Imagine the result

White Sands Missile Range-
HELSTF Chromium Spill

Data Review

WHITE SANDS MISSLE RANGE, NEW MEXICO

Volatiles, DRO, Metals and Miscellaneous Analyses

SDG #1309089

Analyses Performed By:
DHL Analytical, Inc.
Round Rock, Texas

Report # 20419R
Review Level: Tier II
Project: GP08WSMR.2012.MON13

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) #1309089 for samples collected in association with the HELSTF Chromium Spill. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	DRO	SVOC	MET	MISC
HLSF-0143-HMW-041-0913-TB	1309089-01	Water	9/10/2013		X				
HLSF-0143-HMW-041-0913	1309089-02	Water	9/10/2013		X	X		X	X
HLSF-0143-HMW-040-0913	1309089-03	Water	9/10/2013		X	X		X	X
HLSF-0143-HMW-038-0913	1309089-04	Water	9/10/2013		X	X		X	X

Note:

1. Matrix spike/matrix spike duplicate (MS/MSD) was performed on sample location HLSF-0143-HMW-040-0913.
2. Miscellaneous analyses include TOC, hexavalent chromium and pH.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 8260B and 8015D. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

s.u. Standard units

Please Note: 2-Chloroethyl vinyl ether degrades in the presence of acid. Since the samples were preserved with acid to a pH of less than 2, all sample results for 2-chloroethyl vinyl ether are rejected.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination with which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
HLSF-0143-HMW-040-0913	2-Hexanone	>UL	>UL

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included with this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by laboratory personnel using the analytes relative retention time and ion spectra. These identifications were not reviewed by the data validator.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

%R Percent recovery
RPD Relative percent difference

DIESEL RANGE ORGANICS (DRO) ORGANICS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8015D	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C.
	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the reporting limit (RL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included with this SDG.

7. Compound Identification

Compounds are identified on the GC by laboratory personnel using the analytes relative retention time. These identifications were not reviewed by the data validator.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR DRO

DRO; SW-846 8015D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/FID)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content					X

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6020, SM 5310C, M3500-CR and SM 4500-H. Data were reviewed in accordance with USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review of July 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  B The reported value was obtained from a reading less than the contract-required detection limit (CRDL), but greater than or equal to the instrument detection limit (IDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6020	Soil	180 days from collection to analysis	Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the IDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

A laboratory duplicate analysis was not performed on a sample location within this SDG.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included with this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS/LCSD analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS/LCSD analysis exhibited recoveries within and RPD between the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS; SW-846 6020	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP) Atomic Absorption – Manual Cold Vapor (CV)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)		X		X	
LCS/LCSD RPD		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)					X
Reporting Limit Verification		X		X	
Moisture Content					X

%R Percent recovery
RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
TOC by SM 5310C	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2 s.u.
Hexavalent Chromium by M3500-Cr D	Water	24 hours from collection to analysis	Cool to <6 °C.
pH by SM 4500-H	Water	ASAP	Cool to <6 °C.

s.u. Standard units

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory qualifier "N" will be removed.

The MS/MSD analysis exhibited recoveries within the control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the CRDL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the CRDL, a control limit of one times the CRDL is applied for water matrices and two times the CRDL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not included with this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS/LCSD analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS/LCSD analysis exhibited recoveries within and RPD between the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM 5310C, M3500-Cr D and SM 4500-H	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor					X
Moisture Content					X

%RSD – relative standard deviation, %R - percent recovery, RPD - relative percent difference, %D – difference

VALIDATION PERFORMED BY: Jeffrey L. Davin

SIGNATURE:

DATE: October 15, 2013

PEER REVIEW: Dennis Capria

DATE: October 23, 2013

CHAIN OF CUSTODY/
CORRECTED SAMPLE ANALYSIS DATA SHEETS

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-041-0913-TB
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-01
Project No:		**Collection Date:**	09/10/13 11:00 AM
Lab Order:	1309089	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
1,1,1,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,1,1-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,1,2,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,1,2-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,1-Dichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,1-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,1-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,2,3-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 12:49 PM
1,2,3-Trichloropropane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
1,2,4-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 12:49 PM
1,2,4-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 12:49 PM
1,2-Dibromo-3-chloropropane	<0.00300	0.00300	0.0100		mg/L	1	09/11/13 12:49 PM
1,2-Dibromoethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,2-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
1,2-Dichloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
1,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,3,5-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 12:49 PM
1,3-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
1,3-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
1,4-Dichloro-2-butene	<0.00200	0.00200	0.00200		mg/L	1	09/11/13 12:49 PM
1,4-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
2,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
2-Butanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 12:49 PM
2-Chloroethylvinylether	~~<0.00500~~	~~0.00500~~	~~0.0150~~	R	mg/L	1	09/11/13 12:49 PM
2-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
2-Hexanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 12:49 PM
4-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
4-Methyl-2-pentanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 12:49 PM
Acetone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 12:49 PM
Acrylonitrile	<0.00100	0.00100	0.00300		mg/L	1	09/11/13 12:49 PM
Benzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Bromobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Bromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Bromodichloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Bromoform	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Bromomethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Carbon disulfide	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 12:49 PM
Carbon tetrachloride	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-041-0913-TB
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-01
Project No:		**Collection Date:**	09/10/13 11:00 AM
Lab Order:	1309089	**Matrix:**	TRIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Chlorobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Chloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Chloroform	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Chloromethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
cis-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
cis-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Dibromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Dibromomethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Dichlorodifluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Iodomethane	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 12:49 PM
Isopropylbenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 12:49 PM
Methyl tert-butyl ether	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Methylene chloride	<0.00250	0.00250	0.00250		mg/L	1	09/11/13 12:49 PM
n-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
n-Propylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
p-Isopropyltoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
sec-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Styrene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
tert-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 12:49 PM
Tetrachloroethene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 12:49 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 12:49 PM
trans-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
trans-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Trichloroethene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 12:49 PM
Trichlorofluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 12:49 PM
Vinyl chloride	<0.000100	0.000100	0.00100		mg/L	1	09/11/13 12:49 PM
Surr: 1,2-Dichloroethane-d4	113	0	70-120		%REC	1	09/11/13 12:49 PM
Surr: 4-Bromofluorobenzene	105	0	75-120		%REC	1	09/11/13 12:49 PM
Surr: Dibromofluoromethane	120	0	85-115	S	%REC	1	09/11/13 12:49 PM
Surr: Toluene-d8	97.6	0	85-120		%REC	1	09/11/13 12:49 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-041-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-02
Project No:		**Collection Date:**	09/10/13 11:00 AM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **AV**
TPH-DRO C10-C28	0.107	0.0800	0.100		mg/L	1	09/12/13 11:15 AM
Surr: Isopropylbenzene	56.3	0	47-142		%REC	1	09/12/13 11:15 AM
Surr: Octacosane	89.7	0	51-124		%REC	1	09/12/13 11:15 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Chromium	0.372	0.00200	0.00600		mg/L	1	09/17/13 01:13 PM
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
1,1,1,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,1,1-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,1,2,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,1,2-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,1-Dichloroethane	0.000350	0.000200	0.00100	J	mg/L	1	09/11/13 01:14 PM
1,1-Dichloroethene	0.00231	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,1-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,2,3-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:14 PM
1,2,3-Trichloropropane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
1,2,4-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:14 PM
1,2,4-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:14 PM
1,2-Dibromo-3-chloropropane	<0.00300	0.00300	0.0100		mg/L	1	09/11/13 01:14 PM
1,2-Dibromoethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,2-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
1,2-Dichloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
1,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,3,5-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:14 PM
1,3-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
1,3-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
1,4-Dichloro-2-butene	<0.00200	0.00200	0.00200		mg/L	1	09/11/13 01:14 PM
1,4-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
2,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
2-Butanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:14 PM
2-Chloroethylvinylether	~~<0.00500~~	~~0.00500~~	~~0.0150~~	R	mg/L	1	09/11/13 01:14 PM
2-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
2-Hexanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:14 PM
4-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
4-Methyl-2-pentanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:14 PM
Acetone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:14 PM
Acrylonitrile	<0.00100	0.00100	0.00300		mg/L	1	09/11/13 01:14 PM
Benzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-041-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-02
Project No:		**Collection Date:**	09/10/13 11:00 AM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Bromobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Bromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Bromodichloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Bromoform	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Bromomethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
Carbon disulfide	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:14 PM
Carbon tetrachloride	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Chlorobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Chloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
Chloroform	0.000700	0.000300	0.00100	J	mg/L	1	09/11/13 01:14 PM
Chloromethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
cis-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
cis-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Dibromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Dibromomethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Dichlorodifluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
Iodomethane	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:14 PM
Isopropylbenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:14 PM
Methyl tert-butyl ether	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
Methylene chloride	<0.00250	0.00250	0.00250		mg/L	1	09/11/13 01:14 PM
n-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
n-Propylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
p-Isopropyltoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
sec-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
Styrene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
tert-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:14 PM
Tetrachloroethene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:14 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:14 PM
trans-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
trans-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Trichloroethene	0.0764	0.000600	0.00200		mg/L	1	09/11/13 01:14 PM
Trichlorofluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:14 PM
Vinyl chloride	<0.000100	0.000100	0.00100		mg/L	1	09/11/13 01:14 PM
Surr: 1,2-Dichloroethane-d4	103	0	70-120		%REC	1	09/11/13 01:14 PM
Surr: 4-Bromofluorobenzene	106	0	75-120		%REC	1	09/11/13 01:14 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-041-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-02
Project No:		**Collection Date:**	09/10/13 11:00 AM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	09/11/13 01:14 PM
Surr: Toluene-d8	99.8	0	85-120		%REC	1	09/11/13 01:14 PM
HEXAVALENT CHROMIUM-WATER		**M3500-CR D**					Analyst: **LM**
Hexavalent Chromium	0.440	0.00800	0.0100		mg/L	1	09/11/13 10:39 AM
PH		**M4500-H+ B**					Analyst: **JCG**
pH	7.48	0	0		pH Units@20.7℃	1	09/11/13 02:20 PM
TOTAL ORGANIC CARBON		**M5310C**					Analyst: **JCG**
Total Organic Carbon	1.31	0.300	1.00		mg/L	1	09/11/13 04:28 PM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-040-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-03
Project No:		**Collection Date:**	09/10/13 12:07 PM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **AV**
TPH-DRO C10-C28	0.0983	0.0800	0.100	J	mg/L	1	09/12/13 11:24 AM
Surr: Isopropylbenzene	59.8	0	47-142		%REC	1	09/12/13 11:24 AM
Surr: Octacosane	88.3	0	51-124		%REC	1	09/12/13 11:24 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Chromium	0.00376	0.00200	0.00600	J	mg/L	1	09/17/13 01:19 PM
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
1,1,1,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,1,1-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,1,2,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,1,2-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,1-Dichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,1-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,1-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,2,3-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:38 PM
1,2,3-Trichloropropane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
1,2,4-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:38 PM
1,2,4-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:38 PM
1,2-Dibromo-3-chloropropane	<0.00300	0.00300	0.0100		mg/L	1	09/11/13 01:38 PM
1,2-Dibromoethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,2-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
1,2-Dichloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
1,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,3,5-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 01:38 PM
1,3-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
1,3-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
1,4-Dichloro-2-butene	<0.00200	0.00200	0.00200		mg/L	1	09/11/13 01:38 PM
1,4-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
2,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
2-Butanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:38 PM
2-Chloroethylvinylether	~~<0.00500~~	~~0.00500~~	~~0.0150~~	R	mg/L	1	09/11/13 01:38 PM
2-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
2-Hexanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:38 PM
4-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
4-Methyl-2-pentanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:38 PM
Acetone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:38 PM
Acrylonitrile	<0.00100	0.00100	0.00300		mg/L	1	09/11/13 01:38 PM
Benzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-040-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-03
Project No:		**Collection Date:**	09/10/13 12:07 PM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Bromobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Bromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Bromodichloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Bromoform	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Bromomethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Carbon disulfide	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:38 PM
Carbon tetrachloride	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Chlorobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Chloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Chloroform	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Chloromethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
cis-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
cis-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Dibromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Dibromomethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Dichlorodifluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Iodomethane	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 01:38 PM
Isopropylbenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:38 PM
Methyl tert-butyl ether	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Methylene chloride	<0.00250	0.00250	0.00250		mg/L	1	09/11/13 01:38 PM
n-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
n-Propylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
p-Isopropyltoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
sec-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Styrene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
tert-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 01:38 PM
Tetrachloroethene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:38 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:38 PM
trans-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
trans-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Trichloroethene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 01:38 PM
Trichlorofluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 01:38 PM
Vinyl chloride	<0.000100	0.000100	0.00100		mg/L	1	09/11/13 01:38 PM
Surr: 1,2-Dichloroethane-d4	106	0	70-120		%REC	1	09/11/13 01:38 PM
Surr: 4-Bromofluorobenzene	105	0	75-120		%REC	1	09/11/13 01:38 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-040-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-03
Project No:		**Collection Date:**	09/10/13 12:07 PM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Surr: Dibromofluoromethane	102	0	85-115		%REC	1	09/11/13 01:38 PM
Surr: Toluene-d8	97.5	0	85-120		%REC	1	09/11/13 01:38 PM
HEXAVALENT CHROMIUM-WATER		**M3500-CR D**					Analyst: **LM**
Hexavalent Chromium	<0.00800	0.00800	0.0100		mg/L	1	09/11/13 10:39 AM
PH		**M4500-H+ B**					Analyst: **JCG**
pH	7.60	0	0		pH Units@20.8℃	1	09/11/13 02:22 PM
TOTAL ORGANIC CARBON		**M5310C**					Analyst: **JCG**
Total Organic Carbon	1.12	0.300	1.00		mg/L	1	09/11/13 04:52 PM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-038-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-04
Project No:		**Collection Date:**	09/10/13 01:30 PM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TPH EXTRACTABLE BY GC - WATER		**M8015D**					Analyst: **AV**
TPH-DRO C10-C28	0.125	0.0800	0.100		mg/L	1	09/12/13 11:49 AM
Surr: Isopropylbenzene	55.9	0	47-142		%REC	1	09/12/13 11:49 AM
Surr: Octacosane	95.5	0	51-124		%REC	1	09/12/13 11:49 AM
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Chromium	0.0467	0.00200	0.00600		mg/L	1	09/17/13 01:26 PM
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
1,1,1,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,1,1-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,1,2,2-Tetrachloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,1,2-Trichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,1-Dichloroethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,1-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,1-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,2,3-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 02:03 PM
1,2,3-Trichloropropane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
1,2,4-Trichlorobenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 02:03 PM
1,2,4-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 02:03 PM
1,2-Dibromo-3-chloropropane	<0.00300	0.00300	0.0100		mg/L	1	09/11/13 02:03 PM
1,2-Dibromoethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,2-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
1,2-Dichloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
1,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,3,5-Trimethylbenzene	<0.00150	0.00150	0.00500		mg/L	1	09/11/13 02:03 PM
1,3-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
1,3-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
1,4-Dichloro-2-butene	<0.00200	0.00200	0.00200		mg/L	1	09/11/13 02:03 PM
1,4-Dichlorobenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
2,2-Dichloropropane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
2-Butanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 02:03 PM
2-Chloroethylvinylether	~~<0.00500~~	~~0.00500~~	~~0.0150~~	R	mg/L	1	09/11/13 02:03 PM
2-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
2-Hexanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 02:03 PM
4-Chlorotoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
4-Methyl-2-pentanone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 02:03 PM
Acetone	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 02:03 PM
Acrylonitrile	<0.00100	0.00100	0.00300		mg/L	1	09/11/13 02:03 PM
Benzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM

Qualifiers:

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E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
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DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-038-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-04
Project No:		**Collection Date:**	09/10/13 01:30 PM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Bromobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Bromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Bromodichloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Bromoform	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Bromomethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
Carbon disulfide	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 02:03 PM
Carbon tetrachloride	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Chlorobenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Chloroethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
Chloroform	0.000620	0.000300	0.00100	J	mg/L	1	09/11/13 02:03 PM
Chloromethane	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
cis-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
cis-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Dibromochloromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Dibromomethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Dichlorodifluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
Iodomethane	<0.00500	0.00500	0.0150		mg/L	1	09/11/13 02:03 PM
Isopropylbenzene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
m,p-Xylene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 02:03 PM
Methyl tert-butyl ether	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
Methylene chloride	<0.00250	0.00250	0.00250		mg/L	1	09/11/13 02:03 PM
n-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
n-Propylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
o-Xylene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
p-Isopropyltoluene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
sec-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
Styrene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
tert-Butylbenzene	<0.000300	0.000300	0.00100		mg/L	1	09/11/13 02:03 PM
Tetrachloroethene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 02:03 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	09/11/13 02:03 PM
trans-1,2-Dichloroethene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
trans-1,3-Dichloropropene	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Trichloroethene	0.0126	0.000600	0.00200		mg/L	1	09/11/13 02:03 PM
Trichlorofluoromethane	<0.000200	0.000200	0.00100		mg/L	1	09/11/13 02:03 PM
Vinyl chloride	<0.000100	0.000100	0.00100		mg/L	1	09/11/13 02:03 PM
Surr: 1,2-Dichloroethane-d4	106	0	70-120		%REC	1	09/11/13 02:03 PM
Surr: 4-Bromofluorobenzene	106	0	75-120		%REC	1	09/11/13 02:03 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits
N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: *23-Sep-13*

CLIENT:	Zia Engineering & Environmental	**Client Sample ID:**	HLSF-0143-HMW-038-0913
Project:	HELSTF Chromate Spill	**Lab ID:**	1309089-04
Project No:		**Collection Date:**	09/10/13 01:30 PM
Lab Order:	1309089	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260C**					Analyst: **KL**
Surr: Dibromofluoromethane	104	0	85-115		%REC	1	09/11/13 02:03 PM
Surr: Toluene-d8	99.1	0	85-120		%REC	1	09/11/13 02:03 PM
HEXAVALENT CHROMIUM-WATER		**M3500-CR D**					Analyst: **LM**
Hexavalent Chromium	0.0524	0.00800	0.0100		mg/L	1	09/11/13 10:39 AM
PH		**M4500-H+ B**					Analyst: **JCG**
pH	7.55	0	0		pH Units@20.9℃	1	09/11/13 02:25 PM
TOTAL ORGANIC CARBON		**M5310C**					Analyst: **JCG**
Total Organic Carbon	0.726	0.300	1.00	J	mg/L	1	09/11/13 06:03 PM

Qualifiers:				
	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

zia engineering & environmental consultants, llc
755 S. Telshor Blvd. Ste. F-201
Las Cruces, NM 88011
575-532-1526 u
575-532-1587 f

#1309089

CHAIN OF CUSTODY RECORD

PROJECT NO.

PROJECT NAME: HELSTF Chromate Spill

SAMPLER'S SIGNATURE: Bradley T. Davis

	DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	TOC	VOCs	TPH DRO	Hexavalent Chromium	Total Chromium	pH					REMARKS
01	9-10-13	1100	HLSF-0143-HMW-041-0913-TB	Water		2	X	X									VOC only - Trip Blank
02	9-10-13	1100	HLSF-0143-HMW-041-0913	Water		10	X	X	X	X	X	X					
03	9-10-13	1207 + BTD	HLSF-0143-HMW-040-0913	Water		10	X	X	X	X	X	X					
	9-10-13	1207	HLSF-0143-HMW-040-0913-msmsd	Water		10	X	X	X	X	X	X					Matrix Spike/duplicate
04	9-10-13	1330	HLSF-0143-HMW-038-0913	Water		10	X	X	X	X	X	X					

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: Brad Davis	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Bradley T. Davis 9-10-13	(PRINTED NAME) 9/11/13	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	yes	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	4.3	(TIME/DATE) 9/10/13	(TIME/DATE) 9/11/13	(TIME/DATE)
VIA: Fed EX	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: 24 Hold Time on Hexavalent Chromium.		

PLEASE USE BALL POINT PEN

DISTRIBUTION: WHITE - PROJECT FILES; YELLOW - LAB; PINK - FIELD COPY