



## Data Validation Memorandum

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**TO:** John Dudley **FILE:** 29806092.00493  
**FROM:** Lily Bayati, Analytical Services Group **SITE:** Del Amo - 2012  
GW Sampling Event  
**DATE:** May 22, 2012  
**SUBJECT:** Summary of Data Validation for Calscience Reports: 12-02-1148, 12-02-1149, 12-02-1266, 12-02-1267, 12-02-1397, 12-02-1398, 12-03-0316, 12-03-1889, 12-03-2024, and 12-04-1622

### Introduction

This report summarizes the findings of the data validation of 52 water samples (including four field duplicates), ten trip blanks, and ten equipment blanks. These samples were collected between February 16, and April 26, 2012 as part of the 2012 Groundwater (GW) Sampling Event at Del Amo Superfund Site. Calscience Environmental Laboratories, Inc. in Garden Grove, California performed all analyzes. The samples are listed in Table 1 included at the end of this document. The data were reviewed in accordance with URS Standard Operating Procedures, and the principles presented in *USEPA National Functional Guidelines for Superfund Organic Methods Data Review* (EPA, 2008).

### Overall Assessment

All samples were analyzed as requested and all holding times were met. Due to blank contamination, low-level result for acetone for one sample was qualified as anomalous (U). In addition, due to matrix interferences the results for several EPA 8260B analytes for seven samples were qualified as estimated (UJ/J). No other data were qualified. Overall, the data reported in this package, as qualified, are considered to be valid and usable for meeting project objectives. The analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for the project is 100%. Additionally, because all samples in this data set were collected and analyzed under similar prescribed conditions, the data within this set are considered to be comparable.

### Data Review Narratives

The analytical data were reviewed in order to evaluate the usability of the data for meeting project objectives. The data review process performed involved evaluating the following parameters: sample receipt, holding times, laboratory blank results, field blank results, laboratory control sample results, surrogate recoveries, field duplicate results, and matrix spike/matrix spike duplicate results. In addition, level IV data validation parameters were reviewed for more than 10% of the data. After evaluating these parameters, an overall assessment with respect to the quantitative and qualitative data quality assurance parameters of accuracy, precision, completeness, comparability, and representativeness was formulated.

52 water samples, ten trip blanks and ten equipment blanks were collectively analyzed for volatile organic compounds and/or TBA (EPA method 8260B). The laboratory data were reviewed to evaluate compliance with these methods and the quality of the data reported. Full validation including recalculation (EPA Superfund Stage 4A validation) was performed on more than 10% of the laboratory data. The following summarizes the results of this review.

The areas of review are listed below. A check mark (✓) indicates an area of review in which all data were acceptable. A crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Data Completeness
- ✓ Holding Times and Preservation
- ✓ GC-MS Instrument Performance Check (Full Validation)
- ⊗ Calibrations (Full Validation)
- ✓ GC-MS Internal Standards (Full Validation)
- ✓ Blanks
- ⊗ System Monitoring Compounds (Surrogates)
- ✓ Laboratory Control Samples (LCS)
- ⊗ Matrix Spike/Matrix Spike Duplicate Samples (MS/MSD)
- ✓ Field Duplicates
- ✓ Target Analyte Identification and Quantitation

1. Data Completeness

All analyses were performed as requested on the chain-of-custody records (COCs). The laboratory reported all requested analyses and the deliverable data reports were complete.

2. Holding Times and Preservation

All analyses were performed within the method-specified holding times. In addition, all samples were collected and preserved appropriately.

3. GC-MS Instrument Performance Check

An instrument performance check sample was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met.

4. Calibrations

4.1 Initial Calibration (IC)

Appropriate initial calibrations were performed for each analyte for the method. Compliance requirements for the method were met with the following exceptions.

EPA 8260B/ IC Date	Analyte	%RSD	Qualified Sample(s)	Qualifier
2/16/12 GC/MS LL	Bromomethane	34.37	None	NA
	cis-1,3-Dichloropropene	30.41		

Note: Data qualification was not considered necessary since the results for applicable project samples were non-detect.

4.2 Initial Calibration Verification, Continuing Calibration Verification (ICV, CCV)

Compliance requirements for ICVs and CCVs were met for the method.

5. GC-MS Internal Standards

Internal standard performance criteria were met for each sample for each analysis.

6. Blanks

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed. Target analytes were not detected in the associated method blanks, equipment blanks, or trip blanks with the following exceptions.

Blank	Analyte	Concentration (ug/L)	Qualified Samples	Qualifier
<b>FBS02009 (EB)</b>	Acetone	21	<b>GWS02381</b>	<b>U</b>
	TBA	36	None <sup>1</sup>	NA

Notes: EB = Equipment Blank

1- Data qualification was not considered necessary since the results for project samples were either non-detect or greater than five times the blank contamination and above the reporting limit.

7. System Monitoring Compounds (Surrogates)

Appropriate numbers of surrogate compounds were spiked into each sample for the EPA 8260B analyses. All surrogate compound recoveries were within the laboratory's statistically determined acceptance ranges with the following exceptions.

Sample ID	Surrogate	% Recovery	Qualified Analytes	Qualifier
<b>GWS02388</b>	1,4-Bromofluorobenzene	138	None	NA
<b>GWS02373</b>	1,2-Dichloroethane-d4	0		

Note: Data qualification was not considered necessary since the other three surrogate recoveries were within criteria.

8. Laboratory Control Samples (LCS)

LCSs were prepared in duplicate (LCSD) and analyzed at the proper frequency. All LCS and LCSD recoveries reported and the relative percent differences (RPDs) between the LCS and LCSD recoveries were within the laboratory's acceptance criteria. These LCS results indicate that the level of accuracy demonstrated by the analytical method with respect to a clean sample matrix is acceptable.

9. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Project samples **GWS02379**, **GWS02364**, **GWS02395**, **GWS02399**, **GWS02362**, and **GWS02365** were utilized for the MS/MSD analyses. The recoveries of all spiked analytes and the RPDs between the MS/MSD results were within the laboratory's statistically determined acceptance ranges with the following exceptions.

Sample	Analyte	Avg. Recovery	RPD	Qualified Samples	Qualifier
<b>GWS02365</b>	1,2-Dichloroethane	55.5%*	1	<b>GWS02374, GWS02365 GWS02355, GWS02356 GWS02363, GWS02372 GWS02378</b>	<b>UJ/J</b>
	Trichloroethene	73.5%*	2		
	TBA	58.5%*	10		
	Ethanol	40%*	5		
	Chlorobenzene	4X	4X	None	NA
<b>GWS02395</b>	TBA				

Notes: \* =Outlier

4X- MS/MSD evaluation criteria are not considered valid since the native sample concentration was greater than four times the spike concentration.

10. Field Duplicates

The following samples were submitted to the laboratory as field duplicate pairs.

<b>Primary Sample</b>	<b>Field Duplicate</b>
GWS02382	GWS02354
GWS02381	GWS02371
GWS02397	GWS02395
GWS02407	GWS02400

Acceptable field and analytical precision was demonstrated for all analytes for all field duplicate pairs.

11. Target Analyte Identification and Quantitation

All analytes reported and the reporting limits obtained comply with project specifications. All dilutions were appropriate. In addition, this data review process included result recalculation and transcription error checking from the raw data for more than 10% of the data. All detected results checked were confirmed.

**Table 1**  
**Calscience Environmental Laboratories, Inc.**

Sample	SDG	Sample Number	Date Sampled	Analysis Performed
<b>GWS02375</b>	12-02-1148	12-02-1148-1	2/16/12	EPA 8260B <sup>1</sup>
<b>FBS02000</b> (Trip Blank)	12-02-1148	12-02-1148-2	2/16/12	EPA 8260B <sup>1</sup>
<b>GWS02358</b>	12-02-1148	12-02-1148-3	2/17/12	EPA 8260B <sup>1</sup>
<b>GWS02368</b>	12-02-1148	12-02-1148-4	2/17/12	EPA 8260B <sup>1</sup>
<b>FBS02001</b> (Trip Blank)	12-02-1149	12-02-1149-1	2/16/12	EPA 8260B <sup>1</sup>
<b>GWS02379</b>	12-02-1149	12-02-1149-2	2/16/12	EPA 8260B <sup>1</sup>
<b>FBS02003</b> (Trip Blank)	12-02-1266	12-02-1266-1	2/17/12	EPA 8260B <sup>1</sup>
<b>GWS02374</b>	12-02-1266	12-02-1266-2	2/17/12	EPA 8260B <sup>1</sup>
<b>GWS02365</b>	12-02-1266	12-02-1266-3	2/20/12	EPA 8260B <sup>1</sup>
<b>GWS02377</b>	12-02-1266	12-02-1266-4	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02357</b>	12-02-1266	12-02-1266-5	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02355</b>	12-02-1266	12-02-1266-6	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02370</b>	12-02-1266	12-02-1266-7	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02356</b>	12-02-1266	12-02-1266-8	2/21/12	EPA 8260B <sup>1</sup>
<b>FBS02002</b> (Trip Blank)	12-02-1267	12-02-1267-1	2/20/12	EPA 8260B <sup>1</sup>
<b>GWS02363</b>	12-02-1267	12-02-1267-2	2/20/12	EPA 8260B <sup>1</sup>
<b>GWS02372</b>	12-02-1267	12-02-1267-3	2/20/12	EPA 8260B <sup>1</sup>
<b>GWS02367</b>	12-02-1267	12-02-1267-4	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02373</b>	12-02-1267	12-02-1267-5	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02380</b>	12-02-1267	12-02-1267-6	2/21/12	EPA 8260B <sup>1</sup>
<b>GWS02378</b>	12-02-1267	12-02-1267-7	2/21/12	EPA 8260B <sup>1</sup>
<b>FBS02004</b> (Trip Blank)	12-02-1397	12-02-1397-1	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02366</b>	12-02-1397	12-02-1397-2	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02360</b>	12-02-1397	12-02-1397-3	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02376</b>	12-02-1397	12-02-1397-4	2/22/12	EPA 8260B <sup>1</sup>
<b>FBS02006</b> (Trip Blank)	12-02-1397	12-02-1397-5	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02369</b>	12-02-1397	12-02-1397-6	2/22/12	EPA 8260B <sup>1</sup>
<b>FBS02005</b> (Trip Blank)	12-02-1398	12-02-1398-1	2/22/12	EPA 8260B <sup>1</sup>
<b>FBS02007</b> (Equipment Blank)	12-02-1398	12-02-1398-2	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02361</b>	12-02-1398	12-02-1398-3	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02354</b>	12-02-1398	12-02-1398-4	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02382</b> (Field Duplicate of GWS2354)	12-02-1398	12-02-1398-5	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02364</b>	12-02-1398	12-02-1398-6	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02359</b>	12-02-1398	12-02-1398-7	2/22/12	EPA 8260B <sup>1</sup>
<b>GWS02362</b>	12-02-1398	12-02-1398-8	2/22/12	EPA 8260B <sup>1</sup>
<b>FBS02008</b> (IDW)	12-02-1398	12-02-1398-9	2/23/12	NR

**Table 1**  
**Calscience Environmental Laboratories, Inc.**

Sample	SDG	Sample Number	Date Sampled	Analysis Performed
<b>GWS02371</b>	12-03-0316	12-03-0316-1	3/5/12	EPA 8260B <sup>1</sup>
<b>GWS02381</b> (Field Duplicate of GWS02371)	12-03-0316	12-03-0316-2	3/5/12	EPA 8260B <sup>1</sup>
<b>FBS02009</b> (Equipment Blank)	12-03-0316	12-03-0316-3	3/6/12	EPA 8260B <sup>2</sup>
<b>FBS02011</b> (Trip Blank)	12-03-1889	12-03-1889-1	3/27/12	EPA 8260B <sup>2</sup>
<b>FBS02012</b> (Equipment Blank)	12-03-1889	12-03-1889-2	3/27/12	EPA 8260B <sup>2</sup>
<b>GWS02392</b>	12-03-1889	12-03-1889-3	3/27/12	EPA 8260B <sup>2</sup>
<b>FBS02013</b> (Equipment Blank)	12-03-1889	12-03-1889-4	3/27/12	EPA 8260B <sup>2</sup>
<b>GWS02390</b>	12-03-1889	12-03-1889-5	3/27/12	EPA 8260B <sup>2</sup>
<b>GWS02385</b>	12-03-1889	12-03-1889-6	3/27/12	EPA 8260B <sup>2</sup>
<b>FBS02014</b> (Equipment Blank)	12-03-1889	12-03-1889-7	3/27/12	EPA 8260B <sup>2</sup>
<b>GWS02386</b>	12-03-1889	12-03-1889-8	3/27/12	EPA 8260B <sup>2</sup>
<b>GWS02394</b>	12-03-1889	12-03-1889-9	3/28/12	EPA 8260B <sup>2</sup>
<b>FBS02015</b> (Equipment Blank)	12-03-1889	12-03-1889-10	3/28/12	EPA 8260B <sup>2</sup>
<b>FBS02016</b> (Trip Blank)	12-03-2024	12-03-2024-1	3/28/12	EPA 8260B <sup>1</sup>
<b>GWS02398</b>	12-03-2024	12-03-2024-2	3/28/12	EPA 8260B <sup>1</sup>
<b>GWS02399</b>	12-03-2024	12-03-2024-3	3/28/12	EPA 8260B <sup>1</sup>
<b>GWS02393</b>	12-03-2024	12-03-2024-4	3/28/12	EPA 8260B <sup>2</sup>
<b>FBS02017</b> (Trip Blank)	12-03-2024	12-03-2024-5	3/28/12	EPA 8260B <sup>2</sup>
<b>GWS02396</b>	12-03-2024	12-03-2024-6	3/29/12	EPA 8260B <sup>2</sup>
<b>FBS02018</b> (Equipment Blank)	12-03-2024	12-03-2024-7	3/29/12	EPA 8260B <sup>2</sup>
<b>GWS02388</b>	12-03-2024	12-03-2024-8	3/29/12	EPA 8260B <sup>2</sup>
<b>GWS02395</b>	12-03-2024	12-03-2024-9	3/29/12	EPA 8260B <sup>2</sup>
<b>GWS02397</b> (Field Duplicate of GWS02395)	12-03-2024	12-03-2024-10	3/29/12	EPA 8260B <sup>2</sup>
<b>GWS02389</b>	12-03-2024	12-03-2024-11	3/29/12	EPA 8260B <sup>2</sup>
<b>GWS02387</b>	12-03-2024	12-03-2024-12	3/30/12	EPA 8260B <sup>2</sup>
<b>GWS02391</b>	12-03-2024	12-03-2024-13	3/30/12	EPA 8260B <sup>2</sup>
<b>FBS02020</b> (IDW)	12-03-2024	12-03-2024-14	3/30/12	NR
<b>FBS02019</b> (IDW)	12-03-2024	12-03-2024-15	3/29/12	NR
<b>FBS02017</b> (Trip Blank)	12-04-1622	12-04-1622-1	4/25/12	EPA 8260B
<b>FBS02021</b> (Equipment Blank)	12-04-1622	12-04-1622-2	4/25/12	EPA 8260B
<b>GWS02403</b>	12-04-1622	12-04-1622-3	4/25/12	EPA 8260B <sup>1</sup>
<b>GWS02401</b>	12-04-1622	12-04-1622-4	4/25/12	EPA 8260B <sup>1</sup>

**Table 1**  
**Calscience Environmental Laboratories, Inc.**

<b>Sample</b>	<b>SDG</b>	<b>Sample Number</b>	<b>Date Sampled</b>	<b>Analysis Performed</b>
<b>GWS02405</b>	12-04-1622	12-04-1622-5	4/25/12	EPA 8260B <sup>1</sup>
<b>GWS02402</b>	12-04-1622	12-04-1622-6	4/25/12	EPA 8260B <sup>1</sup>
<b>GWS02400</b>	12-04-1622	12-04-1622-7	4/26/12	EPA 8260B <sup>1</sup>
<b>GWS02407</b> (Field Duplicate of GWS02400)	12-04-1622	12-04-1622-8	4/26/12	EPA 8260B <sup>1</sup>
<b>GWS02406</b>	12-04-1622	12-04-1622-9	4/26/12	EPA 8260B <sup>1</sup>
<b>GWS02404</b>	12-04-1622	12-04-1622-10	4/26/12	EPA 8260B <sup>1</sup>

SDG: Sample Delivery Group  
NR: Not Reviewed  
IDW: Investigative Drive Waste  
EPA 8260B<sup>1</sup>: Volatile Organic Compounds (VOCs)  
EPA 8260B<sup>2</sup>: Tert-Butyl Alcohol (TBA)

**ATTACHMENT A**  
**DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY**  
**Assigned by URS's Data Review Team**

**DATA QUALIFIER DEFINITIONS FOR ORGANIC ANALYSES**

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

**DATA QUALIFIER DEFINITIONS FOR INORGANIC ANALYSES**

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- UJ The analyte was analyzed for, but was not detected. The reported sample quantitation limit is approximate and may be inaccurate or imprecise.
- R The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control (QC) criteria. The analyte may or may not be present in the sample.

**URS DATA QUALIFIER DEFINITIONS — REASON CODE DEFINITIONS**

- a Analytical sequence deficiency or omission.
- b Gross compound breakdown (4,4'-DDT/Endrin).
- c Calibration failure; poor or unstable response.
- d Laboratory duplicate imprecision.
- e Laboratory duplicate control sample imprecision.
- f Field duplicate imprecision.
- g Poor chromatography.
- h Holding time violation.
- i Internal standard failure.
- j Poor mass spectrographic performance.
- k Serial dilution imprecision.
- l Laboratory control sample recovery failure.
- m Matrix spike/matrix spike duplicate recovery failure.
- n Interference check sample recovery failure.
- o Calibration blank contamination (metals/inorganics only).
- p Preparation blank contamination (metals/inorganics only).
- q Quantitation outside linear range.
- r Linearity failure in initial calibration.
- s Surrogate spike recovery failure (GC organics and GC/MS organics only).
- t Instrument tuning failure.
- u No valid confirmation column (GC Organics only).
- v Value is estimated below the MDA (Rads only).
- w Retention time (RT) outside of RT window.
- x Field blank contamination.
- y Trip blank contamination.
- z Method blank contamination.

**INTERPRETATION KEY**

The following example shows how an analytical result which includes qualifiers assigned by both the URS data review team and the analytical laboratory could be displayed in the data tables:

**<5.20 Uz | JB**

The qualifier assigned by the URS data review team precedes the "|"; the qualifier assigned by the laboratory follows it. In this example, the result is qualified as a non-detection data to the bias introduced by contamination of the associated method blank. Presence of the analyte in the method blank is indicated by the laboratory qualifier (B). The qualifier assigned by the URS data review team (Uz) indicates that the analyte concentration is considered to be below the adjusted detection limit (quantitation limit) based on the level of contamination in the method blank.