012	1	12/16/08	12/30/08	KWG0813410	
Di-n-butyltin	ND	U	0.050	0.0073	1	12/16/08	12/30/08	KWG0813410	
n-Butyltin	ND	U	0.050	0.029	1	12/16/08	12/30/08	KWG0813410	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	87	18-155	12/30/08	Acceptable

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	EPA 3520C	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	0.050	0.038	1	12/16/08	12/30/08	KWG0813410	
Tri-n-butyltin	ND	U	0.050	0.012	1	12/16/08	12/30/08	KWG0813410	
Di-n-butyltin	ND	U	0.050	0.0073	1	12/16/08	12/30/08	KWG0813410	
n-Butyltin	ND	U	0.050	0.029	1	12/16/08	12/30/08	KWG0813410	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	83	18-155	12/30/08	Acceptable

Comments:

EC 2/4/09

LDC #: 20212B19 **VALIDATION COMPLETENESS WORKSHEET** Date: 1/29/09
SDG #: K0812114 Level III Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Butyltins (Krone Method)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
IIa.	Initial calibration	A	% RSD ≤ 20
IIb.	Calibration verification/ICV	A	ICV/CCV ≤ 25
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS/D
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	RB = 1 FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: water

1	PCM-DSRB-081212	11	KWG0813410-2B			31	
2	PCM-FB-081212	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

NW Natural Gasco Site
Data Validation Reports
LDC# 20212

Phenols

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	January 30, 2009
Matrix:	Water
Parameters:	Phenols
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812114

Sample Identification

PCM-DSRB-081212
PCM-FB-081212
PCM-DSRB-081212MS
PCM-DSRB-081212MSD

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8151M for Phenols.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
1/2/09	0102F036	RTX-1701	2,3,4,5-Tetrachlorophenol 2,3,5,6-Tetrachlorophenol Pentachlorophenol	21 15.26 16	All samples in SDG K0812114	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No phenol contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/(Matrix Spike) Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to calibration %D problems, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No phenol contaminants were found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No phenol contaminants were found in this blank.

NW Natural Gasco Site
Phenols - Data Qualification Summary - SDG K0812114

SDG	Sample	Compound	Flag	A or P	Reason
K0812114	PCM-DSRB-081212 PCM-FB-081212	2,3,4,5-Tetrachlorophenol 2,3,5,6-Tetrachlorophenol Pentachlorophenol	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NW Natural Gasco Site
Phenols - Laboratory Blank Data Qualification Summary - SDG K0812114

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-DSRB-081212	**Units:**	ug/L
Lab Code:	K0812114-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	0.50	0.15	1	12/18/08	01/03/09	KWG0813486	
2,3,4,5-Tetrachlorophenol	ND	U	0.50	0.22	1	12/18/08	01/03/09	KWG0813486	UJ 5
2,3,5,6-Tetrachlorophenol†	ND	U	0.50	0.076	1	12/18/08	01/03/09	KWG0813486	
Pentachlorophenol	ND	U	0.50	0.080	1	12/18/08	01/03/09	KWG0813486	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	84	22-117	01/03/09	Acceptable

† **Analyte Comments**

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments:

EC 2/4/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812114
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/12/2008
Sample Matrix:	Water	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-FB-081212	**Units:**	ug/L
Lab Code:	K0812114-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	0.50	0.15	1	12/18/08	01/03/09	KWG0813486	
2,3,4,5-Tetrachlorophenol	ND	U	0.50	0.22	1	12/18/08	01/03/09	KWG0813486	UJ 5
2,3,5,6-Tetrachlorophenol†	ND	U	0.50	0.076	1	12/18/08	01/03/09	KWG0813486	↓
Pentachlorophenol	ND	U	0.50	0.080	1	12/18/08	01/03/09	KWG0813486	↓

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	79	22-117	01/03/09	Acceptable

† Analyte Comments

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments:

EC 2/4/09

LDC #: 20212B33 **VALIDATION COMPLETENESS WORKSHEET** Date: 1/30/09
SDG #: K0812114 Level III Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Phenols (EPA SW 846 Method 8151M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/12/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	SW	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	A	
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	RB = 1 FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

water

1	PCM-DSRB-081212	11	KN G0813486-4	21		31	
2	PCM-FB-081212	12		22		32	
3	PCM-DSRB-081212MS	13		23		33	
4	PCM-DSRB-081212MSD	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20212B33
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: P

METHOD: ✓ GC ___ HPLC

2nd Reviewer: K

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___RPD
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	1/2/09	0102F036	RTX-1701	2,3,4,5-Tetrachlorophenol	21	( )	All + BLK	J/UJ/A
				2,3,5,6-Tetrachlorophenol	15.26	( )	↓	↓
				Pentachlorophenol	16	( )	↓	↓
						( )		
						( )		
						( )		
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LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Anchor Environmental, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101-2226
ATTN: Ms. Joy Dunay

February 20, 2009

SUBJECT: NW Natural Gasco Site, Data Validation

Dear Ms. Dunay,

Enclosed is the final validation report for the fraction listed below. This SDG was received on February 9, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20300:

SDG #	Fraction
K0900558	Mercury

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Stella S. Cuenco
Project Manager/Senior Chemist

V:\LOGIN\Anchor\Gasco\20300COV.wpd

Attachment 1

38 Pages-EX EDD **LDC #20300 (Anchor Environmental-Seattle WA / NW Natural - Gasco Pilot Cap Monitoring Year 2)**

LDC	SDG#	DATE REC'D	(3) DATE DUE	Hg (7470A)																																	
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	K0900558	02/09/09	03/03/09	2	0																																
Total	T/SC			2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS, MSD, or DUP's.

NW Natural Gasco Site
Data Validation Reports
LDC# 20300

Mercury

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 12, 2008
LDC Report Date:	February 10, 2009
Matrix:	Water
Parameters:	Mercury
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0900558

Sample Identification

PCM-DSRB-081212
PCM-FB-081212
PCM-DSRB-081212MS
PCM-DSRB-081212DUP

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7470A for Mercury.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
All samples in SDG K0900558	Mercury	47	28	J (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No mercury was found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP interference check sample analysis is not required by the method.

V. Matrix Spike Analysis

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution analysis is not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to analysis holding time problems, mercury was qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only.

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

Sample PCM-DSRB-081212 was identified as a rinsate blank. No mercury was found in this blank.

Sample PCM-FB-081212 was identified as a field blank. No mercury was found in this blank.

NW Natural Gasco Site
Mercury - Data Qualification Summary - SDG K0900558

SDG	Sample	Analyte	Flag	A or P	Reason
K0900558	PCM-DSRB-081212 PCM-FB-081212	Mercury	J (all detects) UJ (all non-detects)	P	Technical holding times

NW Natural Gasco Site
Mercury - Laboratory Blank Data Qualification Summary - SDG K0900558

No Sample Data Qualified in this SDG

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	Service Request:	K0900558
Project No.:	000029-02 B6 17 T4	Date Collected:	12/12/08
Project Name:	Gasco Long Term Pilot Cap Monito	Date Received:	12/12/08
Matrix:	WATER	Units:	ug/L
		Basis:	N/A

Sample Name: PCM-DSRB-081212 Lab Code: K0900558-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q	
Mercury	7470A	0.20	0.05	1.0	01/27/09	01/28/09	0.05	U	X	UJ1

% Solids: 0.0

Comments:

2/03/09

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	Service Request:	K0900558
Project No.:	000029-02 B6 17 T4	Date Collected:	12/12/08
Project Name:	Gasco Long Term Pilot Cap Monito	Date Received:	12/12/08
Matrix:	WATER	Units:	ug/L
		Basis:	N/A

Sample Name: PCM-FB-081212 Lab Code: K0900558-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Mercury	7470A	0.20	0.05	1.0	01/27/09	01/28/09	0.05	U	X

% Solids: 0.0

Comments:

2/02/1909

LDC #: 20300A4

SDG #: K0900558

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2/10/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Mercury (EPA SW 846 Method 7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 12/12/08
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Not required
V.	Matrix Spike Analysis	A	3 MS/MSD
VI.	Duplicate Sample Analysis	A	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	RB = 1, FB = 2

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: A2

1	PCM-DSRB-081212	11	PB	21		11	
2	PCM-FB-081212	12		22		12	
3	PCM-DSRB-081212MS	13		23		13	
4	PCM-DSRB-081212DUP	14		24		14	
5		15		25		15	
6		16		26		16	
7		17		27		17	
8		18		28		18	
9		19		29		19	
10		20		30		20	

Notes:

LDC #: 20300A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

(Y) N N/A Were samples preserved?
(Y) N N/A Were all cooler temperatures within validation criteria?
All circled dates have exceeded the technical holding time.

METHOD: EPA SW 846 Method 6010/7000		(CVAA) Hg	(ICP) Al, Sb, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Mg, Mn, Ni, K, Ag, Na, V, Zn	(GFAA) —	(GFAA) —	(GFAA) —	(GFAA) —	
Sample ID:	Sampling Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Qualifier
All	12/12/08	1/28/09	(47 days)					J/UJ/P

Technical Holding Time Criteria
Mercury: 28 days preserved pH <2 Cyanide: 14 days preserved pH >12
All other metals 6 months preserved pH <2
Organic lead Extracted within 14 days for soils and 7 days for waters, analyzed within 40 days of extraction. (no preservation)

HT.4S2

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Anchor Environmental, LLC
1423 3rd Avenue, Suite 300
Seattle, WA 98101-2226
ATTN: Ms. Joy Dunay

February 23, 2009

SUBJECT: NW Natural Gasco Site, Data Validation

Dear Ms. Dunay,

Enclosed are the final validation reports for the fractions listed below. This SDG was received on January 30, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 20260:

SDG #	**Fraction**
K0812115/ P9968	Volatiles, Semivolatiles, Polynuclear Aromatic Hydrocarbons, Chlorinated Pesticides, Polychlorinated Biphenyls, Polychlorinated Biphenyls as Congeners, Metals, Herbicides, Wet Chemistry, Gasoline Range Organics, Diesel Range Organics & Residual Range Organics, Butyltins, Dioxins/Dibenzofurans, Phenols

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- USEPA, Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Diobenzofurans Data Review, September 2005
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

ERauto for

Stella S. Cuenco
Project Manager/Senior Chemist

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Attachment 1

5,745 Pages-EX EDD

LDC #20260 (Anchor Environmental-Seattle WA / NW Natural - Gasco Pilot Cap Monitoring Year 2)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260B)		SVOA (8270C)		PAHs (8270C -SIM)		Pest. (8081A)		PCBs (8082)		PCB Cong. (1668A)		Metals (SW846)		Herbs. (8151A)		Chlor. Phenols (8151M)		GRO (NWTPH -Gx)		DRO RRO (Dx)		Butyl -tins (Krone)		Dioxins (1613B)									
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	K0812115/P9968	01/30/09	02/23/09	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6								
Total	T/SC			0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	0	0	0	0	0	0	78

LDC #20260 (Anchor Environmental-Seattle WA / NW Natural - Gasco Pilot Cap Monitoring Year 2)

LDC	SDG#	DATE REC'D	(3) DATE DUE	NH_3-N (350.1 Plumb)		T.CN- (335.4 /4500)		Cr(VI) (7196A)		Part. Size (PSEP)		S= (9030M /4500)		TOC (PSEP 5310C)		Total Solids (160.3)																					
Matrix:	Water/Sediment			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	K0812115	01/30/09	02/23/09	0	6	0	6	0	6	0	6	0	6	0	6	0	6																				
Total	T/SC			0	6	0	6	0	6	0	6	0	6	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS, MSD, or DUP's.

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Volatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Volatiles
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-02DS-081211MS
PCM-02DS-081211MSD

Introduction

This data review covers 8 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260B for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all volatile target compounds were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
12/5/08	Acrolein Vinyl acetate 2-Butanone	0.0299 (≥0.05) 0.0433 (≥0.05) 0.0164 (≥0.05)	PCM-02DS-081211 PCM-06DS-081211 PCM-02DS-081211MS PCM-02DS-081211MSD KWG0813652-5	J (all detects) UJ (all non-detects)	A
12/18/08	Vinyl acetate 2-Butanone	0.0441 (≥0.05) 0.0251 (≥0.05)	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813545-3	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A
12/11/08	Acrolein	0.0236 (≥0.05)	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813623-3	J (all detects) UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/24/08	2-Chloroethylvinyl ether	53	PCM-02DS-081211 PCM-06DS-081211 PCM-02DS-081211MS PCM-02DS-081211MSD KWG0813652-5	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/5/08	Acrolein	28	PCM-02DS-081211 PCM-06DS-081211 PCM-02DS-081211MS PCM-02DS-081211MSD KWG0813652-5	J (all detects) UJ (all non-detects)	A
12/18/08	Bromomethane	35	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813545-3	J (all detects) UJ (all non-detects)	A

All of the continuing calibration RRF values were within method and validation criteria with the following exceptions:

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
12/19/08	2-Butanone Vinyl acetate	0.0255 (≥0.05) 0.0452 (≥0.05)	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813545-3	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

Date	Compound	RRF (Limits)	Associated Samples	Flag	A or P
12/23/08	Acrolein	0.0216 (≥0.05)	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813545-3	J (all detects) UJ (all non-detects)	A
12/24/08	Acrolein Vinyl acetate 2-Butanone 2-Hexanone	0.0365 (≥0.05) 0.0421 (≥0.05) 0.0173 (≥0.05) 0.0431 (≥0.05)	PCM-02DS-081211 PCM-06DS-081211 PCM-02DS-081211MS PCM-02DS-081211MSD KWG0813652-5	J (all detects) UJ (all non-detects)	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
KWG0813545-3	12/19/08	Methylene chloride Acetone 2-Hexanone Toluene 4-Methyl-2-pentanone Chlorobenzene m,p-Xylenes Styrene 1,4-Dichlorobenzene	1.1 ug/Kg 3.3 ug/Kg 1.2 ug/Kg 0.11 ug/Kg 0.54 ug/Kg 0.15 ug/Kg 0.20 ug/Kg 0.16 ug/Kg 0.41 ug/Kg	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
PCM-09DS-081211	Methylene chloride Acetone	1.7 ug/Kg 20 ug/Kg	12U ug/Kg 24U ug/Kg
PCM-14DS-081211	Methylene chloride Acetone Toluene Chlorobenzene	1.7 ug/Kg 8.6 ug/Kg 0.39 ug/Kg 0.36 ug/Kg	12U ug/Kg 23U ug/Kg 2.3U ug/Kg 2.3U ug/Kg
PCM-15DS-081211	Methylene chloride Acetone	1.4 ug/Kg 8.1 ug/Kg	12U ug/Kg 24U ug/Kg
PCM-22DS-081211	Methylene chloride Acetone Chlorobenzene	1.3 ug/Kg 24 ug/Kg 0.50 ug/Kg	13U ug/Kg 25U ug/Kg 2.5U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
PCM-09DS-081211	Toluene-d8	117 (63-116)	All TCL compounds	J (all detects)	A
PCM-14DS-081211	Toluene-d8	117 (63-116)	All TCL compounds except Acrolein	J (all detects)	A
PCM-14DS-081211	Bromofluorobenzene	55 (58-117)	Acrolein	J (all detects) UJ (all non-detects)	A
PCM-15DS-081211	Toluene-d8	117 (63-116)	All TCL compounds	J (all detects)	A

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0813545-1/2 (PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813545-3)	Iodomethane	20 (50-140)	16 (50-140)	-	J (all detects) UJ (all non-detects)	P
KWG0813545-1/2 (PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 KWG0813545-3)	trans-1,4-Dichloro-2-butene	7 (50-140)	7 (50-140)	-	J (all detects) R (all non-detects)	P

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to severe problems with the LCS/LCSD %Rs, trans-1,4-dichloro-2-butene results were qualified as rejected in four samples.

Due to calibration RRF and %D, surrogate %R and LCS/LCSD %R problems, data were qualified as estimated in six samples.

Due to method blank contamination problems, data were qualified as not detected in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Volatiles - Data Qualification Summary - SDG K0812115

SDG	Sample	Compound	Flag	A or P	Reason
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Acrolein Vinyl acetate 2-Butanone	J (all detects) UJ (all non-detects)	A	Initial calibration (RRF)
K0812115	PCM-02DS-081211 PCM-06DS-081211	2-Chloroethylvinyl ether	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
K0812115	PCM-02DS-081211 PCM-06DS-081211	Acrolein	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
K0812115	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Bromomethane	J (all detects) UJ (all non-detects)	A	Continuing calibration (ICV %D)
K0812115	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	2-Butanone Vinyl acetate	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Continuing calibration (RRF)
K0812115	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Acrolein Vinyl acetate 2-Butanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (RRF)
K0812115	PCM-02DS-081211 PCM-06DS-081211	Acrolein Vinyl acetate 2-Butanone 2-Hexanone	J (all detects) UJ (all non-detects)	A	Continuing calibration (RRF)
K0812115	PCM-14DS-081211	Acrolein	J (all detects) UJ (all non-detects)	A	Surrogate spikes (%R)
K0812115	PCM-14DS-081211	All TCL compounds except Acrolein	J (all detects)	A	Surrogate spikes (%R)
K0812115	PCM-09DS-081211 PCM-15DS-081211	All TCL compounds	J (all detects)	A	Surrogate spikes (%R)
K0812115	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Iodomethane	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
K0812115	PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	trans-1,4-Dichloro-2-butene	J (all detects) R (all non-detects)	P	Laboratory control samples (%R)

NW Natural Gasco Site
Volatiles - Laboratory Blank Data Qualification Summary - SDG K0812115

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
K0812115	PCM-09DS-081211	Methylene chloride Acetone	12U ug/Kg 24U ug/Kg	A
K0812115	PCM-14DS-081211	Methylene chloride Acetone Toluene Chlorobenzene	12U ug/Kg 23U ug/Kg 2.3U ug/Kg 2.3U ug/Kg	A
K0812115	PCM-15DS-081211	Methylene chloride Acetone	12U ug/Kg 24U ug/Kg	A
K0812115	PCM-22DS-081211	Methylene chloride Acetone Chlorobenzene	13U ug/Kg 25U ug/Kg 2.5U ug/Kg	A

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-02DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U UJ5	9.2	0.63	1	12/24/08	12/24/08	KWG0813652	
Iodomethane	ND	U	7.4	0.24	1	12/24/08	12/24/08	KWG0813652	
Methyl tert-Butyl Ether	ND	U	3.7	0.055	1	12/24/08	12/24/08	KWG0813652	
Acrylonitrile	ND	U	7.4	0.12	1	12/24/08	12/24/08	KWG0813652	
Vinyl Acetate	ND	U UJ5	3.7	0.14	1	12/24/08	12/24/08	KWG0813652	
1,2-Dichloropropane	ND	U	3.7	0.030	1	12/24/08	12/24/08	KWG0813652	
Dibromomethane	ND	U	3.7	0.063	1	12/24/08	12/24/08	KWG0813652	
2-Chloroethyl Vinyl Ether	ND	U UJ5	7.4	0.16	1	12/24/08	12/24/08	KWG0813652	*
1,2-Dibromoethane (EDB)	ND	U	3.7	0.027	1	12/24/08	12/24/08	KWG0813652	
1,1,1,2-Tetrachloroethane	ND	U	3.7	0.030	1	12/24/08	12/24/08	KWG0813652	
1,2,3-Trichloropropane	ND	U	3.7	0.077	1	12/24/08	12/24/08	KWG0813652	
trans-1,4-Dichloro-2-butene	ND	U	7.4	0.13	1	12/24/08	12/24/08	KWG0813652	
Dichlorodifluoromethane	ND	U	3.7	0.077	1	12/24/08	12/24/08	KWG0813652	
Chloromethane	ND	U	3.7	0.036	1	12/24/08	12/24/08	KWG0813652	
Vinyl Chloride	ND	U	3.7	0.070	1	12/24/08	12/24/08	KWG0813652	
Bromomethane	ND	U	3.7	0.070	1	12/24/08	12/24/08	KWG0813652	
Chloroethane	ND	U	3.7	0.055	1	12/24/08	12/24/08	KWG0813652	
Trichlorofluoromethane	ND	U	3.7	0.085	1	12/24/08	12/24/08	KWG0813652	
Acetone	ND	U	37	0.88	1	12/24/08	12/24/08	KWG0813652	
1,1-Dichloroethene	ND	U	3.7	0.074	1	12/24/08	12/24/08	KWG0813652	
Carbon Disulfide	ND	U	3.7	0.055	1	12/24/08	12/24/08	KWG0813652	*
Methylene Chloride	**0.084**	J	19	0.026	1	12/24/08	12/24/08	KWG0813652	
trans-1,2-Dichloroethene	ND	U	3.7	0.033	1	12/24/08	12/24/08	KWG0813652	
1,1-Dichloroethane	ND	U	3.7	0.032	1	12/24/08	12/24/08	KWG0813652	
2-Butanone (MEK)	ND	U UJ5	15	0.77	1	12/24/08	12/24/08	KWG0813652	*
Chloroform	ND	U	3.7	0.033	1	12/24/08	12/24/08	KWG0813652	
1,1,1-Trichloroethane (TCA)	ND	U	3.7	0.012	1	12/24/08	12/24/08	KWG0813652	
Carbon Tetrachloride	ND	U	3.7	0.077	1	12/24/08	12/24/08	KWG0813652	
1,2-Dichloroethane (EDC)	ND	U	3.7	0.020	1	12/24/08	12/24/08	KWG0813652	
Benzene	**0.69**	J	3.7	0.025	1	12/24/08	12/24/08	KWG0813652	
Trichloroethene (TCE)	ND	U	3.7	0.048	1	12/24/08	12/24/08	KWG0813652	
Bromodichloromethane	ND	U	3.7	0.032	1	12/24/08	12/24/08	KWG0813652	
2-Hexanone	ND	U UJ5	7.4	0.70	1	12/24/08	12/24/08	KWG0813652	

Comments: SL 012309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-02DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
cis-1,3-Dichloropropene	ND	U	3.7	0.033	1	12/24/08	12/24/08	KWG0813652	
Toluene	ND	U	3.7	0.032	1	12/24/08	12/24/08	KWG0813652	
trans-1,3-Dichloropropene	ND	U	3.7	0.034	1	12/24/08	12/24/08	KWG0813652	
1,1,2-Trichloroethane	ND	U	3.7	0.037	1	12/24/08	12/24/08	KWG0813652	
4-Methyl-2-pentanone (MIBK)	ND	U	7.4	1.3	1	12/24/08	12/24/08	KWG0813652	
Bromochloromethane	ND	U	3.7	0.036	1	12/24/08	12/24/08	KWG0813652	
Tetrachloroethene (PCE)	ND	U	3.7	0.055	1	12/24/08	12/24/08	KWG0813652	
Dibromochloromethane	ND	U	3.7	0.025	1	12/24/08	12/24/08	KWG0813652	
Chlorobenzene	ND	U	3.7	0.024	1	12/24/08	12/24/08	KWG0813652	
Ethylbenzene	**0.42**	J	3.7	0.017	1	12/24/08	12/24/08	KWG0813652	
m,p-Xylenes	**0.069**	J	3.7	0.035	1	12/24/08	12/24/08	KWG0813652	
o-Xylene	**0.11**	J	3.7	0.025	1	12/24/08	12/24/08	KWG0813652	
Styrene	ND	U	3.7	0.017	1	12/24/08	12/24/08	KWG0813652	
Bromoform	ND	U	3.7	0.036	1	12/24/08	12/24/08	KWG0813652	
Isopropylbenzene	**0.12**	J	3.7	0.035	1	12/24/08	12/24/08	KWG0813652	*
1,1,2,2-Tetrachloroethane	ND	U	3.7	0.026	1	12/24/08	12/24/08	KWG0813652	
1,4-Dichlorobenzene	ND	U	3.7	0.028	1	12/24/08	12/24/08	KWG0813652	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	69-118	12/24/08	Acceptable
Toluene-d8	93	77-123	12/24/08	Acceptable
4-Bromofluorobenzene	85	58-135	12/24/08	Acceptable

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-06DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U UJ5	9.7	0.66	1	12/24/08	12/24/08	KWG0813652	
Iodomethane	ND	U	7.8	0.26	1	12/24/08	12/24/08	KWG0813652	
Methyl tert-Butyl Ether	ND	U	3.9	0.059	1	12/24/08	12/24/08	KWG0813652	
Acrylonitrile	ND	U	7.8	0.13	1	12/24/08	12/24/08	KWG0813652	
Vinyl Acetate	ND	U UJ5	3.9	0.15	1	12/24/08	12/24/08	KWG0813652	
1,2-Dichloropropane	ND	U	3.9	0.032	1	12/24/08	12/24/08	KWG0813652	
Dibromomethane	ND	U	3.9	0.066	1	12/24/08	12/24/08	KWG0813652	
2-Chloroethyl Vinyl Ether	ND	U UJ5	7.8	0.17	1	12/24/08	12/24/08	KWG0813652	*
1,2-Dibromoethane (EDB)	ND	U	3.9	0.029	1	12/24/08	12/24/08	KWG0813652	
1,1,1,2-Tetrachloroethane	ND	U	3.9	0.032	1	12/24/08	12/24/08	KWG0813652	
1,2,3-Trichloropropane	ND	U	3.9	0.082	1	12/24/08	12/24/08	KWG0813652	
trans-1,4-Dichloro-2-butene	ND	U	7.8	0.14	1	12/24/08	12/24/08	KWG0813652	
Dichlorodifluoromethane	ND	U	3.9	0.082	1	12/24/08	12/24/08	KWG0813652	
Chloromethane	ND	U	3.9	0.038	1	12/24/08	12/24/08	KWG0813652	
Vinyl Chloride	ND	U	3.9	0.074	1	12/24/08	12/24/08	KWG0813652	
Bromomethane	ND	U	3.9	0.074	1	12/24/08	12/24/08	KWG0813652	
Chloroethane	ND	U	3.9	0.059	1	12/24/08	12/24/08	KWG0813652	
Trichlorofluoromethane	ND	U	3.9	0.090	1	12/24/08	12/24/08	KWG0813652	
Acetone	ND	U	39	0.93	1	12/24/08	12/24/08	KWG0813652	
1,1-Dichloroethene	ND	U	3.9	0.078	1	12/24/08	12/24/08	KWG0813652	
Carbon Disulfide	ND	U	3.9	0.059	1	12/24/08	12/24/08	KWG0813652	*
Methylene Chloride	**0.085**	J	20	0.028	1	12/24/08	12/24/08	KWG0813652	
trans-1,2-Dichloroethene	ND	U	3.9	0.035	1	12/24/08	12/24/08	KWG0813652	
1,1-Dichloroethane	ND	U	3.9	0.034	1	12/24/08	12/24/08	KWG0813652	
2-Butanone (MEK)	ND	U UJ5	16	0.82	1	12/24/08	12/24/08	KWG0813652	*
Chloroform	ND	U	3.9	0.035	1	12/24/08	12/24/08	KWG0813652	
1,1,1-Trichloroethane (TCA)	ND	U	3.9	0.013	1	12/24/08	12/24/08	KWG0813652	
Carbon Tetrachloride	ND	U	3.9	0.082	1	12/24/08	12/24/08	KWG0813652	
1,2-Dichloroethane (EDC)	ND	U	3.9	0.021	1	12/24/08	12/24/08	KWG0813652	
Benzene	**2.3**	J	3.9	0.027	1	12/24/08	12/24/08	KWG0813652	
Trichloroethene (TCE)	ND	U	3.9	0.051	1	12/24/08	12/24/08	KWG0813652	
Bromodichloromethane	ND	U	3.9	0.034	1	12/24/08	12/24/08	KWG0813652	
2-Hexanone	ND	U UJ5	7.8	0.74	1	12/24/08	12/24/08	KWG0813652	

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-06DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
cis-1,3-Dichloropropene	ND	U	3.9	0.035	1	12/24/08	12/24/08	KWG0813652	
Toluene	ND	U	3.9	0.033	1	12/24/08	12/24/08	KWG0813652	
trans-1,3-Dichloropropene	ND	U	3.9	0.036	1	12/24/08	12/24/08	KWG0813652	
1,1,2-Trichloroethane	ND	U	3.9	0.039	1	12/24/08	12/24/08	KWG0813652	
4-Methyl-2-pentanone (MIBK)	ND	U	7.8	1.4	1	12/24/08	12/24/08	KWG0813652	
Bromochloromethane	ND	U	3.9	0.038	1	12/24/08	12/24/08	KWG0813652	
Tetrachloroethene (PCE)	ND	U	3.9	0.059	1	12/24/08	12/24/08	KWG0813652	
Dibromochloromethane	ND	U	3.9	0.027	1	12/24/08	12/24/08	KWG0813652	
Chlorobenzene	ND	U	3.9	0.025	1	12/24/08	12/24/08	KWG0813652	
Ethylbenzene	**0.47**	J	3.9	0.018	1	12/24/08	12/24/08	KWG0813652	
m,p-Xylenes	**0.18**	J	3.9	0.037	1	12/24/08	12/24/08	KWG0813652	
o-Xylene	**0.25**	J	3.9	0.027	1	12/24/08	12/24/08	KWG0813652	
Styrene	ND	U	3.9	0.018	1	12/24/08	12/24/08	KWG0813652	
Bromoform	ND	U	3.9	0.038	1	12/24/08	12/24/08	KWG0813652	
Isopropylbenzene	**0.11**	J	3.9	0.037	1	12/24/08	12/24/08	KWG0813652	*
1,1,2,2-Tetrachloroethane	ND	U	3.9	0.028	1	12/24/08	12/24/08	KWG0813652	
1,4-Dichlorobenzene	ND	U	3.9	0.030	1	12/24/08	12/24/08	KWG0813652	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	90	69-118	12/24/08	Acceptable
Toluene-d8	94	77-123	12/24/08	Acceptable
4-Bromofluorobenzene	87	58-135	12/24/08	Acceptable

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Iodomethane (Methyl Iodide)	ND	U UJ10	24	1.5	1	12/19/08	12/19/08	KWG0813545	*
Methyl tert-Butyl Ether	ND	U	9.6	0.20	1	12/19/08	12/19/08	KWG0813545	
Acrylonitrile	ND	U	4.8	2.4	1	12/19/08	12/19/08	KWG0813545	
Vinyl Acetate	ND	U UJ5	12	1.5	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloropropane	ND	U	2.4	0.16	1	12/19/08	12/19/08	KWG0813545	
Dibromomethane	ND	U	2.4	0.43	1	12/19/08	12/19/08	KWG0813545	
2-Chloroethyl Vinyl Ether	ND	U	6.0	0.74	1	12/19/08	12/19/08	KWG0813545	
1,2-Dibromoethane (EDB)	ND	U	2.4	0.46	1	12/19/08	12/19/08	KWG0813545	
1,1,1,2-Tetrachloroethane	ND	U	2.4	0.43	1	12/19/08	12/19/08	KWG0813545	
trans-1,4-Dichloro-2-butene	ND	U R10	12	1.3	1	12/19/08	12/19/08	KWG0813545	*
1,2,3-Trichloropropane	ND	U	12	0.65	1	12/19/08	12/19/08	KWG0813545	
Dichlorodifluoromethane	ND	U	6.0	0.18	1	12/19/08	12/19/08	KWG0813545	
Chloromethane	ND	U	2.4	0.14	1	12/19/08	12/19/08	KWG0813545	
Vinyl Chloride	ND	U	2.4	0.14	1	12/19/08	12/19/08	KWG0813545	
Bromomethane	ND	U UJ5	6.0	1.1	1	12/19/08	12/19/08	KWG0813545	
Chloroethane	ND	U	2.4	0.72	1	12/19/08	12/19/08	KWG0813545	
Trichlorofluoromethane	ND	U	6.0	0.13	1	12/19/08	12/19/08	KWG0813545	
Acetone	20	J 24UJ	24 7,13	7.0	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethene	ND	U	2.4	0.17	1	12/19/08	12/19/08	KWG0813545	
Carbon Disulfide	ND	U	2.4	0.13	1	12/19/08	12/19/08	KWG0813545	
Methylene Chloride	1.7	J 12UJ	12 7,13	0.34	1	12/19/08	12/19/08	KWG0813545	
trans-1,2-Dichloroethene	ND	U	2.4	0.12	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethane	ND	U	2.4	0.12	1	12/19/08	12/19/08	KWG0813545	
2-Butanone (MEK)	ND	U UJ5	24	3.9	1	12/19/08	12/19/08	KWG0813545	
Chloroform	ND	U	2.4	0.12	1	12/19/08	12/19/08	KWG0813545	
1,1,1-Trichloroethane (TCA)	ND	U	2.4	0.36	1	12/19/08	12/19/08	KWG0813545	
Carbon Tetrachloride	ND	U	6.0	0.19	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloroethane (EDC)	ND	U	2.4	0.13	1	12/19/08	12/19/08	KWG0813545	
Benzene	ND	U	2.4	0.34	1	12/19/08	12/19/08	KWG0813545	
Trichloroethene (TCE)	ND	U	2.4	0.31	1	12/19/08	12/19/08	KWG0813545	
Bromodichloromethane	ND	U	6.0	0.11	1	12/19/08	12/19/08	KWG0813545	
2-Hexanone	ND	U	9.6	1.9	1	12/19/08	12/19/08	KWG0813545	
cis-1,3-Dichloropropene	ND	U	2.4	0.074	1	12/19/08	12/19/08	KWG0813545	
Toluene	ND	U	2.4	0.11	1	12/19/08	12/19/08	KWG0813545	
trans-1,3-Dichloropropene	ND	U	6.0	0.24	1	12/19/08	12/19/08	KWG0813545	

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,2-Trichloroethane	ND	U	2.4	0.21	1	12/19/08	12/19/08	KWG0813545	
4-Methyl-2-pentanone (MIBK)	ND	U	12	0.58	1	12/19/08	12/19/08	KWG0813545	
Bromochloromethane	ND	U	2.4	0.60	1	12/19/08	12/19/08	KWG0813545	
Tetrachloroethene (PCE)	ND	U	2.4	0.29	1	12/19/08	12/19/08	KWG0813545	
Dibromochloromethane	ND	U	2.4	0.39	1	12/19/08	12/19/08	KWG0813545	
Chlorobenzene	ND	U	2.4	0.13	1	12/19/08	12/19/08	KWG0813545	
Ethylbenzene	ND	U	2.4	0.098	1	12/19/08	12/19/08	KWG0813545	
m,p-Xylenes	ND	U	4.8	0.23	1	12/19/08	12/19/08	KWG0813545	
o-Xylene	ND	U	2.4	0.15	1	12/19/08	12/19/08	KWG0813545	
Styrene	ND	U	2.4	0.19	1	12/19/08	12/19/08	KWG0813545	
Bromoform	ND	U	6.0	0.60	1	12/19/08	12/19/08	KWG0813545	
Isopropylbenzene	ND	U	2.4	0.074	1	12/19/08	12/19/08	KWG0813545	*
1,1,2,2-Tetrachloroethane	ND	U	2.4	0.22	1	12/19/08	12/19/08	KWG0813545	
1,4-Dichlorobenzene	ND	U	2.4	0.24	1	12/19/08	12/19/08	KWG0813545	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	114	61-116	12/19/08	Acceptable
Toluene-d8	117	63-116	12/19/08	Outside Control Limits
4-Bromofluorobenzene	110	58-117	12/19/08	Acceptable

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-09DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U UJ5	9.5	0.64	1	12/23/08	12/23/08	KWG0813623	

Surrogate Name	%Rec	Control Limits	Note

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Iodomethane (Methyl Iodide)	ND	U UJ10	23	1.4	1	12/19/08	12/19/08	KWG0813545	*
Methyl tert-Butyl Ether	ND	U	9.1	0.19	1	12/19/08	12/19/08	KWG0813545	
Acrylonitrile	ND	U	4.6	2.3	1	12/19/08	12/19/08	KWG0813545	
Vinyl Acetate	ND	U UJ5	12	1.4	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloropropane	ND	U	2.3	0.15	1	12/19/08	12/19/08	KWG0813545	
Dibromomethane	ND	U	2.3	0.41	1	12/19/08	12/19/08	KWG0813545	
2-Chloroethyl Vinyl Ether	ND	U	5.7	0.71	1	12/19/08	12/19/08	KWG0813545	
1,2-Dibromoethane (EDB)	ND	U	2.3	0.44	1	12/19/08	12/19/08	KWG0813545	
1,1,1,2-Tetrachloroethane	ND	U	2.3	0.41	1	12/19/08	12/19/08	KWG0813545	
trans-1,4-Dichloro-2-butene	ND	U R10	12	1.3	1	12/19/08	12/19/08	KWG0813545	*
1,2,3-Trichloropropane	ND	U	12	0.62	1	12/19/08	12/19/08	KWG0813545	
Dichlorodifluoromethane	ND	U	5.7	0.17	1	12/19/08	12/19/08	KWG0813545	
Chloromethane	ND	U	2.3	0.13	1	12/19/08	12/19/08	KWG0813545	
Vinyl Chloride	ND	U	2.3	0.13	1	12/19/08	12/19/08	KWG0813545	
Bromomethane	ND	U UJ5	5.7	0.96	1	12/19/08	12/19/08	KWG0813545	
Chloroethane	ND	U	2.3	0.69	1	12/19/08	12/19/08	KWG0813545	
Trichlorofluoromethane	ND	U	5.7	0.13	1	12/19/08	12/19/08	KWG0813545	
Acetone	**8.6**	J 23UJ	23 7,13	6.6	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethene	ND	U	2.3	0.16	1	12/19/08	12/19/08	KWG0813545	
Carbon Disulfide	ND	U	2.3	0.13	1	12/19/08	12/19/08	KWG0813545	
Methylene Chloride	**1.7**	J 12UJ	12 7,13	0.32	1	12/19/08	12/19/08	KWG0813545	
trans-1,2-Dichloroethene	ND	U	2.3	0.11	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethane	ND	U	2.3	0.11	1	12/19/08	12/19/08	KWG0813545	
2-Butanone (MEK)	ND	U UJ5	23	3.7	1	12/19/08	12/19/08	KWG0813545	
Chloroform	ND	U	2.3	0.11	1	12/19/08	12/19/08	KWG0813545	
1,1,1-Trichloroethane (TCA)	ND	U	2.3	0.35	1	12/19/08	12/19/08	KWG0813545	
Carbon Tetrachloride	ND	U	5.7	0.18	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloroethane (EDC)	ND	U	2.3	0.13	1	12/19/08	12/19/08	KWG0813545	
Benzene	**4.4**	J 13	1.2	0.16	1	12/22/08	12/22/08	KWG0813585	
Trichloroethene (TCE)	ND	U	2.3	0.30	1	12/19/08	12/19/08	KWG0813545	
Bromodichloromethane	ND	U	5.7	0.10	1	12/19/08	12/19/08	KWG0813545	
2-Hexanone	ND	U	9.1	1.8	1	12/19/08	12/19/08	KWG0813545	
cis-1,3-Dichloropropene	ND	U	2.3	0.071	1	12/19/08	12/19/08	KWG0813545	
Toluene	**0.39**	J 2.3UJ	2.3 7,13	0.10	1	12/19/08	12/19/08	KWG0813545	
trans-1,3-Dichloropropene	ND	U	5.7	0.23	1	12/19/08	12/19/08	KWG0813545	

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,2-Trichloroethane	ND	U	2.3	0.20	1	12/19/08	12/19/08	KWG0813545	
4-Methyl-2-pentanone (MIBK)	ND	U	12	0.55	1	12/19/08	12/19/08	KWG0813545	
Bromochloromethane	ND	U	2.3	0.57	1	12/19/08	12/19/08	KWG0813545	
Tetrachloroethene (PCE)	ND	U	2.3	0.28	1	12/19/08	12/19/08	KWG0813545	
Dibromochloromethane	ND	U	2.3	0.37	1	12/19/08	12/19/08	KWG0813545	
Chlorobenzene	**0.36**	J 2.3UJ	2.3 7,13	0.13	1	12/19/08	12/19/08	KWG0813545	
Ethylbenzene	**1.5**	J J13	2.3	0.094	1	12/19/08	12/19/08	KWG0813545	
m,p-Xylenes	**1.7**	J	4.6	0.22	1	12/19/08	12/19/08	KWG0813545	
o-Xylene	**5.0**		2.3	0.14	1	12/19/08	12/19/08	KWG0813545	
Styrene	ND	U	2.3	0.18	1	12/19/08	12/19/08	KWG0813545	
Bromoform	ND	U	5.7	0.57	1	12/19/08	12/19/08	KWG0813545	
Isopropylbenzene	**1.1**	J J13	2.3	0.071	1	12/19/08	12/19/08	KWG0813545	*
1,1,2,2-Tetrachloroethane	ND	U	2.3	0.21	1	12/19/08	12/19/08	KWG0813545	
1,4-Dichlorobenzene	ND	U	2.3	0.23	1	12/19/08	12/19/08	KWG0813545	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	61-116	12/19/08	Acceptable
Toluene-d8	117	63-116	12/19/08	Outside Control Limits
4-Bromofluorobenzene	110	58-117	12/19/08	Acceptable

Comments: 8 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-14DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U UJS,	9.2 13	0.63	1	12/23/08	12/23/08	KWG0813623	

Surrogate Name	%Rec	Control Limits	Note

Comments: SC 2/3/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Iodomethane (Methyl Iodide)	ND	U UJ10	24	1.4	1	12/19/08	12/19/08	KWG0813545	*
Methyl tert-Butyl Ether	ND	U	9.4	0.19	1	12/19/08	12/19/08	KWG0813545	
Acrylonitrile	ND	U	4.7	2.4	1	12/19/08	12/19/08	KWG0813545	
Vinyl Acetate	ND	U UJ5	12	1.5	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloropropane	ND	U	2.4	0.16	1	12/19/08	12/19/08	KWG0813545	
Dibromomethane	ND	U	2.4	0.43	1	12/19/08	12/19/08	KWG0813545	
2-Chloroethyl Vinyl Ether	ND	U	5.9	0.73	1	12/19/08	12/19/08	KWG0813545	
1,2-Dibromoethane (EDB)	ND	U	2.4	0.45	1	12/19/08	12/19/08	KWG0813545	
1,1,1,2-Tetrachloroethane	ND	U	2.4	0.43	1	12/19/08	12/19/08	KWG0813545	
trans-1,4-Dichloro-2-butene	ND	U R10	12	1.3	1	12/19/08	12/19/08	KWG0813545	*
1,2,3-Trichloropropane	ND	U	12	0.64	1	12/19/08	12/19/08	KWG0813545	
Dichlorodifluoromethane	ND	U	5.9	0.17	1	12/19/08	12/19/08	KWG0813545	
Chloromethane	ND	U	2.4	0.14	1	12/19/08	12/19/08	KWG0813545	
Vinyl Chloride	ND	U	2.4	0.14	1	12/19/08	12/19/08	KWG0813545	
Bromomethane	ND	U UJ5	5.9	0.99	1	12/19/08	12/19/08	KWG0813545	
Chloroethane	ND	U	2.4	0.71	1	12/19/08	12/19/08	KWG0813545	
Trichlorofluoromethane	ND	U	5.9	0.13	1	12/19/08	12/19/08	KWG0813545	
Acetone	**8.1**	J 24UJ	24 7, 13	6.8	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethene	ND	U	2.4	0.17	1	12/19/08	12/19/08	KWG0813545	
Carbon Disulfide	ND	U	2.4	0.13	1	12/19/08	12/19/08	KWG0813545	
Methylene Chloride	**1.4**	J 12UJ	12 7, 13	0.33	1	12/19/08	12/19/08	KWG0813545	
trans-1,2-Dichloroethene	ND	U	2.4	0.12	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethane	ND	U	2.4	0.12	1	12/19/08	12/19/08	KWG0813545	
2-Butanone (MEK)	ND	U UJ5	24	3.8	1	12/19/08	12/19/08	KWG0813545	
Chloroform	ND	U	2.4	0.12	1	12/19/08	12/19/08	KWG0813545	
1,1,1-Trichloroethane (TCA)	ND	U	2.4	0.36	1	12/19/08	12/19/08	KWG0813545	
Carbon Tetrachloride	ND	U	5.9	0.19	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloroethane (EDC)	ND	U	2.4	0.13	1	12/19/08	12/19/08	KWG0813545	
Benzene	ND	U	2.4	0.33	1	12/19/08	12/19/08	KWG0813545	
Trichloroethene (TCE)	ND	U	2.4	0.31	1	12/19/08	12/19/08	KWG0813545	
Bromodichloromethane	ND	U	5.9	0.11	1	12/19/08	12/19/08	KWG0813545	
2-Hexanone	ND	U	9.4	1.9	1	12/19/08	12/19/08	KWG0813545	
cis-1,3-Dichloropropene	ND	U	2.4	0.073	1	12/19/08	12/19/08	KWG0813545	
Toluene	ND	U	2.4	0.11	1	12/19/08	12/19/08	KWG0813545	
trans-1,3-Dichloropropene	ND	U	5.9	0.24	1	12/19/08	12/19/08	KWG0813545	

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,2-Trichloroethane	ND	U	2.4	0.21	1	12/19/08	12/19/08	KWG0813545	
4-Methyl-2-pentanone (MIBK)	ND	U	12	0.57	1	12/19/08	12/19/08	KWG0813545	
Bromochloromethane	ND	U	2.4	0.59	1	12/19/08	12/19/08	KWG0813545	
Tetrachloroethene (PCE)	ND	U	2.4	0.29	1	12/19/08	12/19/08	KWG0813545	
Dibromochloromethane	ND	U	2.4	0.38	1	12/19/08	12/19/08	KWG0813545	
Chlorobenzene	ND	U	2.4	0.13	1	12/19/08	12/19/08	KWG0813545	
Ethylbenzene	ND	U	2.4	0.097	1	12/19/08	12/19/08	KWG0813545	
m,p-Xylenes	ND	U	4.7	0.22	1	12/19/08	12/19/08	KWG0813545	
o-Xylene	ND	U	2.4	0.14	1	12/19/08	12/19/08	KWG0813545	
Styrene	ND	U	2.4	0.18	1	12/19/08	12/19/08	KWG0813545	
Bromoform	ND	U	5.9	0.59	1	12/19/08	12/19/08	KWG0813545	
Isopropylbenzene	ND	U	2.4	0.073	1	12/19/08	12/19/08	KWG0813545	*
1,1,2,2-Tetrachloroethane	ND	U	2.4	0.21	1	12/19/08	12/19/08	KWG0813545	
1,4-Dichlorobenzene	ND	U	2.4	0.24	1	12/19/08	12/19/08	KWG0813545	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	115	61-116	12/19/08	Acceptable
Toluene-d8	117	63-116	12/19/08	Outside Control Limits
4-Bromofluorobenzene	109	58-117	12/19/08	Acceptable

Comments: 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-15DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U U55	9.3	0.64	1	12/23/08	12/23/08	KWG0813623	

Surrogate Name	%Rec	Control Limits	Note

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Iodomethane (Methyl Iodide)	ND	U UJ10	25	1.5	1	12/19/08	12/19/08	KWG0813545	*
Methyl tert-Butyl Ether	ND	U	10	0.20	1	12/19/08	12/19/08	KWG0813545	
Acrylonitrile	ND	U	5.0	2.5	1	12/19/08	12/19/08	KWG0813545	
Vinyl Acetate	ND	U UJ5	13	1.5	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloropropane	ND	U	2.5	0.17	1	12/19/08	12/19/08	KWG0813545	
Dibromomethane	ND	U	2.5	0.45	1	12/19/08	12/19/08	KWG0813545	
2-Chloroethyl Vinyl Ether	ND	U	6.2	0.77	1	12/19/08	12/19/08	KWG0813545	
1,2-Dibromoethane (EDB)	ND	U	2.5	0.48	1	12/19/08	12/19/08	KWG0813545	
1,1,1,2-Tetrachloroethane	ND	U	2.5	0.45	1	12/19/08	12/19/08	KWG0813545	
trans-1,4-Dichloro-2-butene	ND	U R10	13	1.4	1	12/19/08	12/19/08	KWG0813545	*
1,2,3-Trichloropropane	ND	U	13	0.67	1	12/19/08	12/19/08	KWG0813545	
Dichlorodifluoromethane	ND	U	6.2	0.18	1	12/19/08	12/19/08	KWG0813545	
Chloromethane	ND	U	2.5	0.15	1	12/19/08	12/19/08	KWG0813545	
Vinyl Chloride	ND	U	2.5	0.15	1	12/19/08	12/19/08	KWG0813545	
Bromomethane	ND	U UJ5	6.2	1.1	1	12/19/08	12/19/08	KWG0813545	
Chloroethane	ND	U	2.5	0.75	1	12/19/08	12/19/08	KWG0813545	
Trichlorofluoromethane	ND	U	6.2	0.14	1	12/19/08	12/19/08	KWG0813545	
Acetone	**24**	J 2547	25	7.2	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethene	ND	U	2.5	0.18	1	12/19/08	12/19/08	KWG0813545	
Carbon Disulfide	ND	U	2.5	0.14	1	12/19/08	12/19/08	KWG0813545	
Methylene Chloride	**1.3**	J 1347	13	0.35	1	12/19/08	12/19/08	KWG0813545	
trans-1,2-Dichloroethene	ND	U	2.5	0.12	1	12/19/08	12/19/08	KWG0813545	
1,1-Dichloroethane	ND	U	2.5	0.12	1	12/19/08	12/19/08	KWG0813545	
2-Butanone (MEK)	ND	U UJ5	25	4.0	1	12/19/08	12/19/08	KWG0813545	
Chloroform	ND	U	2.5	0.12	1	12/19/08	12/19/08	KWG0813545	
1,1,1-Trichloroethane (TCA)	ND	U	2.5	0.38	1	12/19/08	12/19/08	KWG0813545	
Carbon Tetrachloride	ND	U	6.2	0.20	1	12/19/08	12/19/08	KWG0813545	
1,2-Dichloroethane (EDC)	ND	U	2.5	0.14	1	12/19/08	12/19/08	KWG0813545	
Benzene	**480**		2.5	0.35	1	12/19/08	12/19/08	KWG0813545	
Trichloroethene (TCE)	ND	U	2.5	0.33	1	12/19/08	12/19/08	KWG0813545	
Bromodichloromethane	ND	U	6.2	0.11	1	12/19/08	12/19/08	KWG0813545	
2-Hexanone	ND	U	10	2.0	1	12/19/08	12/19/08	KWG0813545	
cis-1,3-Dichloropropene	ND	U	2.5	0.077	1	12/19/08	12/19/08	KWG0813545	
Toluene	**2.5**		2.5	0.11	1	12/19/08	12/19/08	KWG0813545	
trans-1,3-Dichloropropene	ND	U	6.2	0.25	1	12/19/08	12/19/08	KWG0813545	

Comments: 8202309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 5030A	**Level:**	Low
Analysis Method:	8260B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,1,2-Trichloroethane	ND	U	2.5	0.22	1	12/19/08	12/19/08	KWG0813545	
4-Methyl-2-pentanone (MIBK)	ND	U	13	0.60	1	12/19/08	12/19/08	KWG0813545	
Bromochloromethane	ND	U	2.5	0.62	1	12/19/08	12/19/08	KWG0813545	
Tetrachloroethene (PCE)	ND	U	2.5	0.30	1	12/19/08	12/19/08	KWG0813545	
Dibromochloromethane	ND	U	2.5	0.40	1	12/19/08	12/19/08	KWG0813545	
Chlorobenzene	**0.50**	J 2.547	2.5	0.14	1	12/19/08	12/19/08	KWG0813545	
Ethylbenzene	**2.5**		2.5	0.11	1	12/19/08	12/19/08	KWG0813545	
m,p-Xylenes	**32**		5.0	0.24	1	12/19/08	12/19/08	KWG0813545	
o-Xylene	**35**		2.5	0.15	1	12/19/08	12/19/08	KWG0813545	
Styrene	ND	U	2.5	0.19	1	12/19/08	12/19/08	KWG0813545	
Bromoform	ND	U	6.2	0.62	1	12/19/08	12/19/08	KWG0813545	
Isopropylbenzene	**6.4**		2.5	0.077	1	12/19/08	12/19/08	KWG0813545	*
1,1,2,2-Tetrachloroethane	ND	U	2.5	0.23	1	12/19/08	12/19/08	KWG0813545	
1,4-Dichlorobenzene	ND	U	2.5	0.25	1	12/19/08	12/19/08	KWG0813545	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	112	61-116	12/19/08	Acceptable
Toluene-d8	116	63-116	12/19/08	Acceptable
4-Bromofluorobenzene	112	58-117	12/19/08	Acceptable

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Volatile Organic Compounds

Sample Name:	PCM-22DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 5035A/5030B	**Level:**	Med
Analysis Method:	8260B		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acrolein	ND	U	UJ5	9.9	0.68	1	12/23/08	12/23/08	KWG0813623	

Surrogate Name	%Rec	Control Limits	Note

Comments: SC 1/21/09

LDC #: 20260A1 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/09
SDG #: K0812115 Level III Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	SW	% RSD, r^2 ≥ 0.990
IV.	Continuing calibration/ICV	SW	ICV ≤ 25
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	SW	LCS ID
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ~~SOIL~~ Sediment

1	1	PCM-02DS-081211	11 1	KWG0813652-5	21	12/24	31	
2	1	PCM-06DS-081211	12 1	KWG0813545-3	22	12/19	32	
3	2	3 = FFFF PCM-09DS-081211	13 3	KWG0813623-3	23	12/23	33	
4	2	3 = FFFF PCM-14DS-081211	14		24		34	
5	2	3 = FFFF PCM-15DS-081211	15		25		35	
6	2	3 = FFFF PCM-22DS-081211	16		26		36	
7	1	PCM-02DS-081211MS	17		27		37	
8	1	PCM-02DS-081211MSD	18		28		38	
9			19		29		39	
10			20		30		40	

TARGET COMPOUND WORKSHEET

METHOD: VOA (EPA SW 846 Method 8260B)

A. Chloromethane*	U. 1,1,2-Trichloroethane	OO. 2,2-Dichloropropane	III. n-Butylbenzene	CCCC.1-Chlorohexane
B. Bromomethane	V. Benzene	PP. Bromochloromethane	JJJ. 1,2-Dichlorobenzene	DDDD. Isopropyl alcohol
C. Vinyl choride**	W. trans-1,3-Dichloropropene	QQ. 1,1-Dichloropropene	KKK. 1,2,4-Trichlorobenzene	EEEE. Acetonitrile
D. Chloroethane	X. Bromoform*	RR. Dibromomethane	LLL. Hexachlorobutadiene	FFFF. Acrolein
E. Methylene chloride	Y. 4-Methyl-2-pentanone	SS. 1,3-Dichloropropane	MMM. Naphthalene	GGGG. Acrylonitrile
F. Acetone	Z. 2-Hexanone	TT. 1,2-Dibromoethane	NNN. 1,2,3-Trichlorobenzene	HHHH. 1,4-Dioxane
G. Carbon disulfide	AA. Tetrachloroethene	UU. 1,1,1,2-Tetrachloroethane	OOO. 1,3,5-Trichlorobenzene	IIII. Isobutyl alcohol
H. 1,1-Dichloroethene**	BB. 1,1,2,2-Tetrachloroethane*	VV. Isopropylbenzene	PPP. trans-1,2-Dichloroethene	JJJJ. Methacrylonitrile
I. 1,1-Dichloroethane*	CC. Toluene**	WW. Bromobenzene	QQQ. cis-1,2-Dichloroethene	KKKK. Propionitrile
J. 1,2-Dichloroethene, total	DD. Chlorobenzene*	XX. 1,2,3-Trichloropropane	RRR. m,p-Xylenes	LLLL. Ethyl ether
K. Chloroform**	EE. Ethylbenzene**	YY. n-Propylbenzene	SSS. o-Xylene	MMMM. Benzyl chloride
L. 1,2-Dichloroethane	FF. Styrene	ZZ. 2-Chlorotoluene	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	NNNN. trans-1,4-Dichloro-2-butene
M. 2-Butanone	GG. Xylenes, total	AAA. 1,3,5-Trimethylbenzene	UUU. 1,2-Dichlorotetrafluoroethane	OOOO.
N. 1,1,1-Trichloroethane	HH. Vinyl acetate	BBB. 4-Chlorotoluene	VVV. 4-Ethyltoluene	PPPP.
O. Carbon tetrachloride	II. 2-Chloroethylvinyl ether	CCC. tert-Butylbenzene	WWW. Ethanol	QQQQ.
P. Bromodichloromethane	JJ. Dichlorodifluoromethane	DDD. 1,2,4-Trimethylbenzene	XXX. Di-isopropyl ether	RRRR.
Q. 1,2-Dichloropropane**	KK. Trichlorofluoromethane	EEE. sec-Butylbenzene	YYY. tert-Butanol	SSSS.
R. cis-1,3-Dichloropropene	LL. Methyl-tert-butyl ether	FFF. 1,3-Dichlorobenzene	ZZZ. tert-Butyl alcohol	TTTT.
S. Trichloroethene	MM. 1,2-Dibromo-3-chloropropane	GGG. p-Isopropyltoluene	AAAA. Ethyl tert-butyl ether	UUUU.
T. Dibromochloromethane	NN. Methyl ethyl ketone	HHH. 1,4-Dichlorobenzene	BBBB. tert-Amyl methyl ether	VVVV.

* = System performance check compounds (SPCC) for RRF ; ** = Calibration check compounds (CCC) for %RSD.

LDC #: 20260A1
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Initial Calibration

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Did the laboratory perform a 5 point calibration prior to sample analysis?
Y N N/A Were percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCC's and SPCC's?
Y N N/A Was a curve fit used for evaluation? If yes, what was the acceptance criteria used for evaluation?_____
Y N N/A Did the initial calibration meet the acceptance criteria?
Y N N/A Were all %RSDs and RRFs within the validation criteria of ≤30 %RSD and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %RSD (Limit: ≤30.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/5/08	CAL8016	FFFF		0.0299	KWG0813652-5,	J/UJ/A
			HH		0.0433	1, 2, 7, 8	↓
			M		0.0164	↓	↓
	12/18/08	CAL8070	HH		0.0441	KWG0813545-3,	J/UJ/A
			M		0.0251	3 → 6	↓
	12/11/08	CAL8044	FFFF		0.0236	KWG0813623-3	↓
						3 → 6	

INICAL.1SB

LDC #: 20260A1
SDG #: fu cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤25 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤25.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/5/08	CAL8016-ICV	FFFF	28		KWG0813652-5, 1, 2, 7, 8	J / UJ / A
	12/18/08	CAL8070-ICV	B	35		KWG0813545-3, 3 → 6	J / UJ / A
	12/19/08	1219F006	M		0.0255	KWG0813545-3, 3 → 6	↓
			HH		0.0452		
	12/23/08	1223F002	FFFF		0.0216	↓	↓
	12/24/08	1224F003	FFFF		0.0365	KWG0813652-5, 1, 2, 7, 8	↓
			HH		0.0421		
			M		0.0173		
			Z		0.0431		
			II	53			

CONCAL.1SB

LDC #: 20260A1
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: PJ
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a method blank associated with every sample in this SDG?
Y N N/A Was a method blank analyzed at least once every 12 hours for each matrix and concentration?
Y N N/A Was there contamination in the method blanks? If yes, please see the qualifications below.

Blank analysis date: 12/19/08
Conc. units: ug/kg
Associated Samples: 3 → 6

Compound	Blank ID	Sample Identification									
	KWG0813545-3		3	4	5	6					
Methylene chloride	1.1		1.7/12U	1.7/12U	1.4/12U	1.3/13U					
Acetone	3.3		20/24U	8.6/23U	8.1/24U	24/25U					
Z	1.2		–	–	–	–					
CC	0.11		–	0.39/2.3U	–	–					
Y	0.54		–	–	–	–					
DD	0.15		–	0.36/2.3U	–	0.50/2.5U					
~~CRQL~~ RRR	0.20		–	–	–	–					

Blank analysis date: 12/19/08
Conc. units: ug/kg
Associated Samples: 3 → 6

Compound	Blank ID	Sample Identification									
	↓		3	4	5	6					
~~Methylene chloride~~ FF	0.16		–	–	–	–					
~~Acetone~~ HHH	0.41		–	–	–	–					
CRQL											

All results were qualified using the criteria stated below except those circled.

Note: Common contaminants such as Methylene chloride, Acetone, 2-Butanone, Carbon disulfide and TICs that were detected in samples within ten times the associated method blank concentration were qualified as not detected, "U". Other contaminants within five times the method blank concentration were also qualified as not detected, "U".

LDC #: 20260A1
SDG #: pu cover

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer: FD
2nd Reviewer: a

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

X N N/A Were all surrogate %R within QC limits?

Y N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		3	Tol	117 (63-116)	J/Adet
				( )	
				( )	
		4	Tol	117 (63-116)	~~J~~ J/Adet (All except FFFF)
				( )	
				( )	
		5	Tol	117 (63-116)	~~J~~ J/Adet
				( )	
				( )	
		4	BFB	55 (58-117)	J/UJ/A QUAL FFFF only
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	81-117	88-110
SMC2 (BFB) = Bromofluorobenzene	74-121	86-115
SMC3 (DCE) = 1,2-Dichloroethane-d4	80-120	80-120
SMC4 (DFM) = Dibromofluoromethane	80-120	86-118

SUR.1SB

LDC #: 20260A1 ec
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: EZ
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		KWG0813545-	Iodomethane	29 (50-140)	16 (50-140)	( )	KWG0813545-3	J/UJ/P
		1/2	NNNN	7 (50-140)	7 (50-140)	( )	3 → 6	J/R/P
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Semivolatiles

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Semivolatiles
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-22DS-081211MS
PCM-22DS-081211MSD

Introduction

This data review covers 8 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990 .

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were greater than or equal to 0.05 .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
PCM-14DS-081211(5X)	2-Fluorophenol 2,4,6-Tribromophenol	0 (10-89) 6 (16-122)	All acid compounds	J (all detects) R (all non-detects)	P
PCM-15DS-081211	2-Fluorophenol Phenol-d5 2,4,6-Tribromophenol	0 (10-89) 7 (15-103) 1 (16-122)	All acid compounds	J (all detects) R (all non-detects)	P
PCM-22DS-081211 (5X)	2-Fluorophenol Phenol-d5 2,4,6-Tribromophenol	0 (10-89) 6 (15-103) 0 (16-122)	All acid compounds	J (all detects) R (all non-detects)	P

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
PCM-22DS-081211MS/MSD (PCM-22DS-081211)	Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-di-n-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol	17 (50-140) 23 (50-140) 30 (50-140) 49 (50-140) 35 (50-140) 0 (50-140)	14 (50-140) 20 (50-140) 23 (50-140) 34 (50-140) 29 (50-140) 0 (50-140)	- - - - - -	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
KWG0813605-3/5 (All samples in SDG K0812115)	Bis(2-chloroethyl) ether	48 (50-150)	46 (50-150)	-	J (all detects) UJ (all non-detects)	A
	Phenol	49 (50-150)	48 (50-150)	-		
	Aniline	38 (50-150)	36 (50-150)	-		
	2-Chlorophenol	-	49 (50-150)	-		
	1,3-Dichlorobenzene	43 (50-150)	44 (50-150)	-		
	1,4-Dichlorobenzene	46 (50-150)	43 (50-150)	-		
	1,2-Dichlorobenzene	47 (50-150)	46 (50-150)	-		
	Bis(2-chloroisopropyl)ether	48 (50-150)	45 (50-150)	-		
	2-Methylphenol	43 (50-150)	41 (50-150)	-		
	Hexachloroethane	47 (50-150)	42 (50-150)	-		
	N-Nitroso-di-n-propylamine	49 (50-150)	47 (50-150)	-		
	4-Methylphenol	39 (50-150)	39 (50-150)	-		
	Nitrobenzene	49 (50-150)	-	-		
	2,4-Dimethylphenol	15 (50-150)	16 (50-150)	-		
	Bis(2-chloroethoxy)methane	49 (50-150)	-	-		
	Benzoic acid	10 (50-150)	9 (50-150)	-		
	Hexachlorocyclopentadiene	43 (50-150)	39 (50-150)	-		
	2,4-Dinitrophenol	30 (50-150)	30 (50-150)	-		

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

The analysis was conducted within all specifications of the method.

Due to severe problems with the surrogate %Rs, acid results were rejected in three samples.

Due to MS/MSD and LCS/LCSD %R problems, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Semivolatiles - Data Qualification Summary - SDG K0812115

SDG	Sample	Compound	Flag	A or P	Reason
K0812115	PCM-14DS-081211(5X) PCM-15DS-081211 PCM-22DS-081211(5X)	Phenol 2-Chlorophenol 2-Methylphenol 4-Methylphenol 2-Nitrophenol 2,4-Dimethylphenol 2,4-Dichlorophenol 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrophenol 4-Nitrophenol 4,6-Dinitro-2-methylphenol Benzoic acid	J (all detects) R (all non-detects)	P	Surrogate spikes (%R)
K0812115	PCM-22DS-081211	Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-di-n-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Bis(2-chloroethyl) ether Phenol Aniline 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene Bis(2-chloroisopropyl)ether 2-Methylphenol Hexachloroethane N-Nitroso-di-n-propylamine 4-Methylphenol Nitrobenzene 2,4-Dimethylphenol Bis(2-chloroethoxy)methane Benzoic acid Hexachlorocyclopentadiene 2,4-Dinitrophenol	J (all detects) UJ (all non-detects)	A	Laboratory control samples (%R)

NW Natural Gasco Site
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U UJ10	300	56	25	12/23/08	01/02/09	KWG0813605	
Phenol	ND	U	880	59	25	12/23/08	01/02/09	KWG0813605	
Aniline	ND	U UJ10	590	44	25	12/23/08	01/02/09	KWG0813605	
2-Chlorophenol	ND	U	300	59	25	12/23/08	01/02/09	KWG0813605	
1,3-Dichlorobenzene	ND	U	300	88	25	12/23/08	01/02/09	KWG0813605	
1,4-Dichlorobenzene	ND	U	300	85	25	12/23/08	01/02/09	KWG0813605	
1,2-Dichlorobenzene	ND	U	300	85	25	12/23/08	01/02/09	KWG0813605	
Benzyl Alcohol	ND	U	590	62	25	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroisopropyl) Ether	ND	U UJ10	300	77	25	12/23/08	01/02/09	KWG0813605	
2-Methylphenol	ND	U	300	44	25	12/23/08	01/02/09	KWG0813605	
Hexachloroethane	ND	U	300	91	25	12/23/08	01/02/09	KWG0813605	
N-Nitrosodi-n-propylamine	ND	U	300	71	25	12/23/08	01/02/09	KWG0813605	
4-Methylphenol†	ND	U	300	44	25	12/23/08	01/02/09	KWG0813605	
Nitrobenzene	ND	U	300	65	25	12/23/08	01/02/09	KWG0813605	
Isophorone	ND	U	300	30	25	12/23/08	01/02/09	KWG0813605	
2-Nitrophenol	ND	U	300	44	25	12/23/08	01/02/09	KWG0813605	
2,4-Dimethylphenol	ND	U UJ10	1500	170	25	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroethoxy)methane	ND	U	300	44	25	12/23/08	01/02/09	KWG0813605	
2,4-Dichlorophenol	ND	U	300	30	25	12/23/08	01/02/09	KWG0813605	
Benzoic Acid	ND	U UJ10	5900	2900	25	12/23/08	01/02/09	KWG0813605	*
1,2,4-Trichlorobenzene	ND	U	300	77	25	12/23/08	01/02/09	KWG0813605	
Naphthalene	**4200**	D	150	68	25	12/23/08	01/02/09	KWG0813605	
4-Chloroaniline	ND	U	300	56	25	12/23/08	01/02/09	KWG0813605	
Hexachlorobutadiene	ND	U	300	74	25	12/23/08	01/02/09	KWG0813605	
4-Chloro-3-methylphenol	ND	U	300	41	25	12/23/08	01/02/09	KWG0813605	
Hexachlorocyclopentadiene	ND	U UJ10	1500	850	25	12/23/08	01/02/09	KWG0813605	
2,4,6-Trichlorophenol	ND	U	300	41	25	12/23/08	01/02/09	KWG0813605	
2,4,5-Trichlorophenol	ND	U	300	44	25	12/23/08	01/02/09	KWG0813605	
2-Chloronaphthalene	ND	U	300	47	25	12/23/08	01/02/09	KWG0813605	
2-Nitroaniline	ND	U	590	94	25	12/23/08	01/02/09	KWG0813605	
Acenaphthylene	**1200**	D	150	36	25	12/23/08	01/02/09	KWG0813605	
Dimethyl Phthalate	ND	U	300	30	25	12/23/08	01/02/09	KWG0813605	
2,6-Dinitrotoluene	ND	U	300	59	25	12/23/08	01/02/09	KWG0813605	

Comments: SL07309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	**3100**	D		150	41	25	12/23/08	01/02/09	KWG0813605	
3-Nitroaniline	ND	U		590	74	25	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrophenol	ND	U	UJ10	5900	500	25	12/23/08	01/02/09	KWG0813605	
Dibenzofuran	**190**	D		150	36	25	12/23/08	01/02/09	KWG0813605	
4-Nitrophenol	ND	U		3000	530	25	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrotoluene	ND	U		300	44	25	12/23/08	01/02/09	KWG0813605	
Fluorene	**1500**	D		150	33	25	12/23/08	01/02/09	KWG0813605	
4-Chlorophenyl Phenyl Ether	ND	U		300	41	25	12/23/08	01/02/09	KWG0813605	
Diethyl Phthalate	ND	U		300	39	25	12/23/08	01/02/09	KWG0813605	
4-Nitroaniline	ND	U		590	53	25	12/23/08	01/02/09	KWG0813605	
2-Methyl-4,6-dinitrophenol	ND	U		3000	41	25	12/23/08	01/02/09	KWG0813605	
N-Nitrosodiphenylamine	ND	U		300	47	25	12/23/08	01/02/09	KWG0813605	
Azobenzene†	ND	U		300	33	25	12/23/08	01/02/09	KWG0813605	
4-Bromophenyl Phenyl Ether	ND	U		300	47	25	12/23/08	01/02/09	KWG0813605	
Hexachlorobenzene	ND	U		300	36	25	12/23/08	01/02/09	KWG0813605	
Phenanthrene	**13000**	D		150	41	25	12/23/08	01/02/09	KWG0813605	
Anthracene	**3200**	D		150	47	25	12/23/08	01/02/09	KWG0813605	
Carbazole	**450**	D		300	39	25	12/23/08	01/02/09	KWG0813605	
Fluoranthene	**17000**	D		150	47	25	12/23/08	01/02/09	KWG0813605	
Pyrene	**21000**	D		150	44	25	12/23/08	01/02/09	KWG0813605	
Di-n-butyl Phthalate	ND	U		590	240	25	12/23/08	01/02/09	KWG0813605	
Butyl Benzyl Phthalate	ND	U		300	94	25	12/23/08	01/02/09	KWG0813605	
3,3'-Dichlorobenzidine	ND	U		3000	110	25	12/23/08	01/02/09	KWG0813605	
Benz(a)anthracene	**6000**	D		150	50	25	12/23/08	01/02/09	KWG0813605	
Chrysene	**7500**	D		150	44	25	12/23/08	01/02/09	KWG0813605	
Bis(2-ethylhexyl) Phthalate	ND	U		3000	210	25	12/23/08	01/02/09	KWG0813605	
Di-n-octyl Phthalate	ND	U		300	50	25	12/23/08	01/02/09	KWG0813605	
Benzo(b)fluoranthene	**8400**	D		150	36	25	12/23/08	01/02/09	KWG0813605	
Benzo(k)fluoranthene	**2700**	D		150	41	25	12/23/08	01/02/09	KWG0813605	
Benzo(a)pyrene	**9700**	D		150	50	25	12/23/08	01/02/09	KWG0813605	
Indeno(1,2,3-cd)pyrene	**7700**	D		150	44	25	12/23/08	01/02/09	KWG0813605	
Dibenz(a,h)anthracene	**1200**	D		150	44	25	12/23/08	01/02/09	KWG0813605	
Benzo(g,h,i)perylene	**9100**	D		150	44	25	12/23/08	01/02/09	KWG0813605	

Comments: SL021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	01/02/09	Outside Control Limits
Phenol-d6	22	15-103	01/02/09	Acceptable
Nitrobenzene-d5	53	10-108	01/02/09	Acceptable
2-Fluorobiphenyl	31	10-105	01/02/09	Acceptable
2,4,6-Tribromophenol	0	16-122	01/02/09	Outside Control Limits
Terphenyl-d14	69	31-126	01/02/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments: 8021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U UJ10	310	58	25	12/23/08	01/02/09	KWG0813605	
Phenol	ND	U	910	61	25	12/23/08	01/02/09	KWG0813605	
Aniline	ND	U UJ10	610	46	25	12/23/08	01/02/09	KWG0813605	
2-Chlorophenol	ND	U	310	61	25	12/23/08	01/02/09	KWG0813605	
1,3-Dichlorobenzene	ND	U	310	91	25	12/23/08	01/02/09	KWG0813605	
1,4-Dichlorobenzene	ND	U	310	88	25	12/23/08	01/02/09	KWG0813605	
1,2-Dichlorobenzene	ND	U	310	88	25	12/23/08	01/02/09	KWG0813605	
Benzyl Alcohol	ND	U	610	64	25	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroisopropyl) Ether	ND	U UJ10	310	79	25	12/23/08	01/02/09	KWG0813605	
2-Methylphenol	ND	U	310	46	25	12/23/08	01/02/09	KWG0813605	
Hexachloroethane	ND	U	310	94	25	12/23/08	01/02/09	KWG0813605	
N-Nitrosodi-n-propylamine	ND	U	310	73	25	12/23/08	01/02/09	KWG0813605	
4-Methylphenol†	ND	U	310	46	25	12/23/08	01/02/09	KWG0813605	
Nitrobenzene	ND	U	310	67	25	12/23/08	01/02/09	KWG0813605	
Isophorone	ND	U	310	31	25	12/23/08	01/02/09	KWG0813605	
2-Nitrophenol	ND	U	310	46	25	12/23/08	01/02/09	KWG0813605	
2,4-Dimethylphenol	ND	U UJ10	1600	170	25	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroethoxy)methane	ND	U	310	46	25	12/23/08	01/02/09	KWG0813605	
2,4-Dichlorophenol	ND	U	310	31	25	12/23/08	01/02/09	KWG0813605	
Benzoic Acid	ND	U UJ10	6100	3000	25	12/23/08	01/02/09	KWG0813605	*
1,2,4-Trichlorobenzene	ND	U	310	79	25	12/23/08	01/02/09	KWG0813605	
Naphthalene	**4800**	D	160	70	25	12/23/08	01/02/09	KWG0813605	
4-Chloroaniline	ND	U	310	58	25	12/23/08	01/02/09	KWG0813605	
Hexachlorobutadiene	ND	U	310	76	25	12/23/08	01/02/09	KWG0813605	
4-Chloro-3-methylphenol	ND	U	310	43	25	12/23/08	01/02/09	KWG0813605	
Hexachlorocyclopentadiene	ND	U UJ10	1600	880	25	12/23/08	01/02/09	KWG0813605	
2,4,6-Trichlorophenol	ND	U	310	43	25	12/23/08	01/02/09	KWG0813605	
2,4,5-Trichlorophenol	ND	U	310	46	25	12/23/08	01/02/09	KWG0813605	
2-Chloronaphthalene	ND	U	310	49	25	12/23/08	01/02/09	KWG0813605	
2-Nitroaniline	ND	U	610	97	25	12/23/08	01/02/09	KWG0813605	
Acenaphthylene	**430**	D	160	37	25	12/23/08	01/02/09	KWG0813605	
Dimethyl Phthalate	**49**	JD	310	31	25	12/23/08	01/02/09	KWG0813605	
2,6-Dinitrotoluene	ND	U	310	61	25	12/23/08	01/02/09	KWG0813605	

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	**990**	D	160	43	25	12/23/08	01/02/09	KWG0813605	
3-Nitroaniline	ND	U	610	76	25	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrophenol	ND	U UJ10	6100	520	25	12/23/08	01/02/09	KWG0813605	
Dibenzofuran	**76**	JD	160	37	25	12/23/08	01/02/09	KWG0813605	
4-Nitrophenol	ND	U	3100	550	25	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrotoluene	ND	U	310	46	25	12/23/08	01/02/09	KWG0813605	
Fluorene	**350**	D	160	34	25	12/23/08	01/02/09	KWG0813605	
4-Chlorophenyl Phenyl Ether	ND	U	310	43	25	12/23/08	01/02/09	KWG0813605	
Diethyl Phthalate	ND	U	310	40	25	12/23/08	01/02/09	KWG0813605	
4-Nitroaniline	ND	U	610	55	25	12/23/08	01/02/09	KWG0813605	
2-Methyl-4,6-dinitrophenol	ND	U	3100	43	25	12/23/08	01/02/09	KWG0813605	
N-Nitrosodiphenylamine	ND	U	310	49	25	12/23/08	01/02/09	KWG0813605	
Azobenzene†	ND	U	310	34	25	12/23/08	01/02/09	KWG0813605	
4-Bromophenyl Phenyl Ether	ND	U	310	49	25	12/23/08	01/02/09	KWG0813605	
Hexachlorobenzene	ND	U	310	37	25	12/23/08	01/02/09	KWG0813605	
Phenanthrene	**4200**	D	160	43	25	12/23/08	01/02/09	KWG0813605	
Anthracene	**1600**	D	160	49	25	12/23/08	01/02/09	KWG0813605	
Carbazole	**300**	JD	310	40	25	12/23/08	01/02/09	KWG0813605	
Fluoranthene	**8300**	D	160	49	25	12/23/08	01/02/09	KWG0813605	
Pyrene	**10000**	D	160	46	25	12/23/08	01/02/09	KWG0813605	
Di-n-butyl Phthalate	ND	U	610	240	25	12/23/08	01/02/09	KWG0813605	
Butyl Benzyl Phthalate	ND	U	310	97	25	12/23/08	01/02/09	KWG0813605	
3,3'-Dichlorobenzidine	ND	U	3100	120	25	12/23/08	01/02/09	KWG0813605	
Benz(a)anthracene	**3500**	D	160	52	25	12/23/08	01/02/09	KWG0813605	
Chrysene	**4100**	D	160	46	25	12/23/08	01/02/09	KWG0813605	
Bis(2-ethylhexyl) Phthalate	ND	U	3100	220	25	12/23/08	01/02/09	KWG0813605	
Di-n-octyl Phthalate	ND	U	310	52	25	12/23/08	01/02/09	KWG0813605	
Benzo(b)fluoranthene	**4400**	D	160	37	25	12/23/08	01/02/09	KWG0813605	
Benzo(k)fluoranthene	**1400**	D	160	43	25	12/23/08	01/02/09	KWG0813605	
Benzo(a)pyrene	**5000**	D	160	52	25	12/23/08	01/02/09	KWG0813605	
Indeno(1,2,3-cd)pyrene	**3800**	D	160	46	25	12/23/08	01/02/09	KWG0813605	
Dibenz(a,h)anthracene	**660**	D	160	46	25	12/23/08	01/02/09	KWG0813605	
Benzo(g,h,i)perylene	**4300**	D	160	46	25	12/23/08	01/02/09	KWG0813605	

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	01/02/09	Outside Control Limits
Phenol-d6	36	15-103	01/02/09	Acceptable
Nitrobenzene-d5	41	10-108	01/02/09	Acceptable
2-Fluorobiphenyl	27	10-105	01/02/09	Acceptable
2,4,6-Tribromophenol	37	16-122	01/02/09	Acceptable
Terphenyl-d14	59	31-126	01/02/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U UJ10	300	57	25	12/23/08	01/02/09	KWG0813605	
Phenol	ND	U ↓	890	60	25	12/23/08	01/02/09	KWG0813605	
Aniline	ND	U UJ10	600	45	25	12/23/08	01/02/09	KWG0813605	
2-Chlorophenol	ND	U	300	60	25	12/23/08	01/02/09	KWG0813605	
1,3-Dichlorobenzene	ND	U	300	89	25	12/23/08	01/02/09	KWG0813605	
1,4-Dichlorobenzene	ND	U	300	86	25	12/23/08	01/02/09	KWG0813605	
1,2-Dichlorobenzene	ND	U ↓	300	86	25	12/23/08	01/02/09	KWG0813605	
Benzyl Alcohol	ND	U	600	62	25	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroisopropyl) Ether	ND	U UJ10	300	77	25	12/23/08	01/02/09	KWG0813605	
2-Methylphenol	ND	U	300	45	25	12/23/08	01/02/09	KWG0813605	
Hexachloroethane	ND	U	300	92	25	12/23/08	01/02/09	KWG0813605	
N-Nitrosodi-n-propylamine	ND	U	300	71	25	12/23/08	01/02/09	KWG0813605	
4-Methylphenol†	ND	U	300	45	25	12/23/08	01/02/09	KWG0813605	
Nitrobenzene	ND	U ↓	300	65	25	12/23/08	01/02/09	KWG0813605	
Isophorone	ND	U	300	30	25	12/23/08	01/02/09	KWG0813605	
2-Nitrophenol	ND	U	300	45	25	12/23/08	01/02/09	KWG0813605	
2,4-Dimethylphenol	ND	U UJ10	1500	170	25	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroethoxy)methane	ND	U ↓	300	45	25	12/23/08	01/02/09	KWG0813605	
2,4-Dichlorophenol	ND	U	300	30	25	12/23/08	01/02/09	KWG0813605	
Benzoic Acid	ND	U UJ10	6000	2900	25	12/23/08	01/02/09	KWG0813605	*
1,2,4-Trichlorobenzene	ND	U	300	77	25	12/23/08	01/02/09	KWG0813605	
Naphthalene	**640**	D	150	68	25	12/23/08	01/02/09	KWG0813605	
4-Chloroaniline	ND	U	300	57	25	12/23/08	01/02/09	KWG0813605	
Hexachlorobutadiene	ND	U	300	74	25	12/23/08	01/02/09	KWG0813605	
4-Chloro-3-methylphenol	ND	U	300	42	25	12/23/08	01/02/09	KWG0813605	
Hexachlorocyclopentadiene	ND	U UJ10	1500	860	25	12/23/08	01/02/09	KWG0813605	
2,4,6-Trichlorophenol	ND	U	300	42	25	12/23/08	01/02/09	KWG0813605	
2,4,5-Trichlorophenol	ND	U	300	45	25	12/23/08	01/02/09	KWG0813605	
2-Chloronaphthalene	ND	U	300	48	25	12/23/08	01/02/09	KWG0813605	
2-Nitroaniline	ND	U	600	95	25	12/23/08	01/02/09	KWG0813605	
Acenaphthylene	**440**	D	150	36	25	12/23/08	01/02/09	KWG0813605	
Dimethyl Phthalate	ND	U	300	30	25	12/23/08	01/02/09	KWG0813605	
2,6-Dinitrotoluene	ND	U	300	60	25	12/23/08	01/02/09	KWG0813605	

Comments: 8021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	**480**	D	150	42	25	12/23/08	01/02/09	KWG0813605	
3-Nitroaniline	ND	U	600	74	25	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrophenol	ND	U UJ10	6000	510	25	12/23/08	01/02/09	KWG0813605	
Dibenzofuran	**46**	JD	150	36	25	12/23/08	01/02/09	KWG0813605	
4-Nitrophenol	ND	U	3000	540	25	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrotoluene	ND	U	300	45	25	12/23/08	01/02/09	KWG0813605	
Fluorene	**280**	D	150	33	25	12/23/08	01/02/09	KWG0813605	
4-Chlorophenyl Phenyl Ether	ND	U	300	42	25	12/23/08	01/02/09	KWG0813605	
Diethyl Phthalate	ND	U	300	39	25	12/23/08	01/02/09	KWG0813605	
4-Nitroaniline	ND	U	600	54	25	12/23/08	01/02/09	KWG0813605	
2-Methyl-4,6-dinitrophenol	ND	U	3000	42	25	12/23/08	01/02/09	KWG0813605	
N-Nitrosodiphenylamine	ND	U	300	48	25	12/23/08	01/02/09	KWG0813605	
Azobenzene†	ND	U	300	33	25	12/23/08	01/02/09	KWG0813605	
4-Bromophenyl Phenyl Ether	ND	U	300	48	25	12/23/08	01/02/09	KWG0813605	
Hexachlorobenzene	ND	U	300	36	25	12/23/08	01/02/09	KWG0813605	
Phenanthrene	**2900**	D	150	42	25	12/23/08	01/02/09	KWG0813605	
Anthracene	**860**	D	150	48	25	12/23/08	01/02/09	KWG0813605	
Carbazole	**66**	JD	300	39	25	12/23/08	01/02/09	KWG0813605	
Fluoranthene	**6600**	D	150	48	25	12/23/08	01/02/09	KWG0813605	
Pyrene	**8100**	D	150	45	25	12/23/08	01/02/09	KWG0813605	
Di-n-butyl Phthalate	ND	U	600	240	25	12/23/08	01/02/09	KWG0813605	
Butyl Benzyl Phthalate	ND	U	300	95	25	12/23/08	01/02/09	KWG0813605	
3,3'-Dichlorobenzidine	ND	U	3000	110	25	12/23/08	01/02/09	KWG0813605	
Benz(a)anthracene	**2500**	D	150	51	25	12/23/08	01/02/09	KWG0813605	
Chrysene	**3000**	D	150	45	25	12/23/08	01/02/09	KWG0813605	
Bis(2-ethylhexyl) Phthalate	ND	U	3000	210	25	12/23/08	01/02/09	KWG0813605	
Di-n-octyl Phthalate	ND	U	300	51	25	12/23/08	01/02/09	KWG0813605	
Benzo(b)fluoranthene	**3100**	D	150	36	25	12/23/08	01/02/09	KWG0813605	
Benzo(k)fluoranthene	**1100**	D	150	42	25	12/23/08	01/02/09	KWG0813605	
Benzo(a)pyrene	**3500**	D	150	51	25	12/23/08	01/02/09	KWG0813605	
Indeno(1,2,3-cd)pyrene	**2800**	D	150	45	25	12/23/08	01/02/09	KWG0813605	
Dibenz(a,h)anthracene	**440**	D	150	45	25	12/23/08	01/02/09	KWG0813605	
Benzo(g,h,i)perylene	**3200**	D	150	45	25	12/23/08	01/02/09	KWG0813605	

Comments: SL021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	01/02/09	Outside Control Limits
Phenol-d6	0	15-103	01/02/09	Outside Control Limits
Nitrobenzene-d5	40	10-108	01/02/09	Acceptable
2-Fluorobiphenyl	37	10-105	01/02/09	Acceptable
2,4,6-Tribromophenol	0	16-122	01/02/09	Outside Control Limits
Terphenyl-d14	65	31-126	01/02/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U UJ10	58	11	5	12/23/08	01/02/09	KWG0813605	
Phenol	ND	U R13	180	12	5	12/23/08	01/02/09	KWG0813605	
Aniline	ND	U UJ10	120	8.7	5	12/23/08	01/02/09	KWG0813605	
2-Chlorophenol	ND	U R13	58	12	5	12/23/08	01/02/09	KWG0813605	
1,3-Dichlorobenzene	ND	U UJ10	58	18	5	12/23/08	01/02/09	KWG0813605	
1,4-Dichlorobenzene	ND	U	58	17	5	12/23/08	01/02/09	KWG0813605	
1,2-Dichlorobenzene	ND	U	58	17	5	12/23/08	01/02/09	KWG0813605	
Benzyl Alcohol	ND	U	120	13	5	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroisopropyl) Ether	ND	U UJ10	58	15	5	12/23/08	01/02/09	KWG0813605	
2-Methylphenol	ND	U R13	58	8.7	5	12/23/08	01/02/09	KWG0813605	
Hexachloroethane	ND	U UJ10	58	18	5	12/23/08	01/02/09	KWG0813605	
N-Nitrosodi-n-propylamine	ND	U	58	14	5	12/23/08	01/02/09	KWG0813605	
4-Methylphenol†	ND	U R13	58	8.7	5	12/23/08	01/02/09	KWG0813605	
Nitrobenzene	ND	U UJ10	58	13	5	12/23/08	01/02/09	KWG0813605	
Isophorone	ND	U	58	5.8	5	12/23/08	01/02/09	KWG0813605	
2-Nitrophenol	ND	U R13	58	8.7	5	12/23/08	01/02/09	KWG0813605	
2,4-Dimethylphenol	ND	U	290	32	5	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroethoxy)methane	ND	U UJ10	58	8.7	5	12/23/08	01/02/09	KWG0813605	
2,4-Dichlorophenol	ND	U R13	58	5.8	5	12/23/08	01/02/09	KWG0813605	
Benzoic Acid	ND	U	1200	560	5	12/23/08	01/02/09	KWG0813605	*
1,2,4-Trichlorobenzene	ND	U	58	15	5	12/23/08	01/02/09	KWG0813605	
Naphthalene	**270**	D	29	14	5	12/23/08	01/02/09	KWG0813605	
4-Chloroaniline	ND	U	58	11	5	12/23/08	01/02/09	KWG0813605	
Hexachlorobutadiene	ND	U	58	15	5	12/23/08	01/02/09	KWG0813605	
4-Chloro-3-methylphenol	ND	U R13	58	8.1	5	12/23/08	01/02/09	KWG0813605	
Hexachlorocyclopentadiene	ND	U UJ10	290	170	5	12/23/08	01/02/09	KWG0813605	
2,4,6-Trichlorophenol	ND	U R13	58	8.1	5	12/23/08	01/02/09	KWG0813605	
2,4,5-Trichlorophenol	ND	U	58	8.7	5	12/23/08	01/02/09	KWG0813605	
2-Chloronaphthalene	ND	U	58	9.2	5	12/23/08	01/02/09	KWG0813605	
2-Nitroaniline	ND	U	120	19	5	12/23/08	01/02/09	KWG0813605	
Acenaphthylene	**65**	D	29	6.9	5	12/23/08	01/02/09	KWG0813605	
Dimethyl Phthalate	ND	U	58	5.8	5	12/23/08	01/02/09	KWG0813605	
2,6-Dinitrotoluene	ND	U	58	12	5	12/23/08	01/02/09	KWG0813605	

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	**130**	D		29	8.1	5	12/23/08	01/02/09	KWG0813605	
3-Nitroaniline	ND	U		120	15	5	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrophenol	ND	U	R13	1200	98	5	12/23/08	01/02/09	KWG0813605	
Dibenzofuran	**13**	JD		29	6.9	5	12/23/08	01/02/09	KWG0813605	
4-Nitrophenol	ND	U	R13	580	110	5	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrotoluene	ND	U		58	8.7	5	12/23/08	01/02/09	KWG0813605	
Fluorene	**55**	D		29	6.4	5	12/23/08	01/02/09	KWG0813605	
4-Chlorophenyl Phenyl Ether	ND	U		58	8.1	5	12/23/08	01/02/09	KWG0813605	
Diethyl Phthalate	ND	U		58	7.5	5	12/23/08	01/02/09	KWG0813605	
4-Nitroaniline	ND	U		120	11	5	12/23/08	01/02/09	KWG0813605	
2-Methyl-4,6-dinitrophenol	ND	U	R13	580	8.1	5	12/23/08	01/02/09	KWG0813605	
N-Nitrosodiphenylamine	ND	U		58	9.2	5	12/23/08	01/02/09	KWG0813605	
Azobenzene†	ND	U		58	6.4	5	12/23/08	01/02/09	KWG0813605	
4-Bromophenyl Phenyl Ether	ND	U		58	9.2	5	12/23/08	01/02/09	KWG0813605	
Hexachlorobenzene	ND	U		58	6.9	5	12/23/08	01/02/09	KWG0813605	
Phenanthrene	**370**	D		29	8.1	5	12/23/08	01/02/09	KWG0813605	
Anthracene	**98**	D		29	9.2	5	12/23/08	01/02/09	KWG0813605	
Carbazole	**27**	JD		58	7.5	5	12/23/08	01/02/09	KWG0813605	
Fluoranthene	**680**	D		29	9.2	5	12/23/08	01/02/09	KWG0813605	
Pyrene	**880**	D		29	8.7	5	12/23/08	01/02/09	KWG0813605	
Di-n-butyl Phthalate	ND	U		120	46	5	12/23/08	01/02/09	KWG0813605	
Butyl Benzyl Phthalate	ND	U		58	19	5	12/23/08	01/02/09	KWG0813605	
3,3'-Dichlorobenzidine	ND	U		580	22	5	12/23/08	01/02/09	KWG0813605	
Benz(a)anthracene	**380**	D		29	9.8	5	12/23/08	01/02/09	KWG0813605	
Chrysene	**470**	D		29	8.7	5	12/23/08	01/02/09	KWG0813605	
Bis(2-ethylhexyl) Phthalate	ND	U		580	41	5	12/23/08	01/02/09	KWG0813605	
Di-n-octyl Phthalate	ND	U		58	9.8	5	12/23/08	01/02/09	KWG0813605	
Benzo(b)fluoranthene	**570**	D		29	6.9	5	12/23/08	01/02/09	KWG0813605	
Benzo(k)fluoranthene	**170**	D		29	8.1	5	12/23/08	01/02/09	KWG0813605	
Benzo(a)pyrene	**600**	D		29	9.8	5	12/23/08	01/02/09	KWG0813605	
Indeno(1,2,3-cd)pyrene	**480**	D		29	8.7	5	12/23/08	01/02/09	KWG0813605	
Dibenz(a,h)anthracene	**81**	D		29	8.7	5	12/23/08	01/02/09	KWG0813605	
Benzo(g,h,i)perylene	**560**	D		29	8.7	5	12/23/08	01/02/09	KWG0813605	

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	01/02/09	Outside Control Limits
Phenol-d6	15	15-103	01/02/09	Acceptable
Nitrobenzene-d5	38	10-108	01/02/09	Acceptable
2-Fluorobiphenyl	30	10-105	01/02/09	Acceptable
2,4,6-Tribromophenol	6	16-122	01/02/09	Outside Control Limits
Terphenyl-d14	56	31-126	01/02/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments: SL021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	UJ10	12	2.3	1	12/23/08	01/02/09	KWG0813605	
Phenol	ND	U	R13	36	2.4	1	12/23/08	01/02/09	KWG0813605	
Aniline	ND	U	UJ10	24	1.8	1	12/23/08	01/02/09	KWG0813605	
2-Chlorophenol	ND	U	R13	12	2.4	1	12/23/08	01/02/09	KWG0813605	
1,3-Dichlorobenzene	ND	U	UJ10	12	3.6	1	12/23/08	01/02/09	KWG0813605	
1,4-Dichlorobenzene	ND	U		12	3.5	1	12/23/08	01/02/09	KWG0813605	
1,2-Dichlorobenzene	ND	U		12	3.5	1	12/23/08	01/02/09	KWG0813605	
Benzyl Alcohol	ND	U		24	2.5	1	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroisopropyl) Ether	ND	U	UJ10	12	3.1	1	12/23/08	01/02/09	KWG0813605	
2-Methylphenol	ND	U	R13	12	1.8	1	12/23/08	01/02/09	KWG0813605	
Hexachloroethane	ND	U	UJ10	12	3.7	1	12/23/08	01/02/09	KWG0813605	
N-Nitrosodi-n-propylamine	ND	U		12	2.9	1	12/23/08	01/02/09	KWG0813605	
4-Methylphenol†	ND	U	R13	12	1.8	1	12/23/08	01/02/09	KWG0813605	
Nitrobenzene	ND	U	UJ10	12	2.7	1	12/23/08	01/02/09	KWG0813605	
Isophorone	ND	U		12	1.2	1	12/23/08	01/02/09	KWG0813605	
2-Nitrophenol	ND	U	R13	12	1.8	1	12/23/08	01/02/09	KWG0813605	
2,4-Dimethylphenol	ND	U		60	6.6	1	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroethoxy)methane	ND	U	UJ10	12	1.8	1	12/23/08	01/02/09	KWG0813605	
2,4-Dichlorophenol	ND	U	R13	12	1.2	1	12/23/08	01/02/09	KWG0813605	
Benzoic Acid	ND	U		240	120	1	12/23/08	01/02/09	KWG0813605	*
1,2,4-Trichlorobenzene	ND	U		12	3.1	1	12/23/08	01/02/09	KWG0813605	
Naphthalene	**62**			6.0	2.8	1	12/23/08	01/02/09	KWG0813605	
4-Chloroaniline	ND	U		12	2.3	1	12/23/08	01/02/09	KWG0813605	
Hexachlorobutadiene	ND	U		12	3.0	1	12/23/08	01/02/09	KWG0813605	
4-Chloro-3-methylphenol	ND	U	R13	12	1.7	1	12/23/08	01/02/09	KWG0813605	
Hexachlorocyclopentadiene	ND	U	UJ10	60	35	1	12/23/08	01/02/09	KWG0813605	
2,4,6-Trichlorophenol	ND	U	R13	12	1.7	1	12/23/08	01/02/09	KWG0813605	
2,4,5-Trichlorophenol	ND	U		12	1.8	1	12/23/08	01/02/09	KWG0813605	
2-Chloronaphthalene	ND	U		12	1.9	1	12/23/08	01/02/09	KWG0813605	
2-Nitroaniline	ND	U		24	3.8	1	12/23/08	01/02/09	KWG0813605	
Acenaphthylene	**47**			6.0	1.5	1	12/23/08	01/02/09	KWG0813605	
Dimethyl Phthalate	ND	U		12	1.2	1	12/23/08	01/02/09	KWG0813605	
2,6-Dinitrotoluene	ND	U		12	2.4	1	12/23/08	01/02/09	KWG0813605	

Comments: 8/021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	**94**			6.0	1.7	1	12/23/08	01/02/09	KWG0813605	
3-Nitroaniline	ND	U		24	3.0	1	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrophenol	ND	U	R13	240	21	1	12/23/08	01/02/09	KWG0813605	
Dibenzofuran	**9.8**			6.0	1.5	1	12/23/08	01/02/09	KWG0813605	
4-Nitrophenol	ND	U	R13	120	22	1	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrotoluene	ND	U		12	1.8	1	12/23/08	01/02/09	KWG0813605	
Fluorene	**74**			6.0	1.4	1	12/23/08	01/02/09	KWG0813605	
4-Chlorophenyl Phenyl Ether	ND	U		12	1.7	1	12/23/08	01/02/09	KWG0813605	
Diethyl Phthalate	ND	U		12	1.6	1	12/23/08	01/02/09	KWG0813605	
4-Nitroaniline	ND	U		24	2.2	1	12/23/08	01/02/09	KWG0813605	
2-Methyl-4,6-dinitrophenol	ND	U	R13	120	1.7	1	12/23/08	01/02/09	KWG0813605	
N-Nitrosodiphenylamine	ND	U		12	1.9	1	12/23/08	01/02/09	KWG0813605	
Azobenzene†	ND	U		12	1.4	1	12/23/08	01/02/09	KWG0813605	
4-Bromophenyl Phenyl Ether	ND	U		12	1.9	1	12/23/08	01/02/09	KWG0813605	
Hexachlorobenzene	ND	U		12	1.5	1	12/23/08	01/02/09	KWG0813605	
Phenanthrene	**430**			6.0	1.7	1	12/23/08	01/02/09	KWG0813605	
Anthracene	**82**			6.0	1.9	1	12/23/08	01/02/09	KWG0813605	
Carbazole	**6.9**	J		12	1.6	1	12/23/08	01/02/09	KWG0813605	
Fluoranthene	**520**			6.0	1.9	1	12/23/08	01/02/09	KWG0813605	
Pyrene	**660**			6.0	1.8	1	12/23/08	01/02/09	KWG0813605	
Di-n-butyl Phthalate	**11**	J		24	9.4	1	12/23/08	01/02/09	KWG0813605	
Butyl Benzyl Phthalate	ND	U		12	3.8	1	12/23/08	01/02/09	KWG0813605	
3,3'-Dichlorobenzidine	ND	U		120	4.4	1	12/23/08	01/02/09	KWG0813605	
Benz(a)anthracene	**250**			6.0	2.1	1	12/23/08	01/02/09	KWG0813605	
Chrysene	**310**			6.0	1.8	1	12/23/08	01/02/09	KWG0813605	
Bis(2-ethylhexyl) Phthalate	**33**	J		120	8.3	1	12/23/08	01/02/09	KWG0813605	
Di-n-octyl Phthalate	ND	U		12	2.1	1	12/23/08	01/02/09	KWG0813605	
Benzo(b)fluoranthene	**380**			6.0	1.5	1	12/23/08	01/02/09	KWG0813605	
Benzo(k)fluoranthene	**120**			6.0	1.7	1	12/23/08	01/02/09	KWG0813605	
Benzo(a)pyrene	**410**			6.0	2.1	1	12/23/08	01/02/09	KWG0813605	
Indeno(1,2,3-cd)pyrene	**340**			6.0	1.8	1	12/23/08	01/02/09	KWG0813605	
Dibenz(a,h)anthracene	**61**			6.0	1.8	1	12/23/08	01/02/09	KWG0813605	
Benzo(g,h,i)perylene	**400**			6.0	1.8	1	12/23/08	01/02/09	KWG0813605	

Comments: SC 121309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	01/02/09	Outside Control Limits
Phenol-d6	7	15-103	01/02/09	Outside Control Limits
Nitrobenzene-d5	47	10-108	01/02/09	Acceptable
2-Fluorobiphenyl	27	10-105	01/02/09	Acceptable
2,4,6-Tribromophenol	1	16-122	01/02/09	Outside Control Limits
Terphenyl-d14	66	31-126	01/02/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U UJ10	63	12	5	12/23/08	01/02/09	KWG0813605	
Phenol	ND	U R13	190	13	5	12/23/08	01/02/09	KWG0813605	
Aniline	ND	U UJ10	130	9.4	5	12/23/08	01/02/09	KWG0813605	
2-Chlorophenol	ND	U R13	63	13	5	12/23/08	01/02/09	KWG0813605	
1,3-Dichlorobenzene	ND	U UJ10	63	19	5	12/23/08	01/02/09	KWG0813605	
1,4-Dichlorobenzene	ND	U UJ8,10	63	19	5	12/23/08	01/02/09	KWG0813605	
1,2-Dichlorobenzene	ND	U UJ10	63	19	5	12/23/08	01/02/09	KWG0813605	
Benzyl Alcohol	ND	U	130	14	5	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroisopropyl) Ether	ND	U UJ10	63	17	5	12/23/08	01/02/09	KWG0813605	
2-Methylphenol	ND	U R13	63	9.4	5	12/23/08	01/02/09	KWG0813605	
Hexachloroethane	ND	U UJ10	63	20	5	12/23/08	01/02/09	KWG0813605	
N-Nitrosodi-n-propylamine	ND	U UJ8,10	63	15	5	12/23/08	01/02/09	KWG0813605	
4-Methylphenol†	ND	U R13	63	9.4	5	12/23/08	01/02/09	KWG0813605	
Nitrobenzene	ND	U UJ10	63	14	5	12/23/08	01/02/09	KWG0813605	
Isophorone	ND	U	63	6.3	5	12/23/08	01/02/09	KWG0813605	
2-Nitrophenol	ND	U R13	63	9.4	5	12/23/08	01/02/09	KWG0813605	
2,4-Dimethylphenol	ND	U ↓	320	35	5	12/23/08	01/02/09	KWG0813605	
Bis(2-chloroethoxy)methane	ND	U UJ10	63	9.4	5	12/23/08	01/02/09	KWG0813605	
2,4-Dichlorophenol	ND	U R13	63	6.3	5	12/23/08	01/02/09	KWG0813605	
Benzoic Acid	ND	U ↓	1300	600	5	12/23/08	01/02/09	KWG0813605	*
1,2,4-Trichlorobenzene	ND	U UJ8	63	17	5	12/23/08	01/02/09	KWG0813605	
Naphthalene	**1300**	D	32	15	5	12/23/08	01/02/09	KWG0813605	
4-Chloroaniline	ND	U	63	12	5	12/23/08	01/02/09	KWG0813605	
Hexachlorobutadiene	ND	U	63	16	5	12/23/08	01/02/09	KWG0813605	
4-Chloro-3-methylphenol	ND	U R13	63	8.8	5	12/23/08	01/02/09	KWG0813605	
Hexachlorocyclopentadiene	ND	U UJ10	320	190	5	12/23/08	01/02/09	KWG0813605	
2,4,6-Trichlorophenol	ND	U R13	63	8.8	5	12/23/08	01/02/09	KWG0813605	
2,4,5-Trichlorophenol	ND	U ↓	63	9.4	5	12/23/08	01/02/09	KWG0813605	
2-Chloronaphthalene	ND	U	63	10	5	12/23/08	01/02/09	KWG0813605	
2-Nitroaniline	ND	U	130	20	5	12/23/08	01/02/09	KWG0813605	
Acenaphthylene	**130**	D	32	7.5	5	12/23/08	01/02/09	KWG0813605	
Dimethyl Phthalate	ND	U	63	6.3	5	12/23/08	01/02/09	KWG0813605	
2,6-Dinitrotoluene	ND	U	63	13	5	12/23/08	01/02/09	KWG0813605	

Comments: SL021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	**210**	D		32	8.8	5	12/23/08	01/02/09	KWG0813605	
3-Nitroaniline	ND	U		130	16	5	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrophenol	ND	U	R13	1300	110	5	12/23/08	01/02/09	KWG0813605	
Dibenzofuran	**17**	JD		32	7.5	5	12/23/08	01/02/09	KWG0813605	
4-Nitrophenol	ND	U	R13	630	120	5	12/23/08	01/02/09	KWG0813605	
2,4-Dinitrotoluene	ND	U		63	9.4	5	12/23/08	01/02/09	KWG0813605	
Fluorene	**89**	D		32	6.9	5	12/23/08	01/02/09	KWG0813605	
4-Chlorophenyl Phenyl Ether	ND	U		63	8.8	5	12/23/08	01/02/09	KWG0813605	
Diethyl Phthalate	ND	U		63	8.1	5	12/23/08	01/02/09	KWG0813605	
4-Nitroaniline	ND	U		130	12	5	12/23/08	01/02/09	KWG0813605	
2-Methyl-4,6-dinitrophenol	ND	U	R13	630	8.8	5	12/23/08	01/02/09	KWG0813605	
N-Nitrosodiphenylamine	ND	U		63	10	5	12/23/08	01/02/09	KWG0813605	
Azobenzene†	ND	U		63	6.9	5	12/23/08	01/02/09	KWG0813605	
4-Bromophenyl Phenyl Ether	ND	U		63	10	5	12/23/08	01/02/09	KWG0813605	
Hexachlorobenzene	ND	U		63	7.5	5	12/23/08	01/02/09	KWG0813605	
Phenanthrene	**830**	D		32	8.8	5	12/23/08	01/02/09	KWG0813605	
Anthracene	**260**	D		32	10	5	12/23/08	01/02/09	KWG0813605	
Carbazole	**47**	JD		63	8.1	5	12/23/08	01/02/09	KWG0813605	
Fluoranthene	**1500**	D		32	10	5	12/23/08	01/02/09	KWG0813605	
Pyrene	**2000**	D		32	9.4	5	12/23/08	01/02/09	KWG0813605	
Di-n-butyl Phthalate	ND	U		130	50	5	12/23/08	01/02/09	KWG0813605	
Butyl Benzyl Phthalate	ND	U		63	20	5	12/23/08	01/02/09	KWG0813605	
3,3'-Dichlorobenzidine	ND	U		630	24	5	12/23/08	01/02/09	KWG0813605	
Benz(a)anthracene	**750**	D		32	11	5	12/23/08	01/02/09	KWG0813605	
Chrysene	**890**	D		32	9.4	5	12/23/08	01/02/09	KWG0813605	
Bis(2-ethylhexyl) Phthalate	**68**	JD		630	44	5	12/23/08	01/02/09	KWG0813605	
Di-n-octyl Phthalate	ND	U		63	11	5	12/23/08	01/02/09	KWG0813605	
Benzo(b)fluoranthene	**1100**	D		32	7.5	5	12/23/08	01/02/09	KWG0813605	
Benzo(k)fluoranthene	**330**	D		32	8.8	5	12/23/08	01/02/09	KWG0813605	
Benzo(a)pyrene	**1200**	D		32	11	5	12/23/08	01/02/09	KWG0813605	
Indeno(1,2,3-cd)pyrene	**970**	D		32	9.4	5	12/23/08	01/02/09	KWG0813605	
Dibenz(a,h)anthracene	**120**	D		32	9.4	5	12/23/08	01/02/09	KWG0813605	
Benzo(g,h,i)perylene	**1200**	D		32	9.4	5	12/23/08	01/02/09	KWG0813605	

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	0	10-89	01/02/09	Outside Control Limits
Phenol-d6	6	15-103	01/02/09	Outside Control Limits
Nitrobenzene-d5	36	10-108	01/02/09	Acceptable
2-Fluorobiphenyl	31	10-105	01/02/09	Acceptable
2,4,6-Tribromophenol	0	16-122	01/02/09	Outside Control Limits
Terphenyl-d14	55	31-126	01/02/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.
Azobenzene	1,2-Diphenylhydrazine is reported as Azobenzene.

Comments: SL0X1309

LDC #: 20260A2a

SDG #: K0812115

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2/9/09

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	% RSD, r^2 ≥ 0.990
IV.	Continuing calibration	A	
V.	Blanks	A	
VI.	Surrogate spikes	SW	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	SW	LCS ID
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ~~soils~~ Sediments

1 †	PCM-02DS-081211	11	KWG0813605-4	21		31	
2 †	PCM-06DS-081211	12		22		32	
3 †	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7	PCM-22DS-081211MS	17		27		37	
8	PCM-22DS-081211MSD	18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Notes: * = System performance check compound (SPCC) for RRF; ** = Calibration check compound (CCC) for %RSD.

LDC #: 20240A2a
SDG #: all cases

VALIDATION FINDINGS WORKSHEET
Surrogate Recovery

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualification below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were percent recoveries (%R) for surrogates within QC limits?
Y N N/A If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?
Y N N/A If any %R was less than 10 percent, was a reanalysis performed to confirm %R?

#	Date	Sample ID	Surrogate	%R (Limits)	Qualifications
		1	TBP	0 (16-122)	no qual xs x PL
			2FP	0 (10-89)	
				( )	
		2	2FP	0 (10-89)	↓ xs
				( )	
				( )	
		3	2FP	0 (10-89)	↓ xs
			PHL	0 (15-103)	↓
			TBP	0 (16-122)	↓
				( )	
5X		4	2FP	0 (10-89)	J/R/P All ACID + PPP
			TBP	6 (16-122)	↓
				( )	
1X		5	2FP	0 (10-89)	J/R/P All ACID + PPP
			PHL	7 (15-103)	↓
			TBP	1 (16-122)	↓
				( )	
				( )	
5X		6 (5X)	2FP	0 (↓)	J/R/P All Acid + PPP
			PHL	6 (↓)	↓
			TBP	0 (↓)	↓
				( )	
				( )	
				( )	

* QC limits are advisory	QC Limits (Soil)	QC Limits (Water)		QC Limits (Soil)	QC Limits (Water)
S1 (NBZ) = Nitrobenzene-d5	23-120	35-114	S5 (2FP) = 2-Fluorophenol	25-121	21-100
S2 (FBP) = 2-Fluorobiphenyl	30-115	43-116	S6 (TBP) = 2,4,6-Tribromophenol	19-122	10-123
S3 (TPH) = Terphenyl-d14	18-137	33-141	S7 (2CP) = 2-Chlorophenol-d4	20-130*	33-110*
S4 (PHL) = Phenol-d5	24-113	10-94	S8 (DCB) = 1,2-Dichlorobenzene-d4	20-130*	16-110*

LDC #: 20260A2a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7+8 (5X)	A	17 (50-140)	14 (50-140)	( )	6	J/UJ/A
			C	23 ( )	20 ( )	( )		
			E	30 ( )	23 ( )	( )		
			J	49 ( )	34 ( )	( )		
			R	35 ( )	29 ( )	( )		
*			V	0 ( )	0 ( )	( )		J/R/A
			ZZ	141 ( )	46 ( )	( )		no QUAL parent > 4X
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

* matrix interference

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

LDC #: 20260A2a
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?

Y N N/A Were the LCS/LCSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		KWG0813605-3/5	B	48 (~~50-98~~ 50-150)	46 (50-150)	( )	All + BLK	J/UJ/A
			A	49 ( )	48 ( )	( )		
			NNN	38 ( )	36 ( )	( )	— — —	—
			C	( )	49 ( )	( )		
			D	43 ( )	44 ( )	( )		
			E	46 ( )	43 ( )	( )		
			F	47 ( )	46 ( )	( )		
			MMM	48 ( )	45 ( )	( )		
			G	43 ( )	41 ( )	( )		
			K	47 ( )	42 ( )	( )		
			J	49 ( )	47 ( )	( )		
			I	39 ( )	39 ( )	( )		
			L	49 ( )	( )	( )		
			O	15 ( )	16 ( )	( )		
			P	49 ( )	( )	( )		
			PPP	10 ( )	9 ( )	( )		
			X	43 ( )	39 ( )	( )		
			HH	30 (✓)	30 (✓)	( )	✓	✓
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Polynuclear Aromatic Hydrocarbons

LDC

LDC Report# 20260A2b

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Polynuclear Aromatic Hydrocarbons
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-06DS-081211MS
PCM-06DS-081211MSD

Introduction

This data review covers 8 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per a modification of EPA SW 846 Method 8270C using Selected Ion Monitoring (SIM) for Polynuclear Aromatic Hydrocarbons.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all target compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polynuclear aromatic hydrocarbon contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
PCM-06DS-081211MS/MSD (PCM-06DS-081211)	Acenaphthylene Dibenz(a,h)anthracene Acenaphthene Fluorene 2-Methylnaphthalene	3 (50-140) 12 (50-140) - 26 (50-140) 45 (50-140)	5 (50-140) 16 (50-140) 13 (50-140) 1 (50-140) 44 (50-140)	- - - - -	J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R problems, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Polynuclear Aromatic Hydrocarbons - Data Qualification Summary - SDG K0812115

SDG	Sample	Compound	Flag	A or P	Reason
K0812115	PCM-06DS-081211	Acenaphthylene Dibenz(a,h)anthracene Acenaphthene Fluorene 2-Methylnaphthalene	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)

NW Natural Gasco Site
Polynuclear Aromatic Hydrocarbons - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**4400**	D	59	7.4	20	12/23/08	01/08/09	KWG0813604	
2-Methylnaphthalene	**710**		3.0	0.39	1	12/23/08	01/08/09	KWG0813604	
Acenaphthylene	**590**		3.0	0.24	1	12/23/08	01/08/09	KWG0813604	
Acenaphthene	**3000**	D	59	4.6	20	12/23/08	01/08/09	KWG0813604	
Fluorene	**1300**	D	59	10	20	12/23/08	01/08/09	KWG0813604	
Phenanthrene	**11000**	D	59	15	20	12/23/08	01/08/09	KWG0813604	
Anthracene	**3700**	D	59	9.4	20	12/23/08	01/08/09	KWG0813604	
Fluoranthene	**15000**	D	59	13	20	12/23/08	01/08/09	KWG0813604	
Pyrene	**17000**	D	59	7.4	20	12/23/08	01/08/09	KWG0813604	
Benz(a)anthracene	**6100**	D	59	9.6	20	12/23/08	01/08/09	KWG0813604	
Chrysene	**6800**	D	59	5.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(b)fluoranthene	**8100**	D	59	5.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(k)fluoranthene	**2600**	D	59	3.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(a)pyrene	**9900**	D	59	2.8	20	12/23/08	01/08/09	KWG0813604	
Indeno(1,2,3-cd)pyrene	**7400**	D	59	3.2	20	12/23/08	01/08/09	KWG0813604	
Dibenz(a,h)anthracene	**1100**		3.0	0.28	1	12/23/08	01/08/09	KWG0813604	
Benzo(g,h,i)perylene	**8400**	D	59	13	20	12/23/08	01/08/09	KWG0813604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	36	10-128	01/08/09	Acceptable
Fluoranthene-d10	36	29-121	01/08/09	Acceptable
Terphenyl-d14	43	24-141	01/08/09	Acceptable

Comments: SP 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**5200**	D		61	7.4	20	12/23/08	01/08/09	KWG0813604	
2-Methylnaphthalene	**190**		J8	3.1	0.39	1	12/23/08	01/08/09	KWG0813604	
Acenaphthylene	**380**		J8	3.1	0.24	1	12/23/08	01/08/09	KWG0813604	
Acenaphthene	**940**			3.1	0.23	1	12/23/08	01/08/09	KWG0813604	
Fluorene	**450**			3.1	0.50	1	12/23/08	01/08/09	KWG0813604	
Phenanthrene	**4200**	D		61	15	20	12/23/08	01/08/09	KWG0813604	
Anthracene	**2000**	D		61	9.4	20	12/23/08	01/08/09	KWG0813604	
Fluoranthene	**8800**	D		61	13	20	12/23/08	01/08/09	KWG0813604	
Pyrene	**9000**	D		61	7.4	20	12/23/08	01/08/09	KWG0813604	
Benz(a)anthracene	**3500**	D		61	9.6	20	12/23/08	01/08/09	KWG0813604	
Chrysene	**3800**	D		61	5.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(b)fluoranthene	**4400**	D		61	5.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(k)fluoranthene	**1400**	D		61	3.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(a)pyrene	**5200**	D		61	2.8	20	12/23/08	01/08/09	KWG0813604	
Indeno(1,2,3-cd)pyrene	**3800**	D		61	3.2	20	12/23/08	01/08/09	KWG0813604	
Dibenz(a,h)anthracene	**480**		J8	3.1	0.28	1	12/23/08	01/08/09	KWG0813604	
Benzo(g,h,i)perylene	**4200**	D		61	13	20	12/23/08	01/08/09	KWG0813604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	41	10-128	01/08/09	Acceptable
Fluoranthene-d10	32	29-121	01/08/09	Acceptable
Terphenyl-d14	43	24-141	01/08/09	Acceptable

Comments: 8/02/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**620**		3.0	0.37	1	12/23/08	01/08/09	KWG0813604	
2-Methylnaphthalene	**140**		3.0	0.39	1	12/23/08	01/08/09	KWG0813604	
Acenaphthylene	**260**		3.0	0.24	1	12/23/08	01/08/09	KWG0813604	
Acenaphthene	**460**		3.0	0.23	1	12/23/08	01/08/09	KWG0813604	
Fluorene	**270**		3.0	0.50	1	12/23/08	01/08/09	KWG0813604	
Phenanthrene	**2900**	D	60	15	20	12/23/08	01/08/09	KWG0813604	
Anthracene	**820**		3.0	0.47	1	12/23/08	01/08/09	KWG0813604	
Fluoranthene	**6900**	D	60	13	20	12/23/08	01/08/09	KWG0813604	
Pyrene	**7600**	D	60	7.4	20	12/23/08	01/08/09	KWG0813604	
Benz(a)anthracene	**2800**	D	60	9.6	20	12/23/08	01/08/09	KWG0813604	
Chrysene	**3000**	D	60	5.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(b)fluoranthene	**3500**	D	60	5.0	20	12/23/08	01/08/09	KWG0813604	
Benzo(k)fluoranthene	**920**		3.0	0.15	1	12/23/08	01/08/09	KWG0813604	
Benzo(a)pyrene	**4100**	D	60	2.8	20	12/23/08	01/08/09	KWG0813604	
Indeno(1,2,3-cd)pyrene	**3000**	D	60	3.2	20	12/23/08	01/08/09	KWG0813604	
Dibenz(a,h)anthracene	**400**		3.0	0.28	1	12/23/08	01/08/09	KWG0813604	
Benzo(g,h,i)perylene	**3400**	D	60	13	20	12/23/08	01/08/09	KWG0813604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	39	10-128	01/08/09	Acceptable
Fluoranthene-d10	40	29-121	01/08/09	Acceptable
Terphenyl-d14	50	24-141	01/08/09	Acceptable

Comments: SL 02/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**380**		2.9	0.37	1	12/23/08	01/08/09	KWG0813604	
2-Methylnaphthalene	**47**		2.9	0.39	1	12/23/08	01/08/09	KWG0813604	
Acenaphthylene	**48**		2.9	0.24	1	12/23/08	01/08/09	KWG0813604	
Acenaphthene	**180**		2.9	0.23	1	12/23/08	01/08/09	KWG0813604	
Fluorene	**69**		2.9	0.50	1	12/23/08	01/08/09	KWG0813604	
Phenanthrene	**480**		2.9	0.75	1	12/23/08	01/08/09	KWG0813604	
Anthracene	**140**		2.9	0.47	1	12/23/08	01/08/09	KWG0813604	
Fluoranthene	**860**		2.9	0.61	1	12/23/08	01/08/09	KWG0813604	
Pyrene	**1000**		2.9	0.37	1	12/23/08	01/08/09	KWG0813604	
Benz(a)anthracene	**520**		2.9	0.48	1	12/23/08	01/08/09	KWG0813604	
Chrysene	**570**		2.9	0.25	1	12/23/08	01/08/09	KWG0813604	
Benzo(b)fluoranthene	**730**		2.9	0.25	1	12/23/08	01/08/09	KWG0813604	
Benzo(k)fluoranthene	**250**		2.9	0.15	1	12/23/08	01/08/09	KWG0813604	
Benzo(a)pyrene	**840**		2.9	0.14	1	12/23/08	01/08/09	KWG0813604	
Indeno(1,2,3-cd)pyrene	**610**		2.9	0.16	1	12/23/08	01/08/09	KWG0813604	
Dibenz(a,h)anthracene	**92**		2.9	0.28	1	12/23/08	01/08/09	KWG0813604	
Benzo(g,h,i)perylene	**660**		2.9	0.64	1	12/23/08	01/08/09	KWG0813604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	48	10-128	01/08/09	Acceptable
Fluoranthene-d10	51	29-121	01/08/09	Acceptable
Terphenyl-d14	68	24-141	01/08/09	Acceptable

Comments: 8/021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**84**		3.0	0.37	1	12/23/08	01/07/09	KWG0813604	
2-Methylnaphthalene	**25**		3.0	0.39	1	12/23/08	01/07/09	KWG0813604	
Acenaphthylene	**32**		3.0	0.24	1	12/23/08	01/07/09	KWG0813604	
Acenaphthene	**120**		3.0	0.23	1	12/23/08	01/07/09	KWG0813604	
Fluorene	**99**		3.0	0.50	1	12/23/08	01/07/09	KWG0813604	
Phenanthrene	**430**		3.0	0.75	1	12/23/08	01/07/09	KWG0813604	
Anthracene	**91**		3.0	0.47	1	12/23/08	01/07/09	KWG0813604	
Fluoranthene	**510**		3.0	0.61	1	12/23/08	01/07/09	KWG0813604	
Pyrene	**570**		3.0	0.37	1	12/23/08	01/07/09	KWG0813604	
Benz(a)anthracene	**270**		3.0	0.48	1	12/23/08	01/07/09	KWG0813604	
Chrysene	**290**		3.0	0.25	1	12/23/08	01/07/09	KWG0813604	
Benzo(b)fluoranthene	**370**		3.0	0.25	1	12/23/08	01/07/09	KWG0813604	
Benzo(k)fluoranthene	**130**		3.0	0.15	1	12/23/08	01/07/09	KWG0813604	
Benzo(a)pyrene	**440**		3.0	0.14	1	12/23/08	01/07/09	KWG0813604	
Indeno(1,2,3-cd)pyrene	**310**		3.0	0.16	1	12/23/08	01/07/09	KWG0813604	
Dibenz(a,h)anthracene	**43**		3.0	0.28	1	12/23/08	01/07/09	KWG0813604	
Benzo(g,h,i)perylene	**360**		3.0	0.64	1	12/23/08	01/07/09	KWG0813604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	39	10-128	01/07/09	Acceptable
Fluoranthene-d10	34	29-121	01/07/09	Acceptable
Terphenyl-d14	62	24-141	01/07/09	Acceptable

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polynuclear Aromatic Hydrocarbons

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**1500**	D	32	3.7	10	12/23/08	01/08/09	KWG0813604	
2-Methylnaphthalene	**67**		3.2	0.39	1	12/23/08	01/08/09	KWG0813604	
Acenaphthylene	**87**		3.2	0.24	1	12/23/08	01/08/09	KWG0813604	
Acenaphthene	**240**		3.2	0.23	1	12/23/08	01/08/09	KWG0813604	
Fluorene	**110**		3.2	0.50	1	12/23/08	01/08/09	KWG0813604	
Phenanthrene	**820**		3.2	0.75	1	12/23/08	01/08/09	KWG0813604	
Anthracene	**270**		3.2	0.47	1	12/23/08	01/08/09	KWG0813604	
Fluoranthene	**2000**	D	32	6.1	10	12/23/08	01/08/09	KWG0813604	
Pyrene	**2100**	D	32	3.7	10	12/23/08	01/08/09	KWG0813604	
Benz(a)anthracene	**830**		3.2	0.48	1	12/23/08	01/08/09	KWG0813604	
Chrysene	**940**		3.2	0.25	1	12/23/08	01/08/09	KWG0813604	
Benzo(b)fluoranthene	**1200**		3.2	0.25	1	12/23/08	01/08/09	KWG0813604	
Benzo(k)fluoranthene	**370**		3.2	0.15	1	12/23/08	01/08/09	KWG0813604	
Benzo(a)pyrene	**1500**	D	32	1.4	10	12/23/08	01/08/09	KWG0813604	
Indeno(1,2,3-cd)pyrene	**1100**		3.2	0.16	1	12/23/08	01/08/09	KWG0813604	
Dibenz(a,h)anthracene	**140**		3.2	0.28	1	12/23/08	01/08/09	KWG0813604	
Benzo(g,h,i)perylene	**1200**		3.2	0.64	1	12/23/08	01/08/09	KWG0813604	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	45	10-128	01/08/09	Acceptable
Fluoranthene-d10	46	29-121	01/08/09	Acceptable
Terphenyl-d14	58	24-141	01/08/09	Acceptable

Comments: SL02/2009

LDC #: 20260A2b

VALIDATION COMPLETENESS WORKSHEET

Level III

SDG #: K0812115

Laboratory: Columbia Analytical Services

Date: 2/9/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Polynuclear Aromatic Hydrocarbons (EPA SW 846 Method 8270C-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤25
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS ID
IX.	Regional Quality Assurance and Quality Control	N	
X.	Internal standards	A	
XI.	Target compound identification	N	
XII.	Compound quantitation/CRQLs	N	
XIII.	Tentatively identified compounds (TICs)	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	
XVI.	Field duplicates	N	
XVII.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-02DS-081211	11	KWG0813604-2,5			31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7	PCM-06DS-081211MS	17		27		37	
8	PCM-06DS-081211MSD	18		28		38	
9		19		29		39	
10		20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS BNA (EPA SW 846 Method 8270C)

A. Phenol**	P. Bis(2-chloroethoxy)methane	EE. 2,6-Dinitrotoluene	TT. Pentachlorophenol**	III. Benzo(a)pyrene**
B. Bis (2-chloroethyl) ether	Q. 2,4-Dichlorophenol**	FF. 3-Nitroaniline	UU. Phenanthrene	JJJ. Indeno(1,2,3-cd)pyrene
C. 2-Chlorophenol	R. 1,2,4-Trichlorobenzene	GG. Acenaphthene**	VV. Anthracene	KKK. Dibenz(a,h)anthracene
D. 1,3-Dichlorobenzene	S. Naphthalene	HH. 2,4-Dinitrophenol*	WW. Carbazole	LLL. Benzo(g,h,i)perylene
E. 1,4-Dichlorobenzene**	T. 4-Chloroaniline	II. 4-Nitrophenol*	XX. Di-n-butylphthalate	MMM. Bis(2-Chloroisopropyl)ether
F. 1,2-Dichlorobenzene	U. Hexachlorobutadiene**	JJ. Dibenzofuran	YY. Fluoranthene**	NNN. Aniline
G. 2-Methylphenol	V. 4-Chloro-3-methylphenol**	KK. 2,4-Dinitrotoluene	ZZ. Pyrene	OOO. N-Nitrosodimethylamine
H. 2,2'-Oxybis(1-chloropropane)	W. 2-Methylnaphthalene	LL. Diethylphthalate	AAA. Butylbenzylphthalate	PPP. Benzoic Acid
I. 4-Methylphenol	X. Hexachlorocyclopentadiene*	MM. 4-Chlorophenyl-phenyl ether	BBB. 3,3'-Dichlorobenzidine	QQQ. Benzyl alcohol
J. N-Nitroso-di-n-propylamine*	Y. 2,4,6-Trichlorophenol**	NN. Fluorene	CCC. Benzo(a)anthracene	RRR. Pyridine
K. Hexachloroethane	Z. 2,4,5-Trichlorophenol	OO. 4-Nitroaniline	DDD. Chrysene	SSS. Benzidine
L. Nitrobenzene	AA. 2-Chloronaphthalene	PP. 4,6-Dinitro-2-methylphenol	EEE. Bis(2-ethylhexyl)phthalate	TTT.
M. Isophorone	BB. 2-Nitroaniline	QQ. N-Nitrosodiphenylamine (1)**	FFF. Di-n-octylphthalate**	UUU
N. 2-Nitrophenol**	CC. Dimethylphthalate	RR. 4-Bromophenyl-phenylether	GGG. Benzo(b)fluoranthene	VVV.
O. 2,4-Dimethylphenol	DD. Acenaphthylene	SS. Hexachlorobenzene	HHH. Benzo(k)fluoranthene	WWW.

Notes: * = System performance check compound (SPCC) for RRF; ** = Calibration check compound (CCC) for %RSD.

LDC #: 20260A2b
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS BNA (EPA SW 846 Method 8270)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7 & 8	several compounds	outside limits		( )	2	no qual parent 7 4X
			DD	3 (50-140)	5 (50-140)	( )		J/UJ/A
			KKK	12 ( )	16 ( )	( )		
			GG	( )	13 ( )	( )		
			NN	26 ( )	1 ( )	( )		
			W	45 ( )	44 ( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

	Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)		Compound	QC Limits (Soil)	RPD (Soil)	QC Limits (Water)	RPD (Water)
A.	Phenol	26-90%	≤ 35%	12-110%	≤ 42%	GG.	Acenaphthene	31-137%	≤ 19%	46-118%	≤ 31%
C.	2-Chlorophenol	25-102%	≤ 50%	27-123%	≤ 40%	II.	4-Nitrophenol	11-114%	≤ 50%	10-80%	≤ 50%
E.	1,4-Dichlorobenzene	28-104%	≤ 27%	36-97%	≤ 28%	KK.	2,4-Dinitrotoluene	28-89%	≤ 47%	24-96%	≤ 38%
J.	N-Nitroso-di-n-propylamine	41-126%	≤ 38%	41-116%	≤ 38%	TT.	Pentachlorophenol	17-109%	≤ 47%	9-103%	≤ 50%
R.	1,2,4-Trichlorobenzene	38-107%	≤ 23%	39-98%	≤ 28%	ZZ.	Pyrene	35-142%	≤ 36%	26-127%	≤ 31%
V.	4-Chloro-3-methylphenol	26-103%	≤ 33%	23-97%	≤ 42%						

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Chlorinated Pesticides

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Chlorinated Pesticides
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-02DS-081211MS
PCM-02DS-081211MSD
PCM-06DS-081211MS
PCM-06DS-081211MSD
PCM-14DS-081211MS
PCM-14DS-081211MSD
PCM-15DS-081211MS
PCM-15DS-081211MSD

Introduction

This data review covers 14 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8081A for Chlorinated Pesticides.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of single and multicomponent compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
1/6/09	0105F050-53	DB-35MS	alpha-BHC beta-BHC gamma-BHC delta-BHC Heptachlor Aldrin	17 17 25 30 21 22	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-02DS-081211MS PCM-02DS-081211MSD KWG0813456-13	J (all detects) UJ (all non-detects)	A
1/7/09	0106F019-22	DB-35MS	alpha-BHC beta-BHC gamma-BHC delta-BHC Heptachlor Aldrin	20 16 27 28 24 18	PCM-15DS-081211 PCM-22DS-081211	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

The individual 4,4'-DDT and Endrin breakdowns (%BD) were less than or equal to 15.0%.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
KWG0813456-13	12/17/08	Methoxychlor	0.31 ug/Kg	All samples in SDG K0812115

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
PCM-02DS-081211MS/MSD (PCM-02DS-081211)	gamma-Chlordane 4,4'-DDD 4,4'-DDT Endosulfan sulfate 4,4'-DDE	15 (50-140) - 0 (50-140) 45 (50-140) -	- 24 (50-140) 0 (50-140) - 49 (50-140)	114 (≤40) - 54 (≤40) 80 (≤40) -	J (all detects) UJ (all non-detects)	A
PCM-06DS-081211MS/MSD (PCM-06DS-081211)	Hexachloroethane Hexachlorobutadiene	28 (50-140) 39 (50-140)	27 (50-140) 47 (50-140)	- -	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

The sample results for detected compounds from the two columns were within 40% relative percent difference (RPD) with the following exceptions:

Sample	Compound	RPD	Flag	A or P
PCM-02DS-081211	4,4'-DDE 2,4'-DDD Mirex	45.5 88.9 75.2	J (all detects) J (all detects) J (all detects)	A
PCM-06DS-081211	4,4'-DDT	61.7	J (all detects)	A
PCM-09DS-081211	4,4'-DDT 2,4'-DDD Hexachloroethane	60.0 63.6 66.7	J (all detects) J (all detects) J (all detects)	A
PCM-14DS-081211	Hexachlorobenzene 4,4'-DDT	72.1 64.9	J (all detects) J (all detects)	A
PCM-15DS-081211	Hexachlorobenzene 2,4'-DDT	97.7 72.7	J (all detects) J (all detects)	A
PCM-22DS-081211	Hexachlorobenzene Heptachlor Hexachloroethane	95.0 87.2 43.1	J (all detects) J (all detects) J (all detects)	A

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to calibration %D, MS/MSD %R and RPD and compound quantitation problems, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Chlorinated Pesticides - Data Qualification Summary - SDG K0812115

SDG	Sample	Compound	Flag	A or P	Reason
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	alpha-BHC beta-BHC gamma-BHC delta-BHC Heptachlor Aldrin	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)
K0812115	PCM-02DS-081211	gamma-Chlordane 4,4'-DDT Endosulfan sulfate	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)
K0812115	PCM-02DS-081211	4,4'-DDD 4,4'-DDE	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
K0812115	PCM-06DS-081211	Hexachloroethane Hexachlorobutadiene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
K0812115	PCM-02DS-081211	4,4'-DDE 2,4'-DDD Mirex	J (all detects) J (all detects) J (all detects)	A	Compound quantitation and CRQLs (RPD)
K0812115	PCM-06DS-081211	4,4'-DDT	J (all detects)	A	Compound quantitation and CRQLs (RPD)
K0812115	PCM-09DS-081211	4,4'-DDT 2,4'-DDD Hexachloroethane	J (all detects) J (all detects) J (all detects)	A	Compound quantitation and CRQLs (RPD)
K0812115	PCM-14DS-081211	Hexachlorobenzene 4,4'-DDT	J (all detects) J (all detects)	A	Compound quantitation and CRQLs (RPD)
K0812115	PCM-15DS-081211	Hexachlorobenzene 2,4'-DDT	J (all detects) J (all detects)	A	Compound quantitation and CRQLs (RPD)
K0812115	PCM-22DS-081211	Hexachlorobenzene Heptachlor Hexachloroethane	J (all detects) J (all detects) J (all detects)	A	Compound quantitation and CRQLs (RPD)

NW Natural Gasco Site
Chlorinated Pesticides - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	UJ5	1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobenzene	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
beta-BHC	ND	Ui	UJ5	1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
gamma-BHC (Lindane)	ND	Ui		5.7	5.7	1	12/17/08	01/06/09	KWG0813456	
delta-BHC	ND	U		1.2	0.064	1	12/17/08	01/06/09	KWG0813456	
Heptachlor	ND	Ui		3.6	3.6	1	12/17/08	01/06/09	KWG0813456	
Aldrin	ND	Ui		2.3	2.3	1	12/17/08	01/06/09	KWG0813456	
Heptachlor Epoxide	ND	U		1.2	0.16	1	12/17/08	01/06/09	KWG0813456	
gamma-Chlordane†	ND	U	UJ8,9	1.2	0.075	1	12/17/08	01/06/09	KWG0813456	
Endosulfan I	ND	U		1.2	0.20	1	12/17/08	01/06/09	KWG0813456	
alpha-Chlordane	ND	Ui		3.4	3.4	1	12/17/08	01/06/09	KWG0813456	
Dieldrin	ND	U		1.2	0.34	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDE	**6.2**	P	J8,12	1.2	0.12	1	12/17/08	01/06/09	KWG0813456	
Endrin	ND	Ui		1.7	1.7	1	12/17/08	01/06/09	KWG0813456	
Endosulfan II	ND	U		1.2	0.23	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDD	**34**		J8	1.2	0.14	1	12/17/08	01/06/09	KWG0813456	
Endrin Aldehyde	ND	Ui		1.2	1.1	1	12/17/08	01/06/09	KWG0813456	
Endosulfan Sulfate	ND	U	UJ8,9	1.2	0.092	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDT	**44**		J8,9	1.2	0.075	1	12/17/08	01/06/09	KWG0813456	
Endrin Ketone	**3.0**			1.2	0.096	1	12/17/08	01/06/09	KWG0813456	
Methoxychlor	ND	U		1.2	0.12	1	12/17/08	01/06/09	KWG0813456	
Toxaphene	ND	Ui		660	660	1	12/17/08	01/06/09	KWG0813456	
Oxychlordane	ND	Ui		2.5	2.5	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDE	ND	Ui		2.0	2.0	1	12/17/08	01/06/09	KWG0813456	
cis-Nonachlor	ND	Ui		8.0	8.0	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDD	**13**	P	J12	1.2	0.25	1	12/17/08	01/06/09	KWG0813456	
trans-Nonachlor	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDT	ND	Ui		2.1	2.1	1	12/17/08	01/06/09	KWG0813456	
Mirex	**8.6**	P	J12	1.2	0.074	1	12/17/08	01/06/09	KWG0813456	
Hexachloroethane	ND	U		1.2	0.18	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobutadiene	ND	Ui		6.6	6.6	1	12/17/08	01/06/09	KWG0813456	

Comments: 8021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	73	25-125	01/06/09	Acceptable
Decachlorobiphenyl	68	22-142	01/06/09	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: 8/21/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	**1.4**		J5	1.3	0.32	1	12/17/08	01/06/09	KWG0813456	*
Hexachlorobenzene	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
beta-BHC	ND	Ui	UJ5	1.9	1.9	1	12/17/08	01/06/09	KWG0813456	
gamma-BHC (Lindane)	ND	Ui		4.5	4.5	1	12/17/08	01/06/09	KWG0813456	
delta-BHC	ND	Ui		1.7	1.7	1	12/17/08	01/06/09	KWG0813456	
Heptachlor	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Aldrin	ND	Ui		1.3	1.1	1	12/17/08	01/06/09	KWG0813456	
Heptachlor Epoxide	ND	U		1.3	0.16	1	12/17/08	01/06/09	KWG0813456	
gamma-Chlordane†	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Endosulfan I	ND	U		1.3	0.21	1	12/17/08	01/06/09	KWG0813456	
alpha-Chlordane	ND	Ui		3.6	3.6	1	12/17/08	01/06/09	KWG0813456	
Dieldrin	ND	U		1.3	0.36	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDE	**5.3**			1.3	0.13	1	12/17/08	01/06/09	KWG0813456	
Endrin	ND	U		1.3	0.25	1	12/17/08	01/06/09	KWG0813456	
Endosulfan II	ND	U		1.3	0.23	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDD	**15**			1.3	0.15	1	12/17/08	01/06/09	KWG0813456	
Endrin Aldehyde	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Endosulfan Sulfate	ND	U		1.3	0.096	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDT	**14**	P	J/2	1.3	0.078	1	12/17/08	01/06/09	KWG0813456	
Endrin Ketone	ND	U		1.3	0.10	1	12/17/08	01/06/09	KWG0813456	
Methoxychlor	ND	U		1.3	0.13	1	12/17/08	01/06/09	KWG0813456	
Toxaphene	ND	Ui		310	310	1	12/17/08	01/06/09	KWG0813456	
Oxychlordane	ND	U		1.3	0.071	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDE	ND	Ui		1.3	1.1	1	12/17/08	01/06/09	KWG0813456	
cis-Nonachlor	ND	Ui		3.9	3.9	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDD	**9.2**			1.3	0.26	1	12/17/08	01/06/09	KWG0813456	
trans-Nonachlor	ND	Ui		1.3	0.70	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDT	ND	Ui		1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Mirex	ND	U		1.3	0.077	1	12/17/08	01/06/09	KWG0813456	
Hexachloroethane	ND	Ui	UJ8	1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobutadiene	ND	Ui		4.6	4.6	1	12/17/08	01/06/09	KWG0813456	

* See Case Narrative

Comments: 8/02/309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	25-125	01/06/09	Acceptable
Decachlorobiphenyl	78	22-142	01/06/09	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui UJ5	1.2	0.56	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobenzene	ND	Ui	1.9	1.9	1	12/17/08	01/06/09	KWG0813456	
beta-BHC	ND	Ui UJ5	2.4	2.4	1	12/17/08	01/06/09	KWG0813456	
gamma-BHC (Lindane)	ND	Ui	4.6	4.6	1	12/17/08	01/06/09	KWG0813456	
delta-BHC	ND	Ui	1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Heptachlor	ND	Ui	1.3	1.3	1	12/17/08	01/06/09	KWG0813456	
Aldrin	ND	Ui	2.6	2.6	1	12/17/08	01/06/09	KWG0813456	
Heptachlor Epoxide	ND	U	1.2	0.16	1	12/17/08	01/06/09	KWG0813456	
gamma-Chlordane†	ND	U	1.2	0.076	1	12/17/08	01/06/09	KWG0813456	
Endosulfan I	ND	U	1.2	0.21	1	12/17/08	01/06/09	KWG0813456	
alpha-Chlordane	ND	Ui	1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Dieldrin	ND	U	1.2	0.35	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDE	**3.7**		1.2	0.12	1	12/17/08	01/06/09	KWG0813456	
Endrin	ND	U	1.2	0.24	1	12/17/08	01/06/09	KWG0813456	
Endosulfan II	ND	U	1.2	0.23	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDD	**14**		1.2	0.15	1	12/17/08	01/06/09	KWG0813456	
Endrin Aldehyde	ND	Ui	1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Endosulfan Sulfate	ND	U	1.2	0.094	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDT	**26**	P J12	1.2	0.076	1	12/17/08	01/06/09	KWG0813456	
Endrin Ketone	ND	U	1.2	0.098	1	12/17/08	01/06/09	KWG0813456	
Methoxychlor	ND	U	1.2	0.12	1	12/17/08	01/06/09	KWG0813456	
Toxaphene	ND	Ui	330	330	1	12/17/08	01/06/09	KWG0813456	
Oxychlordane	ND	U	1.2	0.069	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDE	ND	Ui	1.2	1.1	1	12/17/08	01/06/09	KWG0813456	
cis-Nonachlor	ND	Ui	4.5	4.5	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDD	**8.7**	P J12	1.2	0.25	1	12/17/08	01/06/09	KWG0813456	
trans-Nonachlor	ND	Ui	1.2	0.64	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDT	ND	Ui	1.5	1.5	1	12/17/08	01/06/09	KWG0813456	
Mirex	ND	Ui	1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Hexachloroethane	**4.0**	P J12	1.2	0.18	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobutadiene	ND	Ui	7.9	7.9	1	12/17/08	01/06/09	KWG0813456	

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	80	25-125	01/06/09	Acceptable
Decachlorobiphenyl	67	22-142	01/06/09	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: SL21309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	UJS	1.2	0.40	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobenzene	**2.0**	P	J12	1.2	0.091	1	12/17/08	01/06/09	KWG0813456	
beta-BHC	ND	U	UJS	1.2	0.35	1	12/17/08	01/06/09	KWG0813456	
gamma-BHC (Lindane)	ND	Ui		1.4	1.4	1	12/17/08	01/06/09	KWG0813456	
delta-BHC	ND	U		1.2	0.064	1	12/17/08	01/06/09	KWG0813456	
Heptachlor	ND	Ui		1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Aldrin	ND	Ui		1.2	0.73	1	12/17/08	01/06/09	KWG0813456	
Heptachlor Epoxide	ND	U		1.2	0.15	1	12/17/08	01/06/09	KWG0813456	
gamma-Chlordane†	ND	Ui		1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Endosulfan I	ND	Ui		1.2	0.41	1	12/17/08	01/06/09	KWG0813456	
alpha-Chlordane	ND	Ui		2.2	2.2	1	12/17/08	01/06/09	KWG0813456	
Dieldrin	ND	U		1.2	0.34	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDE	**2.9**			1.2	0.12	1	12/17/08	01/06/09	KWG0813456	
Endrin	ND	U		1.2	0.24	1	12/17/08	01/06/09	KWG0813456	
Endosulfan II	ND	Ui		1.2	0.57	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDD	**5.8**			1.2	0.14	1	12/17/08	01/06/09	KWG0813456	
Endrin Aldehyde	ND	U		1.2	0.062	1	12/17/08	01/06/09	KWG0813456	
Endosulfan Sulfate	ND	Ui		1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
4,4'-DDT	**10**	P	J12	1.2	0.074	1	12/17/08	01/06/09	KWG0813456	
Endrin Ketone	ND	U		1.2	0.095	1	12/17/08	01/06/09	KWG0813456	
Methoxychlor	ND	U		1.2	0.12	1	12/17/08	01/06/09	KWG0813456	
Toxaphene	ND	Ui		140	140	1	12/17/08	01/06/09	KWG0813456	
Oxychlordane	ND	U		1.2	0.067	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDE	ND	U		1.2	0.27	1	12/17/08	01/06/09	KWG0813456	
cis-Nonachlor	ND	Ui		1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDD	**3.1**			1.2	0.25	1	12/17/08	01/06/09	KWG0813456	
trans-Nonachlor	ND	Ui		1.2	0.16	1	12/17/08	01/06/09	KWG0813456	
2,4'-DDT	ND	Ui		1.2	0.78	1	12/17/08	01/06/09	KWG0813456	
Mirex	ND	U		1.2	0.073	1	12/17/08	01/06/09	KWG0813456	
Hexachloroethane	ND	Ui		1.2	1.2	1	12/17/08	01/06/09	KWG0813456	
Hexachlorobutadiene	ND	Ui		1.2	1.2	1	12/17/08	01/06/09	KWG0813456	

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	67	25-125	01/06/09	Acceptable
Decachlorobiphenyl	67	22-142	01/06/09	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	UJ5	1.2	0.33	1	12/17/08	01/07/09	KWG0813456	
Hexachlorobenzene	**1.6**	P	J12	1.2	0.094	1	12/17/08	01/07/09	KWG0813456	
beta-BHC	ND	Ui	UJ5	1.2	1.2	1	12/17/08	01/07/09	KWG0813456	
gamma-BHC (Lindane)	ND	Ui		1.7	1.7	1	12/17/08	01/07/09	KWG0813456	
delta-BHC	ND	Ui		1.2	0.22	1	12/17/08	01/07/09	KWG0813456	
Heptachlor	ND	Ui		1.2	1.2	1	12/17/08	01/07/09	KWG0813456	
Aldrin	ND	Ui		1.2	0.74	1	12/17/08	01/07/09	KWG0813456	
Heptachlor Epoxide	ND	U		1.2	0.16	1	12/17/08	01/07/09	KWG0813456	
gamma-Chlordane†	ND	Ui		1.2	1.2	1	12/17/08	01/07/09	KWG0813456	
Endosulfan I	ND	U		1.2	0.21	1	12/17/08	01/07/09	KWG0813456	
alpha-Chlordane	ND	Ui		3.0	3.0	1	12/17/08	01/07/09	KWG0813456	
Dieldrin	ND	U		1.2	0.35	1	12/17/08	01/07/09	KWG0813456	
4,4'-DDE	**3.6**			1.2	0.12	1	12/17/08	01/07/09	KWG0813456	
Endrin	ND	Ui		1.2	0.31	1	12/17/08	01/07/09	KWG0813456	
Endosulfan II	ND	Ui		1.2	0.30	1	12/17/08	01/07/09	KWG0813456	
4,4'-DDD	**19**			1.2	0.15	1	12/17/08	01/07/09	KWG0813456	
Endrin Aldehyde	ND	U		1.2	0.063	1	12/17/08	01/07/09	KWG0813456	
Endosulfan Sulfate	ND	Ui		1.2	1.2	1	12/17/08	01/07/09	KWG0813456	
4,4'-DDT	**14**			1.2	0.076	1	12/17/08	01/07/09	KWG0813456	
Endrin Ketone	ND	U		1.2	0.097	1	12/17/08	01/07/09	KWG0813456	
Methoxychlor	ND	U		1.2	0.12	1	12/17/08	01/07/09	KWG0813456	
Toxaphene	ND	Ui		64	64	1	12/17/08	01/07/09	KWG0813456	
Oxychlordane	ND	U		1.2	0.069	1	12/17/08	01/07/09	KWG0813456	
2,4'-DDE	ND	Ui		1.2	1.2	1	12/17/08	01/07/09	KWG0813456	
cis-Nonachlor	ND	Ui		1.2	1.2	1	12/17/08	01/07/09	KWG0813456	
2,4'-DDD	**7.9**			1.2	0.25	1	12/17/08	01/07/09	KWG0813456	
trans-Nonachlor	ND	Ui		1.2	0.36	1	12/17/08	01/07/09	KWG0813456	
2,4'-DDT	**1.2**	P	J12	1.2	0.17	1	12/17/08	01/07/09	KWG0813456	
Mirex	ND	U		1.2	0.075	1	12/17/08	01/07/09	KWG0813456	
Hexachloroethane	**0.99**	J		1.2	0.18	1	12/17/08	01/07/09	KWG0813456	
Hexachlorobutadiene	ND	Ui		1.2	1.2	1	12/17/08	01/07/09	KWG0813456	

Comments: DL021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	25-125	01/07/09	Acceptable
Decachlorobiphenyl	69	22-142	01/07/09	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: 1/02/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q		MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	UJ5	1.3	0.33	1	12/17/08	01/07/09	KWG0813456	
Hexachlorobenzene	**2.5**	P	J12	1.3	0.098	1	12/17/08	01/07/09	KWG0813456	
beta-BHC	ND	U	UJ5	1.3	0.38	1	12/17/08	01/07/09	KWG0813456	
gamma-BHC (Lindane)	ND	Ui	↓	2.8	2.8	1	12/17/08	01/07/09	KWG0813456	
delta-BHC	ND	Ui	↓	1.3	0.31	1	12/17/08	01/07/09	KWG0813456	
Heptachlor	**2.8**	P	J5,12	1.3	0.099	1	12/17/08	01/07/09	KWG0813456	*
Aldrin	ND	U	UJ5	1.3	0.19	1	12/17/08	01/07/09	KWG0813456	
Heptachlor Epoxide	ND	Ui		1.3	0.23	1	12/17/08	01/07/09	KWG0813456	
gamma-Chlordane†	ND	U		1.3	0.080	1	12/17/08	01/07/09	KWG0813456	
Endosulfan I	ND	U		1.3	0.21	1	12/17/08	01/07/09	KWG0813456	
alpha-Chlordane	ND	Ui		4.1	4.1	1	12/17/08	01/07/09	KWG0813456	
Dieldrin	ND	U		1.3	0.36	1	12/17/08	01/07/09	KWG0813456	
4,4'-DDE	**4.2**			1.3	0.13	1	12/17/08	01/07/09	KWG0813456	
Endrin	ND	U		1.3	0.25	1	12/17/08	01/07/09	KWG0813456	
Endosulfan II	ND	U		1.3	0.24	1	12/17/08	01/07/09	KWG0813456	
4,4'-DDD	**11**			1.3	0.15	1	12/17/08	01/07/09	KWG0813456	
Endrin Aldehyde	ND	Ui		1.3	0.66	1	12/17/08	01/07/09	KWG0813456	
Endosulfan Sulfate	ND	Ui		1.3	1.3	1	12/17/08	01/07/09	KWG0813456	
4,4'-DDT	**17**			1.3	0.080	1	12/17/08	01/07/09	KWG0813456	
Endrin Ketone	ND	U		1.3	0.11	1	12/17/08	01/07/09	KWG0813456	
Methoxychlor	ND	U		1.3	0.13	1	12/17/08	01/07/09	KWG0813456	
Toxaphene	ND	Ui		65	65	1	12/17/08	01/07/09	KWG0813456	
Oxychlordane	ND	U		1.3	0.072	1	12/17/08	01/07/09	KWG0813456	
2,4'-DDE	ND	Ui		1.3	0.54	1	12/17/08	01/07/09	KWG0813456	
cis-Nonachlor	ND	Ui		1.8	1.8	1	12/17/08	01/07/09	KWG0813456	
2,4'-DDD	**5.8**			1.3	0.26	1	12/17/08	01/07/09	KWG0813456	
trans-Nonachlor	ND	Ui		1.3	0.34	1	12/17/08	01/07/09	KWG0813456	
2,4'-DDT	ND	Ui		1.3	1.2	1	12/17/08	01/07/09	KWG0813456	
Mirex	ND	Ui		1.3	0.50	1	12/17/08	01/07/09	KWG0813456	
Hexachloroethane	**3.1**	P	J12	1.3	0.19	1	12/17/08	01/07/09	KWG0813456	
Hexachlorobutadiene	ND	Ui		1.3	1.3	1	12/17/08	01/07/09	KWG0813456	

* See Case Narrative

Comments: 8/07/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Organochlorine Pesticides

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	25-125	01/07/09	Acceptable
Decachlorobiphenyl	66	22-142	01/07/09	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments: 8/02/2009

LDC #: 20260A3a

VALIDATION COMPLETENESS WORKSHEET

Level III

SDG #: K0812115

Laboratory: Columbia Analytical Services

Date: 2/9/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Chlorinated Pesticides (EPA SW 846 Method 8081A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/ECD Instrument Performance Check	A	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	SW	ICV ≤ 15
V.	Blanks	SW	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	PCM-02DS-081211	11	PCM-14DS-081211MS	21	KWG0813456	31 -	13
2	PCM-06DS-081211	12	PCM-14DS-081211MSD	22		32	
3	PCM-09DS-081211	13	PCM-15DS-081211MS	23	U only	33	
4	PCM-14DS-081211	14	PCM-15DS-081211MSD	24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7	PCM-02DS-081211MS	17		27		37	
8	PCM-02DS-081211MSD	18		28		38	
9	PCM-06DS-081211MS	19		29		39	
10	PCM-06DS-081211MSD	20		30		40	

VALIDATION FINDINGS WORKSHEET

METHOD: Pesticide/PCBs (EPASW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG.
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH.
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II.
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ.
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. DB 608	KK.
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. DB 1701	LL.
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE.	MM.
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF.	NN.

Notes:_____

LDC #: 20260A3a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

2nd Reviewer: [illegible]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? ___%D or ___RPD
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	01/06/09	0106F050-53	DB-35MS	A	17	( )	1→4, 7, 8, KWG0813456-13	J/UJ/A
				B	17	( )		
				D	25	( )		
				C	30	( )		
				E	21	( )		
				F	22	( )		
						( )		
						( )		
	1/7/09	0106F019-22	↓	A	20	( )	5, 6	J/UJ/A
				B	16	( )		
				D	27	( )		
				C	28	( )		
				E	24	( )		
				F	18	( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		
						( )		

LDC #: 20260A3a
SDG #: pesticides

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a given method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction procedure was performed?
Y N N/A Was a method blank performed with each extraction batch?
Y N N/A Were any contaminants found in the method blanks? If yes, please see findings below.

Level IV/D Only

Y N N/A (Gasoline and aromatics only)Was a method blank analyzed with each 24 hour batch?
Y N N/A Was a method blank analyzed for each analytical / extraction batch of ≤20 samples?

Blank extraction date: 12/17/08 **Blank analysis date:** 1/6/09 **Associated samples:** All (ND)
Conc. units: ug/kg

Compound	Blank ID	Sample Identification						
	KWG0813456-13							
P	0.31							

Blank extraction date: ___ **Blank analysis date:** ___ **Associated samples:** ___
Conc. units: ___

Compound	Blank ID	Sample Identification						

ALL CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 20260A3a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?
Y N N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?
Y N N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

#	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	7+8	T	15 (50-140)	(50-140)	114 (40)	#1	J/UJ/A
		M	( )	24 (↓)	( )	↓	↓
		O *	0 (↓)	0 (↓)	54 (40)	↓	↓
		N	45 (↓)	( )	80 (40)	↓	↓
		↓	( )	49 (↓)	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	9 & 10	Hexachloroethane	26 (↓)	27 (↓)	( )	#2	J/UJ/A
		Hexachlorobutadiene	39 (↓)	47 (↓)	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			* (matrix	interference)	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 20260A3a
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: M

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	%RPD ≤ 40 Finding (Between 2 columns)	Associated Samples	Qualifications
	J	45.5	1	J / A dit
	2,4'-DDD	88.9	↓	
	mirex	75.2	↓	
	θ	61.7	2	
	θ	60.0	3	
	2,4'-DDD	63.6	↓	
	Hexachloroethane	66.7	↓	
	Hexachlorobenzene	72.1	4	
	θ	64.9	↓	
	Hexachlorobenzene	97.7	5	
	2,4'-DDT	72.7	↓	↓

Comments: See sample calculation verification worksheet for recalculations

LDC #: 20260A3a
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported CRQLs

Reviewer: FT
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Level IV/D Only
Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?
Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	% RPD Bet. 2 column Finding ≤ 40	Associated Samples	Qualifications
	Hexachlorobenzene	95.0	6	J/UJ dut
	E	87.2		
	Hexachloroethane	43.1		

Comments: See sample calculation verification worksheet for recalculations

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Polychlorinated Biphenyls

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyls
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-09DS-081211MS
PCM-09DS-081211MSD

Introduction

This data review covers 8 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Polychlorinated Biphenyls - Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	12	12	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1221	ND	Ui	80	80	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1232	ND	Ui	31	31	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1242	ND	Ui	12	5.2	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1248	ND	Ui	12	7.0	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1254	ND	Ui	44	44	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1260	ND	Ui	12	7.2	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1262	ND	Ui	12	7.2	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1268	ND	Ui	12	4.3	1	12/17/08	01/07/09	KWG0813457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	79	38-144	01/07/09	Acceptable

Comments: SC0430

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	13	7.8	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1221	ND	Ui	57	57	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1232	ND	Ui	22	22	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1242	ND	Ui	13	11	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1248	ND	Ui	13	6.3	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1254	ND	Ui	19	19	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1260	ND	Ui	13	5.4	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1262	ND	Ui	13	5.3	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1268	ND	Ui	13	3.3	1	12/17/08	01/07/09	KWG0813457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	82	38-144	01/07/09	Acceptable

Comments: 8021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	12	12	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1221	ND	Ui	49	49	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1232	ND	Ui	30	30	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1242	ND	Ui	13	13	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1248	ND	Ui	12	4.2	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1254	ND	Ui	27	27	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1260	ND	Ui	12	6.1	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1262	ND	Ui	12	4.8	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1268	ND	Ui	12	7.6	1	12/17/08	01/07/09	KWG0813457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	74	38-144	01/07/09	Acceptable

Comments: 1/22/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	12	1.9	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1221	ND	Ui	49	49	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1232	ND	Ui	12	12	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1242	ND	U	12	1.5	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1248	ND	Ui	12	2.9	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1254	ND	Ui	13	13	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1260	ND	Ui	12	4.5	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1262	ND	Ui	12	3.5	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1268	ND	Ui	12	2.6	1	12/17/08	01/07/09	KWG0813457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	38-144	01/07/09	Acceptable

Comments: K021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	Ui	12	3.6	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1221	ND	Ui	35	35	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1232	ND	Ui	12	3.4	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1242	ND	U	12	1.6	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1248	ND	Ui	12	3.3	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1254	ND	Ui	24	24	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1260	ND	Ui	12	3.9	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1262	ND	Ui	12	3.4	1	12/17/08	01/07/09	KWG0813457	
Aroclor 1268	ND	Ui	12	3.7	1	12/17/08	01/07/09	KWG0813457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	71	38-144	01/07/09	Acceptable

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Polychlorinated Biphenyls (PCBs)

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	13	1.7	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1221	ND	Ui	69	69	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1232	ND	Ui	20	20	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1242	ND	Ui	13	3.1	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1248	ND	Ui	13	6.3	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1254	ND	Ui	21	21	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1260	ND	Ui	13	4.9	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1262	ND	Ui	13	4.8	1	12/17/08	01/08/09	KWG0813457	
Aroclor 1268	ND	Ui	13	4.2	1	12/17/08	01/08/09	KWG0813457	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	38-144	01/08/09	Acceptable

Comments: SC021309

LDC #: 20260A3b

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2/9/09

SDG #: K0812115

Page: 1 of 1

Laboratory: Columbia Analytical Services

Reviewer: P

2nd Reviewer: M

METHOD: GC Polychlorinated Biphenyls (EPA SW 846 Method 8082)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/ECD Instrument Performance Check	NA	
III.	Initial calibration	A	
IV.	Continuing calibration/ICV	A	ICV ≤ 15
V.	Blanks	A	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS
IX.	Regional quality assurance and quality control	N	
Xa.	Florisil cartridge check	N	
Xb.	GPC Calibration	N	
XI.	Target compound identification	N	
XII.	Compound quantitation and reported CRQLs	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	PCM-02DS-081211	11	KWG0813457-4	21		31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7	PCM-09DS-081211MS	17		27		37	
8	PCM-09DS-081211MSD	18		28		38	
9		19		29		39	
10		20		30		40	

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Polychlorinated Biphenyls as Congeners

LDC

LDC Report# 20260A3c

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Polychlorinated Biphenyl
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc./Analytical Perspectives
Sample Delivery Group (SDG):	K0812115/P9968

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211

Introduction

This data review covers 6 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1668A for Polychlorinated Biphenyl as Congeners.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

EMPC Estimated Maximum Possible Concentration

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 35.0% for labeled compounds.

The ion abundance ratios for all PCB congeners were within method criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were less than or equal to 30.0% for unlabeled compounds and less than or equal to 50.0% for labeled compounds.

The ion abundance ratios for all PCB congeners were within method criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyls as congeners contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
MB-6459	12/22/08	PCB-118 Total trichlorobiphenyls Total tetrachlorobiphenyls Total pentachlorobiphenyls	4.89 pg/g 12.2 pg/g 59.5 pg/g 9.33 pg/g	All samples in SDG K0812115/P9968

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Laboratory Control Samples (LCS)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Polychlorinated Biphenyl - Data Qualification Summary - SDG K0812115/P9968

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Polychlorinated Biphenyl - Laboratory Blank Data Qualification Summary - SDG K0812115/P9968

No Sample Data Qualified in this SDG

Sample ID: PCM-02DS-081211

Method HR-PCB

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solid	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.17 g	Sample ID:	P9968_6459_PCB_001-D10	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids	45.1 %	QC Batch No.:	6459	Date Analyzed:	12-Jan-09

Analyte	Conc.	DL	EMPC	Qualifier	Standard	Recovery
	pg/g	pg/g	pg/g			%
PCB-77 33'44'-TeCB	54.1				ES PCB-1	28.1
PCB-81 344'5-TeCB	ND	5.3			ES PCB-3	75.5
PCB-105 233'44'-PeCB	241				ES PCB-4	91.3
PCB-114 2344'5-PeCB	EMPC		13.9		ES PCB-15	56.9
PCB-118 23'44'5-PeCB	601				ES PCB-19	88
PCB-123 2'344'5-PeCB	11.5				ES PCB-37	59.4
PCB-126 33'44'5-PeCB	ND	6.68			ES PCB-54	69.2
PCB-156/157 233'44'5/233'44'5'	105				ES PCB-77	42.4
PCB-167 23'44'55'-HxCB	40.3				ES PCB-81	43.7
PCB-169 33'44'55'-HxCB	ND	8.69			ES PCB-104	65.6
PCB-189 233'44'55'-HpCB	11.5				ES PCB-105	53.6
					ES PCB-114	52.9
TEQs (WHO M/H)					ES PCB-118	52.4
					ES PCB-123	53.8
ND = 0	0.0357		0.0361		ES PCB-126	39.2
ND = 0.5 x DL	0.501		0.501		ES PCB-153	59.4
					ES PCB-155	71
Totals					ES PCB-156/157	55
					ES PCB-167	54.2
Mono-CBs	35.8				ES PCB-169	46.3
Di-CBs	381				ES PCB-170	59.7
Tri-CBs	1,210		1,220		ES PCB-180	63.3
Tetra-CBs	3,720		3,750		ES PCB-188	74.9
Penta-CBs	4,500		4,560		ES PCB-189	54.9
Hexa-CBs	4,570		4,600		ES PCB-202	62.1
Hepta-CBs	2,380				ES PCB-205	54.4
Octa-CBs	763		772		ES PCB-206	57.1
Nona-CBs	193				ES PCB-208	60.3
PCB-209 DeCB	138				ES PCB-209	58.5
					CS PCB-28	58.5
					CS PCB-111	51.4
					CS PCB-178	70.5

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N 121709

Reviewer Cem
Date 19 Jan 09

Sample ID: PCM-06DS-081211

Method HR-PCB

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solid	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.30 g	Sample ID:	P9968_6459_PCB_002-D10	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids	42.4 %	QC Batch No.:	6459	Date Analyzed:	12-Jan-09

Analyte	Conc.	DL	EMPC	Qualifier	Standard	Recovery
	pg/g	pg/g	pg/g			%
PCB-77 33'44'-TeCB	51.1				ES PCB-1	32.2
PCB-81 344'5-TeCB	ND	8.24			ES PCB-3	88.7
PCB-105 233'44'-PeCB	210				ES PCB-4	110
PCB-114 2344'5-PeCB	16.3				ES PCB-15	65.2
PCB-118 23'44'5-PeCB	536				ES PCB-19	100
PCB-123 2'344'5-PeCB	ND	5.25			ES PCB-37	64.6
PCB-126 33'44'5-PeCB	ND	7.57			ES PCB-54	84.6
PCB-156/157 233'44'5/233'44'5'	148				ES PCB-77	47.9
PCB-167 23'44'55'-HxCB	60.4				ES PCB-81	50.9
PCB-169 33'44'55'-HxCB	12				ES PCB-104	75.6
PCB-189 233'44'55'-HpCB	43.8				ES PCB-105	65.8
					ES PCB-114	62.2
TEQs (WHO M/H)					ES PCB-118	65.9
					ES PCB-123	62.5
ND = 0	0.395		0.395		ES PCB-126	45.7
ND = 0.5 x DL	0.775		0.775		ES PCB-153	71.6
					ES PCB-155	86.5
Totals					ES PCB-156/157	64.3
					ES PCB-167	62.7
Mono-CBs			8.62		ES PCB-169	57.6
Di-CBs	302				ES PCB-170	71.7
Tri-CBs	1,100		1,100		ES PCB-180	72.8
Tetra-CBs	3,340		3,370		ES PCB-188	87.6
Penta-CBs	4,280		4,300		ES PCB-189	65.8
Hexa-CBs	6,940		6,990		ES PCB-202	79.8
Hepta-CBs	7,980				ES PCB-205	63.9
Octa-CBs	2,750				ES PCB-206	71
Nona-CBs	293				ES PCB-208	76.9
PCB-209 DeCB	124				ES PCB-209	68.7
					CS PCB-28	75.2
					CS PCB-111	65.6
					CS PCB-178	87.2

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1/21/09

Reviewer cem
Date 19 Jan 09

Sample ID: PCM-09DS-081211

Method HR-PCB

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solid	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.61 g	Sample ID:	P9968_6459_PCB_003-D10	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids	40.1 %	QC Batch No.:	6459	Date Analyzed:	12-Jan-09

Analyte	Conc.	DL	EMPC	Qualifier
	pg/g	pg/g	pg/g	
PCB-77 33'44'-TeCB	47.1			
PCB-81 344'5-TeCB	ND	3.15		
PCB-105 233'44'-PeCB	222			
PCB-114 2344'5-PeCB	14.4			
PCB-118 23'44'5-PeCB	556			
PCB-123 2'344'5-PeCB	12.6			
PCB-126 33'44'5-PeCB	ND	2.74		
PCB-156/157 233'44'5/233'44'5'	94.5			
PCB-167 23'44'55'-HxCB	37.3			
PCB-169 33'44'55'-HxCB	ND	2.99		
PCB-189 233'44'55'-HpCB	10.9			
TEQs (WHO M/H)				
ND = 0	0.0332		0.0332	
ND = 0.5 x DL	0.215		0.215	
Totals				
Mono-CBs	20.6			
Di-CBs	380			
Tri-CBs	1,070			
Tetra-CBs	2,880		2,890	
Penta-CBs	4,080		4,120	
Hexa-CBs	4,370		4,370	
Hepta-CBs	2,390			
Octa-CBs	720			
Nona-CBs	156			
PCB-209 DeCB	123			

Standard	Recovery
	%
ES PCB-1	111
ES PCB-3	99.8
ES PCB-4	126
ES PCB-15	81.6
ES PCB-19	122
ES PCB-37	76.3
ES PCB-54	96.3
ES PCB-77	64.4
ES PCB-81	66.7
ES PCB-104	90.1
ES PCB-105	81.1
ES PCB-114	78.9
ES PCB-118	80.5
ES PCB-123	79.1
ES PCB-126	59.8
ES PCB-153	88.4
ES PCB-155	97.8
ES PCB-156/157	80
ES PCB-167	73.6
ES PCB-169	67.4
ES PCB-170	92.1
ES PCB-180	93.6
ES PCB-188	109
ES PCB-189	80.3
ES PCB-202	89.5
ES PCB-205	77.4
ES PCB-206	85.2
ES PCB-208	89.2
ES PCB-209	84
CS PCB-28	82.3
CS PCB-111	80.3
CS PCB-178	103

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1/21/09

Reviewer Cam
Date 19 Jan 09

Sample ID: PCM-14DS-081211

Method HR-PCB

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solid	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	11.04 g	Sample ID:	P9968_6459_PCB_004-D10	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids	47.8 %	QC Batch No.:	6459	Date Analyzed:	12-Jan-09

Analyte	Conc.	DL	EMPC	Qualifier
	pg/g	pg/g	pg/g	
PCB-77 33'44'-TeCB	32.1			
PCB-81 344'5-TeCB	ND	8.05		
PCB-105 233'44'-PeCB	135			
PCB-114 2344'5-PeCB	8.57			
PCB-118 23'44'5-PeCB	381			
PCB-123 2'344'5-PeCB	ND	6.2		
PCB-126 33'44'5-PeCB	ND	5.66		
PCB-156/157 233'44'5/233'44'5'	116			
PCB-167 23'44'55'-HxCB	51.4			
PCB-169 33'44'55'-HxCB	ND	5.84		
PCB-189 233'44'55'-HpCB	26.7			
TEQs (WHO M/H)				
ND = 0	0.0248		0.0248	
ND = 0.5 x DL	0.397		0.397	
Totals				
Mono-CBs	8.44			
Di-CBs	255			
Tri-CBs	689			
Tetra-CBs	1,900		1,940	
Penta-CBs	2,890		2,940	
Hexa-CBs	7,090			
Hepta-CBs	5,780			
Octa-CBs	1,680			
Nona-CBs	199			
PCB-209 DeCB	94.6			

Standard	Recovery
	%
ES PCB-1	35
ES PCB-3	156
ES PCB-4	198
ES PCB-15	84.3
ES PCB-19	118
ES PCB-37	81.9
ES PCB-54	102
ES PCB-77	62.2
ES PCB-81	67.1
ES PCB-104	102
ES PCB-105	83.7
ES PCB-114	82.8
ES PCB-118	81.1
ES PCB-123	84.3
ES PCB-126	59.6
ES PCB-153	90.4
ES PCB-155	99.1
ES PCB-156/157	82.1
ES PCB-167	75.7
ES PCB-169	71.7
ES PCB-170	90.9
ES PCB-180	94.7
ES PCB-188	110
ES PCB-189	84.8
ES PCB-202	96.7
ES PCB-205	78.5
ES PCB-206	84.8
ES PCB-208	96.5
ES PCB-209	85.9
CS PCB-28	86.2
CS PCB-111	81.6
CS PCB-178	103

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1/21/09

Reviewer CEM
Date 19 Jan 09

Sample ID: PCM-15DS-081211

Method HR-PCB

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solid	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.28 g	Sample ID:	P9968_6459_PCB_005-D10	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids	46.4 %	QC Batch No.:	6459	Date Analyzed:	12-Jan-09

Analyte	Conc.	DL	EMPC	Qualifier
	pg/g	pg/g	pg/g	
PCB-77 33'44'-TeCB	35.2			
PCB-81 344'5-TeCB	ND	10.2		
PCB-105 233'44'-PeCB	128			
PCB-114 2344'5-PeCB	ND	7.24		
PCB-118 23'44'5-PeCB	338			
PCB-123 2'344'5-PeCB	EMPC		5.5	
PCB-126 33'44'5-PeCB	ND	6.39		
PCB-156/157 233'44'5/233'44'5'	61.7			
PCB-167 23'44'55'-HxCB	22.6			
PCB-169 33'44'55'-HxCB	ND	5.03		
PCB-189 233'44'55'-HpCB	EMPC		8.25	
TEQs (WHO M/H)				
ND = 0	0.02		0.0204	
ND = 0.5 x DL	0.417		0.417	
Totals				
Mono-CBs	22.6			
Di-CBs	303			
Tri-CBs	718			
Tetra-CBs	2,060			
Penta-CBs	2,530		2,600	
Hexa-CBs	3,080		3,080	
Hepta-CBs	1,720		1,780	
Octa-CBs	539		544	
Nona-CBs	132			
PCB-209 DeCB	87			

Standard	Recovery
	%
ES PCB-1	28.9
ES PCB-3	128
ES PCB-4	162
ES PCB-15	81.1
ES PCB-19	117
ES PCB-37	79.6
ES PCB-54	96.6
ES PCB-77	55.3
ES PCB-81	58.3
ES PCB-104	96.7
ES PCB-105	78.2
ES PCB-114	75.4
ES PCB-118	76.3
ES PCB-123	78.4
ES PCB-126	53.2
ES PCB-153	91.4
ES PCB-155	110
ES PCB-156/157	83.8
ES PCB-167	81
ES PCB-169	68.1
ES PCB-170	86.6
ES PCB-180	89.5
ES PCB-188	110
ES PCB-189	79.4
ES PCB-202	102
ES PCB-205	80.8
ES PCB-206	84
ES PCB-208	94.5
ES PCB-209	84.2
CS PCB-28	78.9
CS PCB-111	83
CS PCB-178	106

ANALYTICAL PERSPECTIVES

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info@ultratrace.com
www.ultratrace.com

1/21/09

Reviewer Cam
Date 19 Jan 09

Sample ID: PCM-22DS-081211

Method HR-PCB

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solid	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.45 g	Sample ID:	P9968_6459_PCB_006-010	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids	41.5 %	QC Batch No.:	6459	Date Analyzed:	12-Jan-09

Analyte	Conc.	DL	EMPC	Qualifier	Standard	Recovery
	pg/g	pg/g	pg/g			%
PCB-77 33'44'-TeCB	46.8				ES PCB-1	93.6
PCB-81 344'5-TeCB	ND	3.04			ES PCB-3	90.3
PCB-105 233'44'-PeCB	204				ES PCB-4	107
PCB-114 2344'5-PeCB	12.7				ES PCB-15	72.2
PCB-118 23'44'5-PeCB	513				ES PCB-19	105
PCB-123 2'344'5-PeCB	9.74				ES PCB-37	66.6
PCB-126 33'44'5-PeCB	ND	3.09			ES PCB-54	87
PCB-156/157 233'44'5/233'44'5'	92.3				ES PCB-77	52.6
PCB-167 23'44'55'-HxCB	35.1				ES PCB-81	52.7
PCB-169 33'44'55'-HxCB	4.79				ES PCB-104	82.6
PCB-189 233'44'55'-HpCB	11.9				ES PCB-105	66.2
					ES PCB-114	66.7
TEQs (WHO M/H)					ES PCB-118	68
					ES PCB-123	67.7
ND = 0	0.175		0.175		ES PCB-126	48
ND = 0.5 x DL	0.33		0.33		ES PCB-153	77.6
					ES PCB-155	88.2
Totals					ES PCB-156/157	68.2
					ES PCB-167	63.5
Mono-CBs	21.7				ES PCB-169	55.3
Di-CBs	361				ES PCB-170	73.6
Tri-CBs	954				ES PCB-180	76
Tetra-CBs	3,070		3,070		ES PCB-188	96.4
Penta-CBs	3,870				ES PCB-189	69.4
Hexa-CBs	4,300		4,300		ES PCB-202	81
Hepta-CBs	2,490		2,490		ES PCB-205	65.2
Octa-CBs	746		755		ES PCB-206	71.3
Nona-CBs	170				ES PCB-208	78.8
PCB-209 DeCB	131				ES PCB-209	69.6
					CS PCB-28	73.6
					CS PCB-111	66.5
					CS PCB-178	92.3

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ANALYTICAL PERSPECTIVES

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Reviewer Cem
Date 19 Jan 09

LDC #: 20260A3c

VALIDATION COMPLETENESS WORKSHEET

Date: 2/9/09

SDG #: K0812115/P9968

Level III

Page: 1 of 1

Laboratory: Columbia Analytical Services/Analytical Perspectives

Reviewer: Q

2nd Reviewer: A

METHOD: HRGC/HRMS Polychlorinated Biphenyl Congeners (EPA Method 1668A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	GC/MS Instrument performance check	A	
III.	Initial calibration	A	20/35/70
IV.	Routine calibration/ICV	A	
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	client specified
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	
X.	Target compound identifications	N	
XI.	Compound quantitation and CRQLs	N	
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-02DS-081211	11	MBI-6459	21		31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

LDC #: 20260A3c
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: 9
2nd Reviewer: M

METHOD: HRGC/HRMS Polychlorinated Biphenyls (EPA Method 1668)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was method blank contamination less < CRQL for all target compounds?

Blank extraction date: 12/22/08 **Blank analysis date:** 1/12/09 **Associated samples:** All (>5x)
Conc. units: pg/g

Compound	Blank ID	Sample Identification								
MB	6459	1								
PCB 118	4.89*									
Total Tri-CBs	12.2									
Tetra-CBs	59.5									
Penta-CBs	9.33									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

* 2MPc

C:\WPDOCS\WRK\PCB\BLANKS.166

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Metals

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 4, 2009
Matrix:	Sediment
Parameters:	Metals
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-06DS-081211MS
PCM-06DS-081211DUP
PCM-14DS-081211MS
PCM-14DS-081211DUP

Introduction

This data review covers 10 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B, 6020, and 7000 for Metals. The metals analyzed were Aluminum, Antimony, Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium Nickel	0.09 mg/Kg 0.04 mg/Kg	All samples in SDG K0812115
ICB/CCB	Selenium	0.1 ug/L	All samples in SDG K0812115

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
PCM-14DS-081211MS (All samples in SDG K0812115)	Antimony	45.7 (65-135)	J (all detects) UJ (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
PCM-14DS-081211DUP (All samples in SDG K0812115)	Lead	157 (≤20)	-	J (all detects) UJ (all non-detects)	A

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

Percent recoveries (%R) of the standard reference material were within QC limits.

VIII. Internal Standards (ICP-MS)

Raw data were not reviewed for this SDG.

IX. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria.

X. ICP Serial Dilution

ICP serial dilution analysis was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS %R and DUP RPD problems, antimony and lead results were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Metals - Data Qualification Summary - SDG K0812115

SDG	Sample	Analyte	Flag	A or P	Reason
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Antimony	J (all detects) UJ (all non-detects)	A	Matrix spike analysis (%R)
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Lead	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (RPD)

NW Natural Gasco Site
Metals - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812115
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: PCM-02DS-081211 **Lab Code:** K0812115-001

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11	9.5	2.0	01/06/09	01/09/09	22900		
Antimony	6020	0.05	0.04	5.0	01/06/09	01/14/09	0.16		J8
Arsenic	6020	0.5	0.3	5.0	01/06/09	01/16/09	3.1		
Cadmium	6020	0.021	0.007	5.0	01/06/09	01/16/09	0.216		
Chromium	6020	0.21	0.03	5.0	01/06/09	01/16/09	26.9		
Copper	6020	0.11	0.10	5.0	01/06/09	01/16/09	34.1		
Lead	6020	0.05	0.03	5.0	01/06/09	01/16/09	11.9		* J9
Mercury	7471A	0.018	0.002	1.0	12/30/08	12/30/08	0.064		
Nickel	6020	0.21	0.03	5.0	01/06/09	01/16/09	23.1		
Selenium	7742	0.11	0.02	2.0	01/06/09	01/07/09	0.27		
Silver	6020	0.021	0.021	5.0	01/06/09	01/14/09	0.193		
Zinc	6010B	2.1	0.4	2.0	01/06/09	01/09/09	95.9		

% Solids: 42.7

Comments:

8/02/2009

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812115
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: PCM-06DS-081211 **Lab Code:** K0812115-002

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11	9.9	2.0	01/06/09	01/09/09	26900		
Antimony	6020	0.06	0.04	5.0	01/06/09	01/14/09	0.20		J8
Arsenic	6020	0.5	0.3	5.0	01/06/09	01/16/09	3.6		
Cadmium	6020	0.022	0.008	5.0	01/06/09	01/16/09	0.248		
Chromium	6020	0.22	0.03	5.0	01/06/09	01/16/09	30.5		
Copper	6020	0.11	0.10	5.0	01/06/09	01/16/09	39.5		
Lead	6020	0.06	0.03	5.0	01/06/09	01/16/09	13.0		* J9
Mercury	7471A	0.018	0.002	1.0	12/30/08	12/30/08	0.063		
Nickel	6020	0.22	0.03	5.0	01/06/09	01/16/09	25.8		
Selenium	7742	0.11	0.02	2.0	01/06/09	01/07/09	0.32		
Silver	6020	0.022	0.022	5.0	01/06/09	01/14/09	0.184		
Zinc	6010B	2.2	0.4	2.0	01/06/09	01/09/09	109		

% Solids: 41.0

Comments:

8L021309

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812115
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: PCM-09DS-081211 **Lab Code:** K0812115-003

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11	9.7	2.0	01/06/09	01/09/09	26500		
Antimony	6020	0.05	0.04	5.0	01/06/09	01/14/09	0.17		J8
Arsenic	6020	0.5	0.3	5.0	01/06/09	01/16/09	3.8		
Cadmium	6020	0.022	0.008	5.0	01/06/09	01/16/09	0.252		
Chromium	6020	0.22	0.03	5.0	01/06/09	01/16/09	31.1		
Copper	6020	0.11	0.10	5.0	01/06/09	01/16/09	41.9		
Lead	6020	0.05	0.03	5.0	01/06/09	01/16/09	13.4		* J9
Mercury	7471A	0.018	0.002	1.0	12/30/08	12/30/08	0.062		
Nickel	6020	0.22	0.03	5.0	01/06/09	01/16/09	25.2		
Selenium	7742	0.11	0.02	2.0	01/06/09	01/07/09	0.30		
Silver	6020	0.022	0.022	5.0	01/06/09	01/14/09	0.176		
Zinc	6010B	2.2	0.4	2.0	01/06/09	01/09/09	103		

% Solids: 41.9

Comments:

S6021309

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812115
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: PCM-14DS-081211 **Lab Code:** K0812115-004

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	10	9.4	2.0	01/06/09	01/09/09	21500		
Antimony	6020	0.05	0.04	5.0	01/06/09	01/14/09	0.19		J8
Arsenic	6020	0.5	0.3	5.0	01/06/09	01/16/09	3.8		
Cadmium	6020	0.021	0.007	5.0	01/06/09	01/16/09	0.184		
Chromium	6020	0.21	0.03	5.0	01/06/09	01/16/09	25.0		
Copper	6020	0.11	0.09	5.0	01/06/09	01/16/09	33.1		
Lead	6020	0.05	0.03	5.0	01/06/09	01/16/09	11.4		* J9
Mercury	7471A	0.019	0.002	1.0	12/30/08	12/30/08	0.046		
Nickel	6020	0.21	0.03	5.0	01/06/09	01/16/09	22.3		
Selenium	7742	0.10	0.02	2.0	01/06/09	01/07/09	0.23		
Silver	6020	0.021	0.021	5.0	01/06/09	01/14/09	0.148		
Zinc	6010B	2.1	0.4	2.0	01/06/09	01/09/09	103		

% Solids: 43.1

Comments:

8C 021309

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812115
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: PCM-15DS-081211 **Lab Code:** K0812115-005

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11	9.7	2.0	01/06/09	01/09/09	19300		
Antimony	6020	0.05	0.04	5.0	01/06/09	01/14/09	0.13		J8
Arsenic	6020	0.5	0.3	5.0	01/06/09	01/16/09	3.5		
Cadmium	6020	0.022	0.008	5.0	01/06/09	01/16/09	0.188		
Chromium	6020	0.22	0.03	5.0	01/06/09	01/16/09	24.0		
Copper	6020	0.11	0.10	5.0	01/06/09	01/16/09	31.2		
Lead	6020	0.05	0.03	5.0	01/06/09	01/16/09	11.1		* J9
Mercury	7471A	0.018	0.002	1.0	12/30/08	12/30/08	0.057		
Nickel	6020	0.22	0.03	5.0	01/06/09	01/16/09	20.9		
Selenium	7742	0.11	0.02	2.0	01/06/09	01/07/09	0.22		
Silver	6020	0.022	0.022	5.0	01/06/09	01/14/09	0.147		
Zinc	6010B	2.2	0.4	2.0	01/06/09	01/09/09	89.4		

% Solids: 42.0

Comments:

8C021309

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Anchor Environmental	**Service Request:**	K0812115
Project No.:	000029-02 B6 17 T4	**Date Collected:**	12/11/08
Project Name:	Gasco Long Term Pilot Cap Monito	**Date Received:**	12/12/08
Matrix:	SEDIMENT	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: PCM-22DS-081211 **Lab Code:** K0812115-006

Analyte	Analysis Method	MRL	MDL	Dil. Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	6010B	11	10	2.0	01/06/09	01/09/09	26400		
Antimony	6020	0.06	0.05	5.0	01/06/09	01/14/09	0.15		J8
Arsenic	6020	0.6	0.3	5.0	01/06/09	01/16/09	3.7		
Cadmium	6020	0.022	0.008	5.0	01/06/09	01/16/09	0.245		
Chromium	6020	0.22	0.03	5.0	01/06/09	01/16/09	29.7		
Copper	6020	0.11	0.10	5.0	01/06/09	01/16/09	39.6		
Lead	6020	0.06	0.03	5.0	01/06/09	01/16/09	15.5		* J9
Mercury	7471A	0.019	0.002	1.0	12/30/08	12/30/08	0.064		
Nickel	6020	0.22	0.03	5.0	01/06/09	01/16/09	23.1		
Selenium	7742	0.11	0.02	2.0	01/06/09	01/07/09	0.29		
Silver	6020	0.023	0.023	5.0	01/06/09	01/14/09	0.192		
Zinc	6010B	2.3	0.5	2.0	01/06/09	01/09/09	108		

% Solids: 40.0

Comments:

K021309

LDC #: 20260A4

SDG #: K0812115

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2/4/09

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: Metals (EPA SW 846 Method 6010B/6020/7000)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	SW	} MS/DUP
VI.	Duplicate Sample Analysis	SW	
VII.	Laboratory Control Samples (LCS)	A	SRM
VIII.	Internal Standard (ICP-MS)	N	Not ~~analyzed~~ reviewed
IX.	Furnace Atomic Absorption QC	A	Hydride
X.	ICP Serial Dilution	A	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Solids

1	PCM-02DS-081211	11	PB	21		11	
2	PCM-06DS-081211	12		22		12	
3	PCM-09DS-081211	13		23		13	
4	PCM-14DS-081211	14		24		14	
5	PCM-15DS-081211	15		25		15	
6	PCM-22DS-081211	16		26		16	
7	PCM-06DS-081211MS	17		27		17	
8	PCM-06DS-081211DUP	18		28		18	
9	PCM-14DS-081211MS	19		29		19	
10	PCM-14DS-081211DUP	20		30		20	

Notes:

LDC #: 20760A4
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-6	Solid	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
7,8	Solid	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
9,10		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___ ___
GFAA Hydride		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Si, CN-, ___

Comments: Mercury by CVAA if performed

LDC #: 20260A4
SDG #: See Cover

VALIDATION FINDINGS WORKSHEET
PB/ICB/CCB QUALIFIED SAMPLES

Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6020/7000) Soil preparation factor applied: Se: 200X
Sample Concentration units, unless otherwise noted: mg/Kg Associated Samples: All (>5X)

				Sample Identification												
Analyte	Maximum PB[a] (mg/Kg)	Maximum ICB/CCB[a] (ug/l)	Blank Action Limit													
Al																
Sb																
As																
Cd																
Cr	0.09		0.45													
Cu																
Pb																
Hg																
Ni	0.04		0.20													
Se		0.1	0.1													
Ag																
Zn																

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".
Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 20760A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 65-135 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
1	9	Solid	Sb	45.7	All	J/UJ/A

Comments: Al > 4X

MS.4S2

LDC #: 20260A4
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MM
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ 35% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
11	10	Solid	Pb	157 (≤20)		A1	J/UJ/A

Comments:

DUP.4S2

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Herbicides

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Herbicides
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211

Introduction

This data review covers 6 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8151A for Herbicides.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for selected compounds.

A curve fit, based on the initial calibration, was established for quantitation for selected compounds. The coefficient of determination (r^2) was greater than or equal to 0.990 .

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
1/7/09	0106F019	RTX-1701	MCPP	21	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	J (all detects) UJ (all non-detects)	A

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No herbicide contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to calibration %D, MCPP results were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Herbicides - Data Qualification Summary - SDG K0812115

SDG	Sample	Compound	Flag	A or P	Reason
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	MCPP	J (all detects) UJ (all non-detects)	A	Continuing calibration (%D)

NW Natural Gasco Site
Herbicides - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	300	190	5	12/24/08	01/07/09	KWG0813615	
Dicamba	ND	U	300	21	5	12/24/08	01/07/09	KWG0813615	
MCPP	ND	U UJS	59000	1500	5	12/24/08	01/07/09	KWG0813615	*
MCPA	ND	U	59000	3000	5	12/24/08	01/07/09	KWG0813615	
Dichlorprop	ND	U	300	18	5	12/24/08	01/07/09	KWG0813615	
2,4-D	ND	U	300	22	5	12/24/08	01/07/09	KWG0813615	
2,4,5-TP (Silvex)	ND	U	300	22	5	12/24/08	01/07/09	KWG0813615	
2,4,5-T	ND	U	300	24	5	12/24/08	01/07/09	KWG0813615	
2,4-DB	ND	U	300	41	5	12/24/08	01/07/09	KWG0813615	
Dinoseb	ND	U	300	37	5	12/24/08	01/07/09	KWG0813615	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	152	27-171	01/07/09	Acceptable

Comments: RC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	310	190	5	12/24/08	01/07/09	KWG0813615	
Dicamba	ND	U	310	22	5	12/24/08	01/07/09	KWG0813615	
MCPP	ND	U UJ5	61000	1600	5	12/24/08	01/07/09	KWG0813615	*
MCPA	ND	Ui	61000	61000	5	12/24/08	01/07/09	KWG0813615	
Dichlorprop	ND	U	310	19	5	12/24/08	01/07/09	KWG0813615	
2,4-D	ND	U	310	23	5	12/24/08	01/07/09	KWG0813615	
2,4,5-TP (Silvex)	ND	U	310	22	5	12/24/08	01/07/09	KWG0813615	
2,4,5-T	ND	U	310	25	5	12/24/08	01/07/09	KWG0813615	
2,4-DB	ND	U	310	43	5	12/24/08	01/07/09	KWG0813615	
Dinoseb	ND	U	310	39	5	12/24/08	01/07/09	KWG0813615	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	132	27-171	01/07/09	Acceptable

Comments: 8C021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	300	190	5	12/24/08	01/07/09	KWG0813615	
Dicamba	ND	U	300	21	5	12/24/08	01/07/09	KWG0813615	
MCPP	ND	U KJS	60000	1500	5	12/24/08	01/07/09	KWG0813615	*
MCPA	ND	Ui	60000	60000	5	12/24/08	01/07/09	KWG0813615	
Dichlorprop	ND	U	300	18	5	12/24/08	01/07/09	KWG0813615	
2,4-D	ND	U	300	23	5	12/24/08	01/07/09	KWG0813615	
2,4,5-TP (Silvex)	ND	U	300	22	5	12/24/08	01/07/09	KWG0813615	
2,4,5-T	ND	U	300	24	5	12/24/08	01/07/09	KWG0813615	
2,4-DB	ND	U	300	42	5	12/24/08	01/07/09	KWG0813615	
Dinoseb	ND	U	300	38	5	12/24/08	01/07/09	KWG0813615	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	169	27-171	01/07/09	Acceptable

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	290	180	5	12/24/08	01/07/09	KWG0813615	
Dicamba	ND	U	290	21	5	12/24/08	01/07/09	KWG0813615	
MCPP	ND	U UJ5	58000	1500	5	12/24/08	01/07/09	KWG0813615	*
MCPA	ND	U	58000	2900	5	12/24/08	01/07/09	KWG0813615	
Dichlorprop	ND	U	290	18	5	12/24/08	01/07/09	KWG0813615	
2,4-D	ND	U	290	22	5	12/24/08	01/07/09	KWG0813615	
2,4,5-TP (Silvex)	ND	U	290	21	5	12/24/08	01/07/09	KWG0813615	
2,4,5-T	ND	U	290	24	5	12/24/08	01/07/09	KWG0813615	
2,4-DB	ND	U	290	41	5	12/24/08	01/07/09	KWG0813615	
Dinoseb	ND	U	290	37	5	12/24/08	01/07/09	KWG0813615	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	115	27-171	01/07/09	Acceptable

Comments: SC 01/13/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	300	190	5	12/24/08	01/07/09	KWG0813615	
Dicamba	ND	U	300	21	5	12/24/08	01/07/09	KWG0813615	
MCPP	ND	U UJ5	60000	1500	5	12/24/08	01/07/09	KWG0813615	*
MCPA	ND	Ui	60000	60000	5	12/24/08	01/07/09	KWG0813615	
Dichlorprop	ND	U	300	18	5	12/24/08	01/07/09	KWG0813615	
2,4-D	ND	U	300	23	5	12/24/08	01/07/09	KWG0813615	
2,4,5-TP (Silvex)	ND	U	300	22	5	12/24/08	01/07/09	KWG0813615	
2,4,5-T	ND	U	300	24	5	12/24/08	01/07/09	KWG0813615	
2,4-DB	ND	U	300	42	5	12/24/08	01/07/09	KWG0813615	
Dinoseb	ND	U	300	38	5	12/24/08	01/07/09	KWG0813615	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	132	27-171	01/07/09	Acceptable

Comments: SC 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Herbicides

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dalapon	ND	U	320	200	5	12/24/08	01/07/09	KWG0813615	
Dicamba	ND	U	320	22	5	12/24/08	01/07/09	KWG0813615	
MCPP	ND	U UJ5	63000	1600	5	12/24/08	01/07/09	KWG0813615	*
MCPA	ND	Ui	63000	63000	5	12/24/08	01/07/09	KWG0813615	
Dichlorprop	ND	U	320	19	5	12/24/08	01/07/09	KWG0813615	
2,4-D	ND	U	320	24	5	12/24/08	01/07/09	KWG0813615	
2,4,5-TP (Silvex)	ND	U	320	23	5	12/24/08	01/07/09	KWG0813615	
2,4,5-T	ND	U	320	25	5	12/24/08	01/07/09	KWG0813615	
2,4-DB	ND	U	320	44	5	12/24/08	01/07/09	KWG0813615	
Dinoseb	ND	U	320	40	5	12/24/08	01/07/09	KWG0813615	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2,4-Dichlorophenylacetic Acid	128	27-171	01/07/09	Acceptable

Comments: SC021309

LDC #: 20260A5 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/09

SDG #: K0812115 Level III Page: 1 of 1

Laboratory: Columbia Analytical Services Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC Herbicides (EPA SW 846 Method 8151A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
IIa.	Initial calibration	A	% RSD, r^2
IIb.	Calibration verification/ICV	SW	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS/D
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediment

1	PCM-02DS-081211	11	KWG0813615-3			31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: ____GC ____HPLC

8310	8330	8151	8141	8141(Con't)	8021B
A. Acenaphthene	A. HMX	A. 2,4-D	A. Dichlorvos	V. Fensulfothion	V. Benzene
B. Acenaphthylene	B. RDX	B. 2,4-DB	B. Mevinphos	W. Bolstar	CC. Toluene
C. Anthracene	C. 1,3,5-Trinitrobenzene	C. 2,4,5-T	C. Demeton-O	X. EPN	EE. Ethyl Benzene
D. Benzo(a)anthracene	D. 1,3-Dinitrobenzene	D. 2,4,5-TP	D. Demeton-S	Y. Azinphos-methyl	SSS. O-Xylene
E. Benzo(a)pyrene	E. Tetryl	E. Dinoseb	E. Ethoprop	Z. Coumaphos	RRR. MP-Xylene
F. Benzo(b)fluoranthene	F. Nitrobenzene	F. Dichlorprop	F. Naled	AA. Parathion	GG. Total Xylene
G. Benzo(g,h,i)perylene	G. 2.4.6-Trinitrotoluene	G. Dicamba	G. Sulfotep	BB. Trichloronate	
H. Benzo(k)fluoranthene	H. 4-Amino-2,6-dinitrotoluene	H. Dalapon	H. Phorate	CC. Trichlorinate	
I. Chrysene	I. 2-Amino-4,6-dinitrotoluene	I. MCPP	I. Dimethoate	DD. Trifluralin	
J. Dibenz(a,h)anthracene	J. 2,4-Dinitrotolune	J. MCPA	J. Diazinon	EE. Def	
K. Fluoranthene	K. 2,6-Dinitrotoluene	K. Pentachlorophenol	K. Disulfoton	FF. Prowl	
L. Fluorene	L. 2-Nitrotoluene	L. 2,4,5-TP (silvex)	L. Parathion-methyl	GG. Ethion	
M. Indeno(1,2,3-cd)pyrene	M. 3-Nitrotoluene	M. Silvex	M. Ronnel	HH. Tetrachlorvinphos	
N. Naphthalene	N. 4-Nitrotoluene		N. Malathion	II. Sulprofos	
O. Phenanthrene	O.		O. Chlorpyrifos		
P. Pyrene	P.		P. Fenthion		
Q.	Q		Q. Parathion-ethyl		
R.			R. Trichloronate		
S.			S. Merphos		
			T. Stirofos		
			U. Tokuthion		

Notes:_____

cmpd_list.wpd

LDC #: 20260A5
SDG #: per cover

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: R

METHOD: ✓ GC __ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
What type of continuing calibration calculation was performed? __%D or __RPD
Y N N/A Were continuing calibration standards analyzed at the required frequencies?
Y N N/A Did the continuing calibration standards meet the %D / RPD validation criteria of ≤15.0%?
Level IV Only
Y N N/A Were the retention times for all calibrated compounds within their respective acceptance windows?

#	Date	Standard ID	Detector/ Column	Compound	%D / RPD (Limit ≤ 15.0)	RT (limit)	Associated Samples	Qualifications
	1/7/09	0106F019	RTX-1701	I	21	( )	All except BLK	J/UJ/R
						( )		
						( )		
						( )		
						( )		
						( )		
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NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Wet Chemistry

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 4, 2009
Matrix:	Sediment
Parameters:	Wet Chemistry
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-02DS-081211MS
PCM-02DS-081211MSD
PCM-02DS-081211DUP
PCM-02DS-081211TRP
PCM-09DS-081211DUP
PCM-09DS-081211TRP
PCM-22DS-081211MS
PCM-22DS-081211MSD
PCM-22DS-081211DUP

Introduction

This data review covers 15 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.3 for Total Solids, EPA Method 350.1 and Plumb Method 5-1981 KCl for Ammonia-N, EPA SW 846 Method 7196A for Hexavalent Chromium, EPA SW 846 Method 9012A for Total Cyanide, EPA SW 846 Method 9030M for Sulfide, and PSEP Method for Total Organic Carbon and Particle Size.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Extraction Until Analysis	Required Holding Time From Sample Extraction Until Analysis	Flag	A or P
PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211 PCM-22DS-081211MS PCM-22DS-081211MSD PCM-22DS-081211DUP	Hexavalent chromium	7 days	4 days	J (all detects) UJ (all non-detects)	P

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Cyanide	18 days	14 days	J (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
PCM-22DS-081211MS/MSD (All samples in SDG K0812115)	Hexavalent chromium	0 (65-135)	0 (65-135)	-	J (all detects) UJ (all non-detects)	A

Although the %Rs above were severely low, associated results were qualified as estimated since the post spike %R (93%) was within QC limits

V. Duplicates/Triplicates

Duplicate (DUP) and triplicate (TRP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits with the following exceptions:

DUP/TRP ID (Associated Samples)	Analyte	%RSD (Limits)	Flag	A or P
PCM-09DS-081211DUP/TRP (All samples in SDG K0812115)	Gravel Sand, coarse Sand, medium Sand, fine Clay	58.7 (≤20) 23.5 (≤20) 28.9 (≤20) 35.0 (≤20) 26.2 (≤20)	J (all detects) UJ (all non-detects)	A

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to extraction and analysis holding time, MS/MSD %R and DUP/TRP %RSD problems, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the Level III data validation all other results are considered valid and usable for all purposes.

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Wet Chemistry - Data Qualification Summary - SDG K0812115

SDG	Sample	Analyte	Flag	A or P	Reason
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Hexavalent chromium Cyanide	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	P	Technical holding times
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Hexavalent chromium	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)
K0812115	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	Gravel Sand, coarse Sand, medium Sand, fine Clay	J (all detects) UJ (all non-detects)	A	Duplicate/Triplicate sample analysis (%RSD)

NW Natural Gasco Site
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Anchor Environmental
Project: Gasco Long Term Pilo/000029-02 B6 17 T4
Sample Matrix: Sediment

Service Request: K0812115

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
PCM-02DS-081211	K0812115-001	12/11/2008	12/12/2008	12/15/2008	42.7	
PCM-06DS-081211	K0812115-002	12/11/2008	12/12/2008	12/15/2008	41.0	
PCM-09DS-081211	K0812115-003	12/11/2008	12/12/2008	12/15/2008	41.9	
PCM-14DS-081211	K0812115-004	12/11/2008	12/12/2008	12/15/2008	43.1	
PCM-15DS-081211	K0812115-005	12/11/2008	12/12/2008	12/15/2008	42.0	
PCM-22DS-081211	K0812115-006	12/11/2008	12/12/2008	12/15/2008	40.0	

12/22/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : SEDIMENT

Service Request : K0812115
Date Collected : 12/11/08
Date Received : 12/12/08

Ammonia as Nitrogen

Prep Method : EPA Plumb 5-1981 KCl
Analysis Method 350.1M
Test Notes :

Units : mg/Kg
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-02DS-081211	K0812115-001	5.86	0.47	5	12/15/2008	12/23/08	83.4	
PCM-06DS-081211	K0812115-002	6.10	0.49	5	12/15/2008	12/23/08	78.9	
PCM-09DS-081211	K0812115-003	5.97	0.48	5	12/15/2008	12/23/08	149	
PCM-14DS-081211	K0812115-004	1.17	0.10	1	12/15/2008	12/23/08	40.7	
PCM-15DS-081211	K0812115-005	1.20	0.10	1	12/15/2008	12/23/08	47.6	
PCM-22DS-081211	K0812115-006	6.25	0.50	5	12/15/2008	12/23/08	121	
Method Blank	K0812115-MB	1.17	0.10	1	12/15/2008	12/23/08	ND	

K021709

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : SEDIMENT

Service Request : K0812115
Date Collected : 12/11/08
Date Received : 12/12/08

Chromium, Hexavalent

Prep Method : EPA 3060A
Analysis Method 7196A
Test Notes :

Units : mg/Kg
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-02DS-081211	K0812115-001	1.3	0.015	1	12/23/2008	12/30/08	ND	UJ1,8
PCM-06DS-081211	K0812115-002	1.3	0.015	1	12/23/2008	12/30/08	ND	
PCM-09DS-081211	K0812115-003	1.3	0.015	1	12/23/2008	12/30/08	ND	
PCM-14DS-081211	K0812115-004	1.3	0.015	1	12/23/2008	12/30/08	ND	
PCM-15DS-081211	K0812115-005	1.3	0.015	1	12/23/2008	12/30/08	ND	
PCM-22DS-081211	K0812115-006	1.3	0.015	1	12/23/2008	12/30/08	ND	
Method Blank	K0812115-MB	1.3	0.015	1	12/23/2008	12/30/08	ND	

1/22/09

Report By: MKANALY

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : SEDIMENT

Service Request : K0812115
Date Collected : 12/11/08
Date Received : 12/12/08

Cyanide, Total

Prep Method : Method
Analysis Method 9012A
Test Notes :

Units : mg/Kg
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-02DS-081211	K0812115-001	0.49	0.10	1	12/23/2008	12/29/08	ND	UJ
PCM-06DS-081211	K0812115-002	0.52	0.11	1	12/23/2008	12/29/08	ND	
PCM-09DS-081211	K0812115-003	044	0.09	1	12/23/2008	12/29/08	ND	
PCM-14DS-081211	K0812115-004	0.38	0.08	1	12/23/2008	12/29/08	ND	
PCM-15DS-081211	K0812115-005	044	0.09	1	12/23/2008	12/29/08	ND	
PCM-22DS-081211	K0812115-006	0.41	0.09	1	12/23/2008	12/29/08	ND	
Method Blank	K0812115-MB	0.38	0.08	1	12/23/2008	12/29/08	ND	

11/21/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : SEDIMENT

Service Request : K0812115
Date Collected : 12/11/08
Date Received : 12/12/08

Sulfide, Total

Prep Method : EPA 9030B Modified
Analysis Method 9030M
Test Notes :

Units : mg/Kg
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-02DS-081211	K0812115-001	1.3	0.13	1	12/17/2008	12/17/08	ND	
PCM-06DS-081211	K0812115-002	1.3	0.13	1	12/17/2008	12/17/08	ND	
PCM-09DS-081211	K0812115-003	1.3	0.13	1	12/17/2008	12/17/08	9.2	
PCM-14DS-081211	K0812115-004	1.3	0.13	1	12/17/2008	12/17/08	ND	
PCM-15DS-081211	K0812115-005	1.3	0.13	1	12/17/2008	12/17/08	1.20	J
PCM-22DS-081211	K0812115-006	1.3	0.13	1	12/17/2008	12/17/08	6.3	
Method Blank	K0812115-MB	1.3	0.13	1	12/17/2008	12/17/08	ND	

N021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Anchor Environmental
Project Name : Gasco Long Term Pilot Cap Monitoring-Year 2 Event
Project Number : 000029-02 B6 17 T4
Sample Matrix : SEDIMENT

Service Request : K0812115
Date Collected : 12/11/08
Date Received : 12/12/08

Carbon, Total Organic (TOC)

Prep Method : SOP
Analysis Method PSEP TOC
Test Notes :

Units : Percent
Basis : Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
PCM-02DS-081211	K0812115-001	0.05	0.02	1	12/16/2008	01/14/09	3.04	
PCM-06DS-081211	K0812115-002	0.05	0.02	1	12/16/2008	01/14/09	2.95	
PCM-09DS-081211	K0812115-003	0.05	0.02	1	12/16/2008	01/14/09	2.92	
PCM-14DS-081211	K0812115-004	0.05	0.02	1	12/16/2008	01/14/09	1.81	
PCM-15DS-081211	K0812115-005	0.05	0.02	1	12/16/2008	01/14/09	1.98	
PCM-22DS-081211	K0812115-006	0.05	0.02	1	12/16/2008	01/14/09	2.61	
Method Blank	K0812115-MB	0.05	0.02	1	NA	01/14/09	ND	

8/21309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008
		Date Analyzed:	12/23/2008

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: PCM-02DS-081211
Lab Code: K0812115-001

Sand Fraction:	Dry Weight (Grams)	40.9476
Sand Fraction:	Weight Recovered (Grams)	40.2368
Sand Fraction:	Percent Recovery	98.3

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Gravel (>2.00 mm)	<-1 Ø	1.0408	1.59	J9
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	2.1804	3.33	
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	3.1945	4.88	J9
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	5.0163	7.67	↓
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	9.2599	14.2	
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	14.7801	22.6	
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	25.7350	39.3	
Clay (< 0.0039 mm)	> 8 Ø	3.4950	5.34	J9
	Total	64.7020	98.9	

K021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008
		Date Analyzed:	12/23/2008

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: PCM-06DS-081211
Lab Code: K0812115-002

Sand Fraction:	Dry Weight (Grams)	22.1840
Sand Fraction:	Weight Recovered (Grams)	22.4206
Sand Fraction:	Percent Recovery	101

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Gravel (>2.00 mm)	<-1 Ø	0.2975	0.62	J9
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.7418	1.56	
Sand, Coarse (0.500 mm to 1.0mm)	0 to 1 Ø	1.2128	2.55	J9
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	2.0634	4.33	↓
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	3.3830	7.10	
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	11.1732	23.5	
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	28.0700	58.9	
Clay (< 0.0039 mm)	> 8 Ø	2.8600	6.00	J9
	Total	49.8017	105	

12/21/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008
		Date Analyzed:	12/23/2008

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: PCM-09DS-081211
Lab Code: K0812115-003

Sand Fraction:	Dry Weight (Grams)	14.0441
Sand Fraction:	Weight Recovered (Grams)	14.1497
Sand Fraction:	Percent Recovery	101

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Gravel (>2.00 mm)	<-1 Ø	0.6229	1.73	J9
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.9000	2.50	
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	1.2191	3.39	J9
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	2.6754	7.44	↓
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	2.6292	7.31	
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	4.3663	12.1	
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	22.6400	63.0	
Clay (< 0.0039 mm)	> 8 Ø	2.9200	8.12	J9
	Total	37.9729	106	

8021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008
		Date Analyzed:	12/23/2008

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: PCM-14DS-081211
Lab Code: K0812115-004

Sand Fraction: Dry Weight (Grams)	25.1649
Sand Fraction: Weight Recovered (Grams)	25.0878
Sand Fraction: Percent Recovery	99.7

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Gravel (>2.00 mm)	<-1 Ø	0.2603	0.57	J9
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	2.0767	4.54	
Sand, Coarse (0.500mm to 1.0mm)	0 to 1 Ø	3.1105	6.79	J9
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	11.2484	24.6	↓
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	3.6000	7.86	
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	3.1953	6.98	
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	21.7850	47.6	
Clay (< 0.0039 mm)	> 8 Ø	1.2850	2.81	J9
	Total	46.5612	102	

8/12/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008
		Date Analyzed:	12/23/2008

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: PCM-15DS-081211
Lab Code: K0812115-005

Sand Fraction:	Dry Weight (Grams)	30.4607
Sand Fraction:	Weight Recovered (Grams)	29.7522
Sand Fraction:	Percent Recovery	97.7

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Gravel (>2.00 mm)	<-1 Ø	2.5606	4.64	J9
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	1.3899	2.52	
Sand, Coarse (0.500 mm to 1.00mm)	0 to 1 Ø	2.9689	5.38	J9
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	13.0288	23.6	↓
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	4.2595	7.72	
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	3.4131	6.19	
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	27.6350	50.1	
Clay (< 0.0039 mm)	> 8 Ø	2.4050	4.36	J9
	Total	57.6608	105	

8021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008
		Date Analyzed:	12/23/2008

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: PCM-22DS-081211
Lab Code: K0812115-006

Sand Fraction:	Dry Weight (Grams)	12.3357
Sand Fraction:	Weight Recovered (Grams)	11.6377
Sand Fraction:	Percent Recovery	94.3

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Gravel (>2.00 mm)	<-1 Ø	0.9800	2.58	J9
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	0.6798	1.79	
Sand, Coarse (0.500 mm to 1.00 mm	0 to 1 Ø	0.8122	2.13	J9
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	1.6123	4.24	↓
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	1.3884	3.65	
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	3.9787	10.5	
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	27.8150	73.1	
Clay (< 0.0039 mm)	> 8 Ø	1.7150	4.51	J9
	Total	38.9814	102	

5021309

LDC #: 20260A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/4/09

SDG #: K0812115 Level III Page: 1 of 1

Laboratory: Columbia Analytical Services Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Ammonia-N (EPA Method 350.1/Plumb 5-1981 KCl), Total Cyanide (EPA SW846 Method 9012A/~~SM4500-CN-C/E)~~,) Hexavalent Chromium (EPA SW846 Method 7196A), Particle Size (PSEP), Sulfide (EPA SW846 Method 9030M/~~SM4500-S2-D~~), Total Solids (EPA Method 160.3), TOC (~~SM5310C/~~PSEP Method)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 12/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	MS/MSD *
V	Duplicates	SW	Duplicates, Triplicates.
VI.	Laboratory control samples	A	LCS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Se limit

1	PCM-02DS-081211	11	PCM-09DS-081211DUP	21	MB	31	
2	PCM-06DS-081211	12	PCM-09DS-081211TRP	22		32	
3	PCM-09DS-081211	13	PCM-22DS-081211MS	23		33	
4	PCM-14DS-081211	14	PCM-22DS-081211MSD	24		34	
5	PCM-15DS-081211	15	PCM-22DS-081211DUP	25		35	
6	PCM-22DS-081211	16		26		36	
7	PCM-02DS-081211MS	17		27		37	
8	PCM-02DS-081211MSD	18		28		38	
9	PCM-02DS-081211DUP	19		29		39	
10	PCM-02DS-081211TRP	20		30		40	

Notes: * CN: a non client sample.

LDC #: 70760A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MM
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Parameter																		
1-6	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN	NH_3	TKN	TOC	CR^{6+}	TS	S	Grain size		
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
7-10	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN	NH_3	TKN	TOC	CR^{6+}					
13-15	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
15	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}	TS				
7, 9, 10	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
11, 12	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}			Grain size		
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					
	pH	TDS	Cl	F	NO_3	NO_2	SO_4	PO_4	ALK	CN^-	NH_3	TKN	TOC	CR^{6+}					

Comments:

LDC #: 20760A1
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: WH
2nd reviewer: A

All circled dates have exceeded the technical holding time.
Y N N/A Were all samples preserved as applicable to each method ?
Y N N/A Were all cooler temperatures within validation criteria?

Method:		7196A		9012A			
Parameters:		Cr6+		CN			
Technical holding time:		30 days	4 days*	14 days			
Sample ID	Sampling date	~~Analysis~~ extraction date	~~Analysis~~ date	Analysis date	Analysis date	Analysis date	Qualifier
1-6, 13-15	12/11/08	12/23/08	12/30/08	(19 days)			J/UJ/P
1-6	12/11/08			12/29/08	(18 days)		J/UJ/P

HT.6

* from extraction to analysis.

** TOC was prepared within 14 day HT.

LDC #: 20760A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 65-135 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
1	13/14	Sediment	Cr6+	0	0		All	J/~~R~~/A (UJ)
								(post spike 93%)

Comments:

LDC #: 20860A6
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Page: 1 of 1
Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water and ≤ 35% for soil samples (≤ 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	~~RPD (Limits)~~ %RSD (20%)	Associated Samples	Qualifications
1	11/12 (Triplicates)	Sediment	Gravel	58.7	All	J/UJ/A
			Sand, Coarse	23.5		
			Sand, Medium	28.9		
			Sand, Fine	35.0		
			Clay	26.2		

Comments:

DUP.6

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Gasoline Range Organics

LDC

LDC Report# 20260A7

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Gasoline Range Organics
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211
PCM-09DS-081211DUP

Introduction

This data review covers 7 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per NWTPH-Gx Method for Gasoline Range Organics.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No gasoline range organic contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Gasoline Range Organics - Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Gasoline Range Organics - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Gasoline Range Organics

Sample Name:	PCM-02DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 5035/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**48**	Z	15	4.4	1	12/15/08	12/15/08	KWG0813377	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	84	50-150	12/15/08	Acceptable

Comments: 8221309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Gasoline Range Organics

Sample Name:	PCM-06DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 5035/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**58**	Z	16	4.6	1	12/15/08	12/15/08	KWG0813377	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	85	50-150	12/15/08	Acceptable

Comments: 8 22/309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Gasoline Range Organics

Sample Name:	PCM-09DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 5035/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**6.6**	J	15	4.4	1	12/15/08	12/15/08	KWG0813377	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	81	50-150	12/15/08	Acceptable

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Gasoline Range Organics

Sample Name:	PCM-14DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 5035/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**6.2**	J	15	4.4	1	12/15/08	12/15/08	KWG0813377	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	85	50-150	12/15/08	Acceptable

Comments: 8021B09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Gasoline Range Organics

Sample Name:	PCM-15DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 5035/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	15	4.5	1	12/15/08	12/15/08	KWG0813377	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	84	50-150	12/15/08	Acceptable

Comments: K21309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Gasoline Range Organics

Sample Name:	PCM-22DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 5035/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**23**	Z	17	4.9	1	12/15/08	12/15/08	KWG0813377	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	86	50-150	12/15/08	Acceptable

Comments: SL021309

LDC #: 20260A7 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/09

SDG #: K0812115 Level III Page: 1 of 1

Laboratory: Columbia Analytical Services Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Gasoline Range Organics (NWTPH-Gx)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates /DUP	~~N~~ A	MS/D client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: sediments

1	PCM-02DS-081211	11	KWG0813377-~~2~~			31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7	PCM-09DS-081211DUP	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Diesel Range Organics & Residual Range Organics

LDC

LDC Report# 20260A8

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Diesel Range Organics & Residual Range Organics
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211

Introduction

This data review covers 6 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per NWTPH-Dx Method for Diesel Range Organics and Residual Range Organics.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No diesel range organic or residual range organic contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
KWG0813527-3	12/19/08	Diesel range organics Residual range organics	1.6 mg/Kg 3.6 mg/Kg	All samples in SDG K0812115

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Diesel Range Organics & Residual Range Organics - Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Diesel Range Organics & Residual Range Organics - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Diesel and Residual Range Organics

Sample Name:	PCM-02DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**800**	Z	59	2.8	1	12/19/08	12/31/08	KWG0813527	
Residual Range Organics (RRO)	**1300**	Z	240	6.8	1	12/19/08	12/31/08	KWG0813527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	90	50-150	12/31/08	Acceptable
n-Triacontane	106	50-150	12/31/08	Acceptable

Comments: 12/21/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Diesel and Residual Range Organics

Sample Name:	PCM-06DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**220**	Z	61	3.0	1	12/19/08	12/31/08	KWG0813527	
Residual Range Organics (RRO)	**770**	Z	250	7.1	1	12/19/08	12/31/08	KWG0813527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	12/31/08	Acceptable
n-Triacontane	94	50-150	12/31/08	Acceptable

Comments: 8/02/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Diesel and Residual Range Organics

Sample Name:	PCM-09DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**200**	Z	60	2.9	1	12/19/08	12/31/08	KWG0813527	
Residual Range Organics (RRO)	**780**	Z	240	6.9	1	12/19/08	12/31/08	KWG0813527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	82	50-150	12/31/08	Acceptable
n-Triacontane	94	50-150	12/31/08	Acceptable

Comments: 8 02/309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Diesel and Residual Range Organics

Sample Name:	PCM-14DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**91**	H	58	2.8	1	12/19/08	12/29/08	KWG0813527	
Residual Range Organics (RRO)	**450**	O	240	6.8	1	12/19/08	12/29/08	KWG0813527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	50-150	12/29/08	Acceptable
n-Triacontane	93	50-150	12/29/08	Acceptable

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Diesel and Residual Range Organics

Sample Name:	PCM-15DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**110**	H	59	2.9	1	12/19/08	12/30/08	KWG0813527	
Residual Range Organics (RRO)	**410**	O	240	6.9	1	12/19/08	12/30/08	KWG0813527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	50-150	12/30/08	Acceptable
n-Triacontane	89	50-150	12/30/08	Acceptable

Comments: 2/02/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Diesel and Residual Range Organics

Sample Name:	PCM-22DS-081211	**Units:**	mg/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**67**	H	63	3.0	1	12/19/08	12/30/08	KWG0813527	
Residual Range Organics (RRO)	**320**	O	250	7.3	1	12/19/08	12/30/08	KWG0813527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	75	50-150	12/30/08	Acceptable
n-Triacontane	78	50-150	12/30/08	Acceptable

Comments: 8021309

LDC #: 20260A8

SDG #: K0812115

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2/9/09

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Diesel Range Organics & Residual Range Organics (NWTPH-Dx)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	SW	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: Sediment

1	PCM-02DS-081211	11	KWG0813527-3	21		31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 20260A8
SDG #: per covey

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: F7
2nd Reviewer: K

METHOD: ✓ GC ___ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a given method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction procedure was performed?
Y N N/A Was a method blank performed with each extraction batch?
Y N N/A Were any contaminants found in the method blanks? If yes, please see findings below.

Level IV/D Only

Y N N/A (Gasoline and aromatics only)Was a method blank analyzed with each 24 hour batch?
Y N N/A Was a method blank analyzed for each analytical / extraction batch of ≤20 samples?

Blank extraction date: 12/19/08 **Blank analysis date:** 12/29/08 **Associated samples:** All (75X)
Conc. units: mg/kg

Compound	Blank ID	Sample Identification						
	KWG0813527-3 5X							
DRO	1.6	8.0						
RRO	3.6	18.0						

Blank extraction date:_____ **Blank analysis date:**_____ **Associated samples:**_____
Conc. units:_____

Compound	Blank ID	Sample Identification						

ALL CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Butyltin

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 18, 2009
Matrix:	Sediment
Parameters:	Butyltins
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211

Introduction

This data review covers 6 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per Krone Method for Butyltins.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and the confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of continuing standard mixtures were within the 25.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 25.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No butyltin contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Butyltins - Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Butyltins - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	2.4	1.1	1	12/18/08	01/17/09	KWG0813447	
Tri-n-butyltin	**2.0**	J	2.4	0.70	1	12/18/08	01/17/09	KWG0813447	
Di-n-butyltin	**0.68**	J	2.4	0.56	1	12/18/08	01/17/09	KWG0813447	
n-Butyltin	**1.5**	J	2.4	0.49	1	12/18/08	01/17/09	KWG0813447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	47	11-108	01/17/09	Acceptable

Comments: 8/02/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	2.4	1.1	1	12/18/08	01/17/09	KWG0813447	
Tri-n-butyltin	**1.5**	J	2.4	0.71	1	12/18/08	01/17/09	KWG0813447	
Di-n-butyltin	**0.79**	J	2.4	0.57	1	12/18/08	01/17/09	KWG0813447	
n-Butyltin	**1.2**	J	2.4	0.50	1	12/18/08	01/17/09	KWG0813447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	56	11-108	01/17/09	Acceptable

Comments: 2/02/2009

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	2.4	1.2	1	12/18/08	01/17/09	KWG0813447	
Tri-n-butyltin	**1.6**	J	2.4	0.72	1	12/18/08	01/17/09	KWG0813447	
Di-n-butyltin	**1.1**	J	2.4	0.57	1	12/18/08	01/17/09	KWG0813447	
n-Butyltin	**1.1**	J	2.4	0.50	1	12/18/08	01/17/09	KWG0813447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	55	11-108	01/17/09	Acceptable

Comments: 8/21/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	2.3	1.1	1	12/18/08	01/17/09	KWG0813447	
Tri-n-butyltin	**1.6**	J	2.3	0.68	1	12/18/08	01/17/09	KWG0813447	
Di-n-butyltin	**1.3**	J	2.3	0.54	1	12/18/08	01/17/09	KWG0813447	
n-Butyltin	**1.1**	J	2.3	0.48	1	12/18/08	01/17/09	KWG0813447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	50	11-108	01/17/09	Acceptable

Comments: SL 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	2.4	1.1	1	12/18/08	01/17/09	KWG0813447	
Tri-n-butyltin	**2.9**		2.4	0.71	1	12/18/08	01/17/09	KWG0813447	
Di-n-butyltin	**1.3**	J	2.4	0.57	1	12/18/08	01/17/09	KWG0813447	
n-Butyltin	**1.2**	J	2.4	0.50	1	12/18/08	01/17/09	KWG0813447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	65	11-108	01/17/09	Acceptable

Comments: 8/02/309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Butyltins (as cation)

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	Krone		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Tetra-n-butyltin	ND	U	2.5	1.2	1	12/18/08	01/18/09	KWG0813447	
Tri-n-butyltin	**4.2**		2.5	0.75	1	12/18/08	01/18/09	KWG0813447	
Di-n-butyltin	**1.7**	J	2.5	0.60	1	12/18/08	01/18/09	KWG0813447	
n-Butyltin	**2.0**	J	2.5	0.53	1	12/18/08	01/18/09	KWG0813447	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tri-n-propyltin	70	11-108	01/18/09	Acceptable

Comments: 1/02/09

LDC #: 20260A19

SDG #: K0812115

Laboratory: Columbia Analytical Services

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 2/9/09

Page: 1 of 1

Reviewer: P

2nd Reviewer: N

METHOD: GC Butyltins (Krone Method)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV/CCV ≤ 25
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-02DS-081211	11	KWG0813447-4	21		31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Dioxins/Dibenzofurans

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Dioxins/Dibenzofurans
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc./Analytical Perspectives
Sample Delivery Group (SDG):	K0812115/P9968

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211

Introduction

This data review covers 6 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 1613B for Polychlorinated Dioxins/Dibenzofurans.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Polychlorinated Dioxins/Dibenzofurans Data Review (September 2005) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. HRGC/HRMS Instrument Performance Check

Instrument performance was checked at the required daily frequency.

Retention time windows were established for all homologues. The chromatographic resolution between 2,3,7,8-TCDD and peaks representing any other unlabeled TCDD isomer was less than or equal to 25%.

III. Initial Calibration

A five point initial calibration was performed as required by the method.

Percent relative standard deviations (%RSD) were less than or equal to 20.0% for unlabeled compounds and less than or equal to 30.0% for labeled compounds.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

IV. Routine Calibration (Continuing)

Routine calibration was performed at the required frequencies.

All of the routine calibration percent differences (%D) between the initial calibration RRF and the routine calibration RRF were within QC limits.

The ion abundance ratios for all PCDDs and PCDFs were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated dioxin/dibenzofuran contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
6459-MBO	12/22/08	Total TCDD	0.0784 pg/g	All samples in SDG K0812115/P9968

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

VI. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. Laboratory Control Samples (LCS)

Ongoing precision and recovery (OPR) control samples were reviewed for each matrix as applicable. The percent recoveries (%R) were within the QC limits.

VIII. Regional Quality Assurance and Quality Control

Not applicable.

IX. Internal Standards

All internal standard recoveries were within QC limits.

X. Target Compound Identifications

Raw data were not reviewed for this SDG.

XI. Compound Quantitation and CRQLs

The 2,3,7,8-TCDF confirmation was performed with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All samples in SDG K0812115/P9968	2,3,7,8-TCDF	2nd column confirmation was not performed for this compound.	2,3,7,8-TCDF must be confirmed on the 2nd column per the method.	None	P

Raw data were not reviewed for this SDG.

XII. System Performance

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method with the exception noted in Section XI. No data were qualified due to this laboratory oversight.

No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

XV. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Dioxins/Dibenzofurans - Data Qualification Summary - SDG K0812115/P9968

SDG	Sample	Compound	Flag	A or P	Reason
K0812115/ P9968	PCM-02DS-081211 PCM-06DS-081211 PCM-09DS-081211 PCM-14DS-081211 PCM-15DS-081211 PCM-22DS-081211	2,3,7,8-TCDF	None	P	Compound quantitation and CRQLs

NW Natural Gasco Site
Dioxins/Dibenzofurans - Laboratory Blank Data Qualification Summary - SDG K0812115/P9968

No Sample Data Qualified in this SDG

Sample ID: PCM-02DS-081211 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.17 g	Sample ID:	P9968_6459_001	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids:	45.1 %	QC Batch No.:	6459	Date Analyzed:	10-Jan-09
		Split:	-	Dilution:	-	Time Analyzed:	21:45:38

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.446	[Ra=0.749]		J	13C-2,3,7,8-TCDD	59.4	
1,2,3,7,8-PeCDD	1.38			J	13C-1,2,3,7,8-PeCDD	58.5	
1,2,3,4,7,8-HxCDD	2.87				13C-1,2,3,4,7,8-HxCDD	57.9	
1,2,3,6,7,8-HxCDD	11.3				13C-1,2,3,6,7,8-HxCDD	59.6	
1,2,3,7,8,9-HxCDD	4.5				13C-1,2,3,7,8,9-HxCDD	61	
1,2,3,4,6,7,8-HpCDD	290				13C-1,2,3,4,6,7,8-HpCDD	55.9	
OCDD	2,310				13C-OCDD	39.9	
2,3,7,8-TCDF	80				13C-2,3,7,8-TCDF	59.9	
1,2,3,7,8-PeCDF	70.7				13C-1,2,3,7,8-PeCDF	60.4	
2,3,4,7,8-PeCDF	40.3				13C-2,3,4,7,8-PeCDF	59.4	
1,2,3,4,7,8-HxCDF	121				13C-1,2,3,4,7,8-HxCDF	58.9	
1,2,3,6,7,8-HxCDF	33				13C-1,2,3,6,7,8-HxCDF	57.4	
2,3,4,6,7,8-HxCDF	8.57				13C-2,3,4,6,7,8-HxCDF	58.9	
1,2,3,7,8,9-HxCDF	18.9				13C-1,2,3,7,8,9-HxCDF	55.5	
1,2,3,4,6,7,8-HpCDF	116				13C-1,2,3,4,6,7,8-HpCDF	54.5	
1,2,3,4,7,8,9-HpCDF	21.1				13C-1,2,3,4,7,8,9-HpCDF	51.9	
OCDF	446				13C-OCDF	41.7	
Totals						**CS Recoveries**	
TCDDs	14.3		15.6		37Cl-2,3,7,8-TCDD	62.9	
PeCDDs	8.4		9.9		13C-1,2,3,4,7-PeCDD	68.9	
HxCDDs	66.3		68.1		13C-1,2,3,4,6-PeCDF	67.8	
HpCDDs	582				13C-1,2,3,4,6,9-HxCDF	70.4	
					13C-1,2,3,4,6,8,9-HpCDF	69.5	
TCDFs	178		185				
PeCDFs	187		190			**AS Recoveries**	
HxCDFs	268		268		13C-1,3,6,8-TCDD	54.4	
HpCDFs	435				13C-1,3,6,8-TCDF	60.8	
Total PCDD/Fs	**4,490**		**4,510**				
ITEF TEQs							
TEQ: ND=0	59.9		59.9				
TEQ: ND=DL/2	59.9		59.9				
TEQ: ND=DL	59.9		59.9				

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Checkcode: 2992

AP 2008 Rev. H

1/22/1709

Reviewer .....
Date 2/12/09

Sample ID: PCM-06DS-081211 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.30 g	Sample ID:	P9968_6459_002	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids:	42.4 %	QC Batch No.:	6459	Date Analyzed:	10-Jan-09
		Split:	-	Dilution:	-	Time Analyzed:	22:35:53

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.388	[Ra=0.877]		J	13C-2,3,7,8-TCDD	69.9	
1,2,3,7,8-PeCDD	EMPC		0.614	J	13C-1,2,3,7,8-PeCDD	68.8	
1,2,3,4,7,8-HxCDD	1.31			J	13C-1,2,3,4,7,8-HxCDD	69.4	
1,2,3,6,7,8-HxCDD	6.15				13C-1,2,3,6,7,8-HxCDD	69.9	
1,2,3,7,8,9-HxCDD	2.78				13C-1,2,3,7,8,9-HxCDD	71.2	
1,2,3,4,6,7,8-HpCDD	160				13C-1,2,3,4,6,7,8-HpCDD	65.7	
OCDD	2,140				13C-OCDD	56	
2,3,7,8-TCDF	9.65				13C-2,3,7,8-TCDF	70.3	
1,2,3,7,8-PeCDF	9.91				13C-1,2,3,7,8-PeCDF	69.9	
2,3,4,7,8-PeCDF	6.3				13C-2,3,4,7,8-PeCDF	69.3	
1,2,3,4,7,8-HxCDF	16.7				13C-1,2,3,4,7,8-HxCDF	69.3	
1,2,3,6,7,8-HxCDF	4.93				13C-1,2,3,6,7,8-HxCDF	67.1	
2,3,4,6,7,8-HxCDF	2.51				13C-2,3,4,6,7,8-HxCDF	69.1	
1,2,3,7,8,9-HxCDF	2.43				13C-1,2,3,7,8,9-HxCDF	66.1	
1,2,3,4,6,7,8-HpCDF	32.4				13C-1,2,3,4,6,7,8-HpCDF	65.7	
1,2,3,4,7,8,9-HpCDF	4.87				13C-1,2,3,4,7,8,9-HpCDF	63.4	
OCDF	113				13C-OCDF	54.5	
Totals						**CS Recoveries**	
TCDDs	7.56		8.09		37Cl-2,3,7,8-TCDD	72.1	
PeCDDs	4.53		7.31		13C-1,2,3,4,7-PeCDD	78.5	
HxCDDs	44.3				13C-1,2,3,4,6-PeCDF	76.1	
HpCDDs	340				13C-1,2,3,4,6,9-HxCDF	81	
					13C-1,2,3,4,6,8,9-HpCDF	79.7	
TCDFs	35.2		35.6				
PeCDFs	37.6					**AS Recoveries**	
HxCDFs	64.9				13C-1,3,6,8-TCDD	64.9	
HpCDFs	115		116		13C-1,3,6,8-TCDF	71.5	
Total PCDD/Fs	**2,900**		**2,910**				
ITEF TEQs							
TEQ: ND=0	12.9		13.2				
TEQ: ND=DL/2	12.9		13.2				
TEQ: ND=DL	12.9		13.2				

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AP 2008 Rev. H

1/21/09

Reviewer .....TV.....
Date .....2/12/09.....

Sample ID: PCM-09DS-081211 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.61 g	Sample ID:	P9968_6459_003	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids:	40.1 %	QC Batch No.:	6459	Date Analyzed:	10-Jan-09
		Split:	-	Dilution:	-	Time Analyzed:	23:26:06

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.355	[Ra=0.761]		J	13C-2,3,7,8-TCDD	89	
1,2,3,7,8-PeCDD	0.728			J	13C-1,2,3,7,8-PeCDD	88.2	
1,2,3,4,7,8-HxCDD	1.32			J	13C-1,2,3,4,7,8-HxCDD	86.6	
1,2,3,6,7,8-HxCDD	5.42				13C-1,2,3,6,7,8-HxCDD	92.2	
1,2,3,7,8,9-HxCDD	2.74				13C-1,2,3,7,8,9-HxCDD	91.7	
1,2,3,4,6,7,8-HpCDD	134				13C-1,2,3,4,6,7,8-HpCDD	84.7	
OCDD	1,220				13C-OCDD	67.7	
2,3,7,8-TCDF	12.4				13C-2,3,7,8-TCDF	91	
1,2,3,7,8-PeCDF	18.7				13C-1,2,3,7,8-PeCDF	92.2	
2,3,4,7,8-PeCDF	12.7				13C-2,3,4,7,8-PeCDF	91.8	
1,2,3,4,7,8-HxCDF	49.3				13C-1,2,3,4,7,8-HxCDF	87.9	
1,2,3,6,7,8-HxCDF	11.5				13C-1,2,3,6,7,8-HxCDF	87.6	
2,3,4,6,7,8-HxCDF	3.53				13C-2,3,4,6,7,8-HxCDF	88.4	
1,2,3,7,8,9-HxCDF	5.26				13C-1,2,3,7,8,9-HxCDF	85.6	
1,2,3,4,6,7,8-HpCDF	33.9				13C-1,2,3,4,6,7,8-HpCDF	85	
1,2,3,4,7,8,9-HpCDF	5.68				13C-1,2,3,4,7,8,9-HpCDF	80.2	
OCDF	96.4				13C-OCDF	67	
Totals						**CS Recoveries**	
TCDDs	8.67		9.1		37Cl-2,3,7,8-TCDD	89.3	
PeCDDs	5.63		7.35		13C-1,2,3,4,7-PeCDD	96.6	
HxCDDs	40.6		42.8		13C-1,2,3,4,6-PeCDF	97.6	
HpCDDs	302				13C-1,2,3,4,6,9-HxCDF	99.1	
					13C-1,2,3,4,6,8,9-HpCDF	99.7	
TCDFs	42.6		43.7				
PeCDFs	67.8					**AS Recoveries**	
HxCDFs	105				13C-1,3,6,8-TCDD	80.6	
HpCDFs	99.7				13C-1,3,6,8-TCDF	90.9	
Total PCDD/Fs	**1,980**		**1,990**				
ITEF TEQs							
TEQ: ND=0	20.2		20.2				
TEQ: ND=DL/2	20.2		20.2				
TEQ: ND=DL	20.2		20.2				

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AP 2008 Rev. H

8021709

Reviewer .....
Date .....2/12/09.....

Sample ID: PCM-14DS-081211 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	11.04 g	Sample ID:	P9968_6459_004	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids:	47.8 %	QC Batch No.:	6459	Date Analyzed:	11-Jan-09
		Split:	-	Dilution:	-	Time Analyzed:	0:16:26

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.222	[Ra=0.658]		J	13C-2,3,7,8-TCDD	91.7	
1,2,3,7,8-PeCDD	EMPC		0.546	J	13C-1,2,3,7,8-PeCDD	89.1	
1,2,3,4,7,8-HxCDD	1.15			J	13C-1,2,3,4,7,8-HxCDD	88.8	
1,2,3,6,7,8-HxCDD	5.56				13C-1,2,3,6,7,8-HxCDD	90.7	
1,2,3,7,8,9-HxCDD	2.24			J	13C-1,2,3,7,8,9-HxCDD	90.5	
1,2,3,4,6,7,8-HpCDD	175				13C-1,2,3,4,6,7,8-HpCDD	87.1	
OCDD	2,410				13C-OCDD	74.9	
2,3,7,8-TCDF	6.31				13C-2,3,7,8-TCDF	92.9	
1,2,3,7,8-PeCDF	16.1				13C-1,2,3,7,8-PeCDF	92.9	
2,3,4,7,8-PeCDF	5.91				13C-2,3,4,7,8-PeCDF	93.2	
1,2,3,4,7,8-HxCDF	37.7				13C-1,2,3,4,7,8-HxCDF	88	
1,2,3,6,7,8-HxCDF	10.8				13C-1,2,3,6,7,8-HxCDF	86.8	
2,3,4,6,7,8-HxCDF	2.94				13C-2,3,4,6,7,8-HxCDF	87.6	
1,2,3,7,8,9-HxCDF	3.4				13C-1,2,3,7,8,9-HxCDF	85.2	
1,2,3,4,6,7,8-HpCDF	36.3				13C-1,2,3,4,6,7,8-HpCDF	83.9	
1,2,3,4,7,8,9-HpCDF	6.92				13C-1,2,3,4,7,8,9-HpCDF	83.2	
OCDF	122				13C-OCDF	74.7	
Totals						**CS Recoveries**	
TCDDs	6.17		6.65		37Cl-2,3,7,8-TCDD	97.8	
PeCDDs	3.97		6.09		13C-1,2,3,4,7-PeCDD	102	
HxCDDs	40.5		42.3		13C-1,2,3,4,6-PeCDF	103	
HpCDDs	438				13C-1,2,3,4,6,9-HxCDF	105	
					13C-1,2,3,4,6,8,9-HpCDF	107	
TCDFs	22.8		23				
PeCDFs	39.2					**AS Recoveries**	
HxCDFs	85.5		86.1		13C-1,3,6,8-TCDD	84.3	
HpCDFs	129				13C-1,3,6,8-TCDF	93.2	
Total PCDD/Fs	**3,300**		**3,300**				
ITEF TEQs							
TEQ: ND=0	15.7		16				
TEQ: ND=DL/2	15.7		16				
TEQ: ND=DL	15.7		16				

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2/12/09

Reviewer .....
Date .....2/12/09.....

Sample ID: PCM-15DS-081211 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.28 g	Sample ID:	P9968_6459_005	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids:	46.4 %	QC Batch No.:	6459	Date Analyzed:	11-Jan-09
		Split:	-	Dilution:	-	Time Analyzed:	1:08:12

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	EMPC	[Ra=0.605]	0.217	J	13C-2,3,7,8-TCDD	89.3	
1,2,3,7,8-PeCDD	0.544			J	13C-1,2,3,7,8-PeCDD	89.9	
1,2,3,4,7,8-HxCDD	0.879			J	13C-1,2,3,4,7,8-HxCDD	87.8	
1,2,3,6,7,8-HxCDD	3.6				13C-1,2,3,6,7,8-HxCDD	89.1	
1,2,3,7,8,9-HxCDD	1.91			J	13C-1,2,3,7,8,9-HxCDD	90.4	
1,2,3,4,6,7,8-HpCDD	78.1				13C-1,2,3,4,6,7,8-HpCDD	84.3	
OCDD	726				13C-OCDD	67.1	
2,3,7,8-TCDF	5.77				13C-2,3,7,8-TCDF	90.7	
1,2,3,7,8-PeCDF	8.96				13C-1,2,3,7,8-PeCDF	90.2	
2,3,4,7,8-PeCDF	4.47				13C-2,3,4,7,8-PeCDF	88.9	
1,2,3,4,7,8-HxCDF	20.9				13C-1,2,3,4,7,8-HxCDF	87.4	
1,2,3,6,7,8-HxCDF	5.94				13C-1,2,3,6,7,8-HxCDF	84.8	
2,3,4,6,7,8-HxCDF	2.07			J	13C-2,3,4,6,7,8-HxCDF	86	
1,2,3,7,8,9-HxCDF	2.13			J	13C-1,2,3,7,8,9-HxCDF	83.1	
1,2,3,4,6,7,8-HpCDF	22.5				13C-1,2,3,4,6,7,8-HpCDF	82.7	
1,2,3,4,7,8,9-HpCDF	4.07				13C-1,2,3,4,7,8,9-HpCDF	80.5	
OCDF	58.4				13C-OCDF	67.9	
Totals						**CS Recoveries**	
TCDDs	61.1		61.8		37Cl-2,3,7,8-TCDD	94.3	
PeCDDs	8.72		9.18		13C-1,2,3,4,7-PeCDD	103	
HxCDDs	27.9		28.9		13C-1,2,3,4,6-PeCDF	101	
HpCDDs	173				13C-1,2,3,4,6,9-HxCDF	104	
					13C-1,2,3,4,6,8,9-HpCDF	105	
TCDFs	21.1		22.9				
PeCDFs	29.2		29.5			**AS Recoveries**	
HxCDFs	51.8		52.2		13C-1,3,6,8-TCDD	84.1	
HpCDFs	60.6				13C-1,3,6,8-TCDF	91.5	
Total PCDD/Fs	**1,220**		**1,220**				
ITEF TEQs							
TEQ: ND=0	9.1		9.32				
TEQ: ND=DL/2	9.1		9.32				
TEQ: ND=DL	9.1		9.32				

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AP 2008 Rev. H

R021709

Reviewer .....
Date 2/12/09

Sample ID: PCM-22DS-081211 — Method 1613

Client Data		Sample Data		Laboratory Data			
Name:	Anchor Environmental, LLC	Matrix:	Solids	Project No.:	P9968	Date Received:	17-Dec-08
Project ID:	GASCO Long Term Monitoring	Weight/Volume:	10.45 g	Sample ID:	P9968_6459_006	Date Extracted:	22-Dec-08
Date Collected:	11-Dec-08	% Solids:	41.5 %	QC Batch No.:	6459	Date Analyzed:	11-Jan-09
		Split:	-	Dilution:	-	Time Analyzed:	2:00:09

Analyte	Conc. (pg/g)	DL (pg/g)	EMPC (pg/g)	Qualifiers	Standard	ES Recoveries	Qualifiers
2,3,7,8-TCDD	0.404	[Ra=0.778]		J	13C-2,3,7,8-TCDD	75.8	
1,2,3,7,8-PeCDD	0.831			J	13C-1,2,3,7,8-PeCDD	76.1	
1,2,3,4,7,8-HxCDD	1.43			J	13C-1,2,3,4,7,8-HxCDD	75.6	
1,2,3,6,7,8-HxCDD	5.3				13C-1,2,3,6,7,8-HxCDD	79.4	
1,2,3,7,8,9-HxCDD	2.72				13C-1,2,3,7,8,9-HxCDD	79.6	
1,2,3,4,6,7,8-HpCDD	130				13C-1,2,3,4,6,7,8-HpCDD	75.7	
OCDD	1,190				13C-OCDD	59.9	
2,3,7,8-TCDF	13				13C-2,3,7,8-TCDF	77.3	
1,2,3,7,8-PeCDF	22.3				13C-1,2,3,7,8-PeCDF	78.1	
2,3,4,7,8-PeCDF	11.9				13C-2,3,4,7,8-PeCDF	76.5	
1,2,3,4,7,8-HxCDF	37				13C-1,2,3,4,7,8-HxCDF	77.5	
1,2,3,6,7,8-HxCDF	10.5				13C-1,2,3,6,7,8-HxCDF	74.7	
2,3,4,6,7,8-HxCDF	3.86				13C-2,3,4,6,7,8-HxCDF	76.9	
1,2,3,7,8,9-HxCDF	4.95				13C-1,2,3,7,8,9-HxCDF	73.4	
1,2,3,4,6,7,8-HpCDF	34.1				13C-1,2,3,4,6,7,8-HpCDF	71.3	
1,2,3,4,7,8,9-HpCDF	7.32				13C-1,2,3,4,7,8,9-HpCDF	69.6	
OCDF	96.2				13C-OCDF	59.2	
Totals						**CS Recoveries**	
TCDDs	9.83		10.9		37Cl-2,3,7,8-TCDD	80.2	
PeCDDs	6.4		7.7		13C-1,2,3,4,7-PeCDD	86.6	
HxCDDs	44.7				13C-1,2,3,4,6-PeCDF	85.4	
HpCDDs	294				13C-1,2,3,4,6,9-HxCDF	90.3	
					13C-1,2,3,4,6,8,9-HpCDF	88.3	
TCDFs	40.3		42.4				
PeCDFs	66.5					**AS Recoveries**	
HxCDFs	90.1		90.8		13C-1,3,6,8-TCDD	70.5	
HpCDFs	98.4				13C-1,3,6,8-TCDF	78.2	
Total PCDD/Fs	**1,930**		**1,940**				
ITEF TEQs							
TEQ: ND=0	18.8		18.8				
TEQ: ND=DL/2	18.8		18.8				
TEQ: ND=DL	18.8		18.8				

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AP 2008 Rev. H

1/21/09

Reviewer TV
Date 2/12/09

LDC #: 20260A21 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/09

SDG #: K0812115/P9968 Level III Page: 1 of 1

Laboratory: Analytical Perspectives 3 CAS Reviewer:

2nd Reviewer:

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA Method 1613B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
II.	HRGC/HRMS Instrument performance check	A	
III.	Initial calibration	A	
IV.	Routine calibration/~~CV~~	A	QC limit
V.	Blanks	SW	
VI.	Matrix spike/Matrix spike duplicates	N	client specified
VII.	Laboratory control samples	A	OPR
VIII.	Regional quality assurance and quality control	N	
IX.	Internal standards	A	QC limit
X.	Target compound identifications	N	
XI.	Compound quantitation and CRQLs	N	Non confirmation for H was performed (nne/P)
XII.	System performance	N	
XIII.	Overall assessment of data	A	
XIV.	Field duplicates	N	
XV.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

sediment

1	PCM-02DS-081211	11	6459-MBU	21		31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

VALIDATION FINDINGS WORKSHEET

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 1613B)

A. 2,3,7,8-TCDD	F. 1,2,3,4,6,7,8-HpCDD	K. 1,2,3,4,7,8-HxCDF	P. 1,2,3,4,7,8,9-HpCDF	U. Total HpCDD
B. 1,2,3,7,8-PeCDD	G. OCDD	L. 1,2,3,6,7,8-HxCDF	Q. OCDF	V. Total TCDF
C. 1,2,3,4,7,8-HxCDD	H. 2,3,7,8-TCDF	M. 2,3,4,6,7,8-HxCDF	R. Total TCDD	W. Total PeCDF
D. 1,2,3,6,7,8-HxCDD	I. 1,2,3,7,8-PeCDF	N. 1,2,3,7,8,9-HxCDF	S. Total PeCDD	X. Total HxCDF
E. 1,2,3,7,8,9-HxCDD	J. 2,3,4,7,8-PeCDF	O. 1,2,3,4,6,7,8-HpCDF	T. Total HxCDD	Y. Total HpCDF

Notes:

LDC #: 20260A21
SDG #: see cover

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: PT
2nd Reviewer: K

METHOD: HRGC/HRMS Dioxins/Dibenzofurans (EPA SW 846 Method 1613B)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all samples associated with a method blank?
Y N N/A Was a method blank performed for each matrix and whenever a sample extraction was performed?
Y N N/A Was the method blank contaminated?

Blank extraction date: 12/22/08 **Blank analysis date:** 1/10/09 **Associated samples:** All (~~MB~~ 75X)
Conc. units: pg/g

Compound	Blank ID	Sample Identification								
	6459-MB0									
R	0.0784									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

NW Natural Gasco Site
Data Validation Reports
LDC# 20260

Phenols

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	NW Natural Gasco Site
Collection Date:	December 11, 2008
LDC Report Date:	February 10, 2009
Matrix:	Sediment
Parameters:	Phenols
Validation Level:	EPA Level III
Laboratory:	Columbia Analytical Services, Inc.
Sample Delivery Group (SDG):	K0812115

Sample Identification

PCM-02DS-081211
PCM-06DS-081211
PCM-09DS-081211
PCM-14DS-081211
PCM-15DS-081211
PCM-22DS-081211

Introduction

This data review covers 6 sediment samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8151M for Phenols.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed for the primary (quantitation) column and confirmation column as required by this method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

b. Calibration Verification

Calibration verification was performed at the required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

The percent differences (%D) of the second source calibration standard were less than or equal to 15.0% for all compounds.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No phenol contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/(Matrix Spike) Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the Level III data validation all results are considered valid and usable for all purposes.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

NW Natural Gasco Site
Phenols - Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

NW Natural Gasco Site
Phenols - Laboratory Blank Data Qualification Summary - SDG K0812115

No Sample Data Qualified in this SDG

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-02DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-001	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	12	6.3	1	12/23/08	01/01/09	KWG0813614	
2,3,4,5-Tetrachlorophenol	ND	U	12	7.0	1	12/23/08	01/01/09	KWG0813614	
2,3,5,6-Tetrachlorophenol†	ND	U	12	8.7	1	12/23/08	01/01/09	KWG0813614	
Pentachlorophenol	ND	U	12	8.2	1	12/23/08	01/01/09	KWG0813614	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	97	32-107	01/01/09	Acceptable

† Analyte Comments

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments: SC021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-06DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-002	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	12	6.4	1	12/23/08	01/01/09	KWG0813614	
2,3,4,5-Tetrachlorophenol	ND	U	12	7.1	1	12/23/08	01/01/09	KWG0813614	
2,3,5,6-Tetrachlorophenol†	ND	U	12	8.8	1	12/23/08	01/01/09	KWG0813614	
Pentachlorophenol	ND	U	12	8.3	1	12/23/08	01/01/09	KWG0813614	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	105	32-107	01/01/09	Acceptable

† Analyte Comments

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments: 8/21/309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-09DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-003	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	12	6.4	1	12/23/08	01/01/09	KWG0813614	
2,3,4,5-Tetrachlorophenol	ND	U	12	7.1	1	12/23/08	01/01/09	KWG0813614	
2,3,5,6-Tetrachlorophenol†	ND	U	12	8.7	1	12/23/08	01/01/09	KWG0813614	
Pentachlorophenol	ND	U	12	8.3	1	12/23/08	01/01/09	KWG0813614	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	106	32-107	01/01/09	Acceptable

† Analyte Comments

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments: SL021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-14DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-004	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	12	6.2	1	12/23/08	01/01/09	KWG0813614	
2,3,4,5-Tetrachlorophenol	ND	U	12	6.9	1	12/23/08	01/01/09	KWG0813614	
2,3,5,6-Tetrachlorophenol†	ND	U	12	8.5	1	12/23/08	01/01/09	KWG0813614	
Pentachlorophenol	ND	U	12	8.0	1	12/23/08	01/01/09	KWG0813614	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	104	32-107	01/01/09	Acceptable

† Analyte Comments

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments: SR 021309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-15DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-005	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	12	6.4	1	12/23/08	01/01/09	KWG0813614	
2,3,4,5-Tetrachlorophenol	ND	U	12	7.1	1	12/23/08	01/01/09	KWG0813614	
2,3,5,6-Tetrachlorophenol†	ND	U	12	8.8	1	12/23/08	01/01/09	KWG0813614	
Pentachlorophenol	ND	U	12	8.3	1	12/23/08	01/01/09	KWG0813614	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	98	32-107	01/01/09	Acceptable

† **Analyte Comments**

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments: 8/24309

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Anchor Environmental	**Service Request:**	K0812115
Project:	Gasco Long Term Pilot Cap Monitoring-Year 2 Event/000029-02 B6 17 T	**Date Collected:**	12/11/2008
Sample Matrix:	Sediment	**Date Received:**	12/12/2008

Chlorinated Phenols

Sample Name:	PCM-22DS-081211	**Units:**	ug/Kg
Lab Code:	K0812115-006	**Basis:**	Dry
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	8151M		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
2,4,6-Trichlorophenol	ND	U	13	6.8	1	12/23/08	01/01/09	KWG0813614	
2,3,4,5-Tetrachlorophenol	ND	U	13	7.5	1	12/23/08	01/01/09	KWG0813614	
2,3,5,6-Tetrachlorophenol†	ND	U	13	9.2	1	12/23/08	01/01/09	KWG0813614	
Pentachlorophenol	ND	U	13	8.7	1	12/23/08	01/01/09	KWG0813614	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromo-2,6-dichlorophenol	107	32-107	01/01/09	Acceptable

† Analyte Comments

2,3,5,6-Tetrachlorophenol	This analyte cannot be separated from 2,3,4,6-Tetrachlorophenol.

Comments: SC 021309

LDC #: 20260A33 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/9/09
SDG #: K0812115 Level III Page: 1 of 1
Laboratory: Columbia Analytical Services Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC Phenols (EPA SW 846 Method 8151M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/11/08
IIa.	Initial calibration	A	
IIb.	Calibration verification/ICV	A	ICV ≤ 15
III.	Blanks	A	
IVa.	Surrogate recovery	A	
IVb.	Matrix spike/Matrix spike duplicates	N	client specified
IVc.	Laboratory control samples	A	LCS
V.	Target compound identification	N	
VI.	Compound Quantitation and CRQLs	N	
VII.	System Performance	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	PCM-02DS-081211 (sediment)	11	KWG0813614-~~4~~			31	
2	PCM-06DS-081211	12		22		32	
3	PCM-09DS-081211	13		23		33	
4	PCM-14DS-081211	14		24		34	
5	PCM-15DS-081211	15		25		35	
6	PCM-22DS-081211	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: