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

Tronox, LLC
P.O. Box 55
Henderson NV 89009
ATTN: Ms. Susan Crowley

February 4, 2010

SUBJECT: **Data Validation Summary Report July to December 2009 Semi-Annual Remedial Performance Sampling Tronox LLC Facility Henderson, Nevada**

Dear Ms. Crowley,

Data Validation Summary Report July to December 2009 Semi-Annual Remedial Performance Sampling Tronox LLC Facility Henderson, Nevada project.

We appreciate this opportunity to support Tronox, LLC in the performance of this project.

Please feel free to call me at (760) 634-0437 if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Data Validation Summary Report
July to December 2009
Semi-Annual Remedial Performance Sampling
Tronox LLC Facility
Henderson, Nevada

Prepared for

Tronox LLC
Henderson, Nevada

Prepared by

Laboratory Data Consultants, Inc.
7750 El Camino Real, Suite 2C
Carlsbad, California 92009

February 2, 2010

Table of Contents

LIST OF TABLES

ATTACHMENT

LIST OF ACRONYMS AND ABBREVIATIONS

DQO	Data Quality Objectives
DUP	Duplicate
DVSR	Data Validation Summary Report
ICV	Initial Calibration Verification
LCS/LCSD	Laboratory Control Sample / Laboratory Control Sample Duplicate
LDC	Laboratory Data Consultants, Inc.
MS/MSD	Matrix Spike / Matrix Spike Duplicate
PARCC	Precision, Accuracy, Representativeness, Comparability, Completeness
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance / Quality Control
QAPP	Quality Assurance Project Plan
RPD	Relative Percent Difference
SDG	Sample Delivery Group
SQL	Sample Quantitation Limit
ug/L	Micrograms per Liter
ug/Kg	Micrograms per Kilogram
mg/L	Milligram per Liter
mg/Kg	Milligram per Kilogram
USEPA	United States Environmental Protection Agency
%D	Percent Difference
%R	Percent Recovery

1.0 INTRODUCTION

This data validation summary report (DVSR) has been prepared by Laboratory Data Consultants, Inc. (LDC) to assess the validity and usability of laboratory analytical data from the Semi-Annual Remedial Performance Sampling conducted at the Tronox LLC facility in Henderson, Nevada. The assessment was performed by Tronox LLC as a part of the *Revised Phase B Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada* dated May 2009 and included the collection and analyses of 482 environmental and quality control (QC) samples. The analyses were performed by the following methods:

Boron, Chromium, Iron, and Manganese by EPA SW 846 Method 6010B and EPA 200.7
Wet Chemistry:
Ammonia as Nitrogen by EPA Method 350.1
Specific Conductance by Standard Method 2510B
Hexavalent Chromium by EPA SW 846 Method 7196
Inorganic Nitrogen by Calculation Method
Nitrate as Nitrogen, Nitrite as Nitrogen, and Chloride by EPA Method 300.0
Perchlorate by EPA Method 314.0
pH by EPA SW 846 Method 9040B and Standard Method 4500-H,B
Total Dissolved Solids (TDS) by EPA Method 160.1
Total Organic Carbon by Standard Method 5310C
Total Organic Halides by EPA SW 846 Method 9020

Laboratory analytical services were provided by MWH Laboratories, Inc. The samples were grouped into sample delivery groups (SDGs). The water samples are associated with QA/QC samples designed to document the data quality of the entire SDG or a sub-group of samples within an SDG. Table I is a cross-reference table listing each sample, analysis, SDG, collection date, laboratory sample number, and matrix. All shaded samples in Table I were reviewed under Stage 4 validation guidelines.

The laboratory analytical data were validated in accordance with procedures described in the Nevada Division of Environmental Protection (NDEP) *Data Verification and Validation Requirements - Supplement* established for the BMI Plant Sites and Common Areas Projects, Henderson, Nevada, April 13, 2009. Consistent with the NDEP requirements, approximately ninety percent of the analytical data were validated according to Stage 2A data validation procedures and ten percent of the analytical data were validated according to Stage 4 data validation procedures. The analytical data were evaluated for quality assurance and quality control (QA/QC) based on the following documents: *Basic Remediation Company (BRC) Standard Operating Procedures (SOP) 40 Data Review/Valdiation*, Revision 1, July 2007, *Revised Phase B Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (QAPP)*, Revision, May 2009, *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004, and the *EPA SW 846 Third Edition, Test Methods for Evaluating Solid Waste,* update I, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IV, February 2007.

This report summarizes the QA/QC evaluation of the data according to precision, accuracy, representativeness, completeness, and comparability (PARCC) relative to the project data quality objectives (DQOs). This report provides a quantitative and qualitative assessment of the data and identifies potential sources of error, uncertainty, and bias that may affect the overall usability.

The PARCC summary report evaluates and summarizes the results of QA/QC data validation for the entire sampling program. Each analytical fraction has a separate section for each of the PARCC criteria. These sections interpret specific QC deviations and their effects on both individual data points and the analyses as a whole. Section 5.0 presents a summary of the PARCC criteria by comparing quantitative parameters with acceptability criteria defined in the project DQO's. Qualitative PARCC criteria are also summarized in this section.

Precision and Accuracy of Environmental Data

Environmental data quality depends on sample collection procedures, analytical methods and instrumentation, documentation, and sample matrix properties. Both sampling procedures and laboratory analyses contain potential sources of uncertainty, error, and/or bias, which affect the overall quality of a measurement. Errors for sample data may result from incomplete equipment decontamination, inappropriate sampling techniques, sample heterogeneity, improper filtering, and improper preservation. The accuracy of analytical results is dependent on selecting appropriate analytical methods, maintaining equipment properly, and complying with QC requirements. The sample matrix also is an important factor in the ability to obtain precise and accurate results within a given media.

Environmental and laboratory QA/QC samples assess the effects of sampling procedures and evaluate laboratory contamination, laboratory performance, and matrix effects. QA/QC samples include: equipment blanks, field blanks, field duplicates, method blanks, laboratory control samples and laboratory control sample duplicates (LCS/LCSDs), laboratory duplicate (DUP) and matrix spike/matrix spike duplicates (MS/MSDs).

Before conducting the PARCC evaluation, the analytical data were validated according to the BRC SOP-40 (July 2007), QAPP (May 2009), Functional Guidelines (USEPA 2004), and EPA SW 846 Test Methods. Samples not meeting the acceptance criteria were qualified with a flag, an abbreviation indicating a deficiency with the data. The following are flags used in data validation.

J-   Estimated The associated numerical value is an estimated quantity with a negative bias. The analyte was detected but the reported value may not be accurate or precise.

J+   Estimated The associated numerical value is an estimated quantity with a positive bias. The analyte was detected but the reported value may not be accurate or precise.

J   Estimated The associated numerical value is an estimated quantity. It is not possible to assess the direction of the potential bias. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits, but the exceedance was not sufficient to cause rejection of the data.

R   Rejected The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte. The "R" designation is also applied to yield only one complete set of data for a given sample and eliminate redundant data.

U   Nondetected Analyses were performed for the compound or analyte, but it was not detected. The "U" designation is also applied to suspected blank contamination. The "U" flag is used to qualify any result that is detected in an environmental sample and associated blank at less than the PQL.

UJ   Estimated/Nondetected Analyses were performed for the compound or analyte, but it was not detected and the sample quantitation or detection limit is an estimated quantity due to poor accuracy or precision. This qualification is also used to flag possible false negative results in the case where low bias in the analytical system is indicated by low calibration response, surrogate, or other spike recovery.

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

A   Indicates the finding is based upon technical validation criteria.

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

The hierarchy of flags is listed below:

R > J   The R flag will always take precedence over the J qualifier.

J > J+ or J-   A non-biased (J) flag will always supersede biased (J+ or J-) flags since it is not possible to assess the direction of the potential bias.

J = J+ plus J-   Adding biased (J+, J-) flags with opposite signs will result in a non-biased flag (J).

UJ = U plus J or J+ or J-   The UJ flag is used when a non-detected (U) flag is added to a biased (J+ or J-) or non-biased flag (J).

Table II lists the reason codes used. Reason codes explain why flags have been applied and identify possible limitations of data use. Reason codes are cumulative except when one of the flags is R then only the reason code associated to the R flag will be used.

Table III presents the overall qualified results after all the flags or validation qualifiers and associated reason codes have been applied.

Once the data are reviewed and qualified according to the BRC SOP-40, QAPP, functional guidelines, and EPA Test Methods, the data set is then evaluated using PARCC criteria. PARCC criteria provide an evaluation of overall data usability. The following is a discussion of PARCC criteria as related to the project DQOs.

Precision is a measure of the agreement or reproducibility of analytical results under a given set of conditions. It is a quantity that cannot be measured directly but is calculated from percent recovery data. Precision is expressed as the relative percent difference (RPD):

$$RPD = (D1-D2)/\{1/2(D1+D2)\} \times 100$$

where:
D1 = reported concentration for the sample
D2 = reported concentration for the duplicate

Precision is primarily assessed by calculating an RPD from the percent recoveries of the spiked compounds for each sample in the MS/MSD pair. In the absence of an MS/MSD pair, a laboratory duplicate or LCS/LCSD pair can be analyzed as an alternative means of assessing precision. An additional measure of sampling precision was obtained by collecting and analyzing field duplicate samples, which were compared using the RPD result as the evaluation criteria.

MS and MSD samples are field samples spiked by the laboratory with target analytes prior to preparation and analysis. These samples measure the overall efficiency of the analytical method in recovering target analytes from an environmental matrix. A LCS is similar to an MS/MSD sample in that the LCS is spiked with the same target analytes prior to preparation and analysis. However, the LCS is prepared using a controlled interference-free matrix instead of a field sample aliquot. Laboratory reagent water is used to prepare aqueous LCS. The LCS measures laboratory efficiency in recovering target analytes from either an aqueous matrix in the absence of matrix interferences.

One primary sample is analyzed and accompanied by an unspiked laboratory duplicate. The data reviewer compares the reported results of the primary analysis and the laboratory duplicate, then

calculates RPDs, which are used to assess laboratory precision.

Laboratory and field sampling precision are evaluated by calculating RPDs for aqueous field sample duplicate pairs. The sampler collects two field samples at the same location and under identically controlled conditions. The laboratory then analyzes the samples under identical conditions.

An RPD outside the numerical QC limit in either MS/MSD samples or LCS/LCSD indicates imprecision. Imprecision is the variance in the consistency with which the laboratory arrives at a particular reported result. Thus, the actual analyte concentration may be higher or lower than the reported result.

Possible causes of poor precision include sample matrix interference, improper sample collection or handling, inconsistent sample preparation, and poor instrument stability. In some duplicate pairs, results maybe reported in either the primary or duplicate samples at levels below the practical quantitation limit (PQL) or non-detected. Since these values are considered to be estimates, RPD exceedances from these duplicate pairs do not suggest a significant impact on the data quality.

Accuracy is a measure of the agreement of an experimental determination and the true value of the parameter being measured. It is used to identify bias in a given measurement system. Recoveries outside acceptable QC limits may be caused by factors such as instrumentation, analyst error, or matrix interference. Accuracy is assessed through the analysis of MS, MSD, LCS, and LCSD. In some cases, samples from multiple SDGs were within one QC batch and therefore are associated with the same laboratory QC samples. Accuracy of inorganic analyses is determined using the percent recoveries of MS and LCS analyses.

Percent recovery (%R) is calculated using the following equation:

$$\%R = (A-B)/C \times 100$$

where:
A = measured concentration in the spiked sample
B = measured concentration of the spike compound in the unspiked sample
C = concentration of the spike

The percent recovery of each analyte spiked in MS/MSD samples and LCS/LCSD is evaluated with the acceptance criteria specified by the previously noted documents. Spike recoveries outside the acceptable QC accuracy limits provide an indication of bias, where the reported data may overestimate or underestimate the actual concentration of compounds detected or quantitation limits reported for environmental samples.

Representativeness is a qualitative parameter that expresses the degree to which the sample data are characteristic of a population. It is evaluated by reviewing the QC results of blanks, samples and holding times. Positive detects of compounds in the blank samples identify compounds that may have been introduced into the samples during sample collection, transport, preparation, or analysis. The QA/QC blanks collected and analyzed are method blanks, equipment blanks and field blanks.

A method blank is a laboratory grade water or solid matrix that contains the method reagents and has undergone the same preparation and analysis as the environmental samples. The method blank provides a measure of the combined contamination derived from the laboratory source water, glassware, instruments, reagents, and sample preparation steps. Method blanks are prepared for each sample of a similar matrix extracted by the same method at a similar concentration level.

Initial and continuing calibration blanks consist of acidified laboratory grade water, which are injected at the beginning and at a regular frequency during each 12 - hour sample analysis run. These blanks estimate residual contaminants from the previous sample or standards analysis and measure baseline shifts that

commonly occur in emission and absorption spectroscopy.

Equipment blanks consist of analyte-free water poured over or through the sample collection equipment. The water is collected in a sample container for laboratory analysis. These blanks are collected after the sampling equipment is decontaminated and measure efficiency of the decontamination procedure. Equipment blanks were collected and analyzed for all target analytes.

Field blanks consist of analyte-free source water stored at the sample collection site. The water is collected from each source water used during each sampling event. Field blanks were collected and analyzed for all target analytes.

Contaminants found in both the environmental sample and the blank samples are assumed to be laboratory artifacts if both values are less than the PQL.

Holding times are evaluated to assure that the sample integrity is intact for accurate sample preparation and analysis. Holding times will be specific for each method and matrix analyzed. Holding time exceedances can cause loss of sample constituents due to biodegradation, precipitation, volatization, and chemical degradation. In accordance with EPA guidance (USEPA 2004), sample results for analyses that were performed after the method holding time but less than two times the method holding time were qualified as estimated (J- or UJ) and sample results for analyses that were performed after two times the method holding time were qualified as rejected (R).

Comparability is a qualitative expression of the confidence with which one data set may be compared to another. It provides an assessment of the equivalence of the analytical results to data obtained from other analyses. It is important that data sets be comparable if they are used in conjunction with other data sets. The factors affecting comparability include the following: sample collection and handling techniques, matrix type, and analytical method. If these aspects of sampling and analysis are carried out according to standard analytical procedures, the data are considered comparable. Comparability is also dependent upon other PARCC criteria, because only when precision, accuracy, and representativeness are known can data sets be compared with confidence.

Completeness is defined as the percentage of acceptable sample results compared to the total number of sample results. Completeness is evaluated to determine if an acceptable amount of usable data were obtained so that a valid scientific site assessment can be completed. Completeness equals the total number of sample results for each fraction minus the total number of rejected sample results divided by the total number of sample results multiplied by 100. As specified in the project DQOs, the goal for completeness for target analytes in each analytical fraction is 90 percent.

Percent completeness is calculated using the following equation:

$$\%C = (T - R)/T \times 100$$

where:
%C = percent completeness
T = total number of sample results
R = total number of rejected sample results

Completeness is also determined by comparing the planned number of samples per method and matrix as specified in the QAPP, with the number determined above.

The following sections present a review of QC data for each analytical method.

2.0   METALS

A total of 293 water samples were analyzed for chromium by EPA SW 846 Method 6010B and EPA Method 200.7 and one water sample was analyzed for boron, iron, and manganese by EPA Method 200.7. All metal data were assessed to be valid since none of the 296 total results were rejected based on holding time and QC exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCC criteria and evaluated based on the DQOs.

2.1   Precision and Accuracy

2.1.1   Instrument Calibration

Initial and continuing calibration verification results provide a means of evaluating accuracy within a particular SDG. Correlation coefficient (r) and percent recovery (%R) are the two major parameters used to measure the effectiveness of instrument calibration. The correlation coefficient indicates the linearity of the calibration curve. %R is used to verify the ongoing calibration acceptability of the analytical system.

The most critical of the two calibration parameters, r, has the potential to affect data accuracy across an SDG when it is outside the acceptable QC limits. %R exceedances suggest more routine instrumental anomalies, which typically impact all sample results for the affected analytes.

The correlation coefficients in the initial calibrations were within the acceptance criteria of $\geq$ 0.995 and the %Rs in the continuing calibration verification met the acceptance criteria of 90-110%.

2.1.2   MS/MSD Samples

All MS/MSD %Rs and RPDs met acceptance criteria.

2.1.3   LCS/LCSD Samples

All LCS/LCSD %R and RPDs met acceptance criteria.

2.1.4   Field Duplicate Samples

The field duplicate samples were evaluated for acceptable precision with RPDs for the compounds. All RPDs met the acceptance criteria.

2.1.5   ICP Interference Check Sample

All ICP interference check %Rs met acceptance criteria.

2.1.6   Analyte Quantitation and Target Identification

Raw data were evaluated for the Stage 4 samples. All analyte quantitation and target identifications were acceptable.

2.2   Representativeness

2.2.1   Sample Preservation and Holding Times

The evaluation of holding times to verify compliance with the method was conducted. All samples met the 180-day analysis holding time criteria for metals.

6

2.2.2 Blanks

Method blanks, equipment blanks, and field blanks were analyzed to evaluate representativeness. The concentration for an individual target compound in any of the three types of QA/QC blanks was used for data qualification.

If contaminants were detected in a blank, corrective actions were made for the chemical analytical data during data validation. The corrective action consisted of amending the laboratory reported results based on the following criteria.

> Results Below the PQL If a sample result and blank contaminant value were less than the PQL, the sample result was amended as non-detected (U) at the concentration reported in the sample results.

> Results Above the PQL If a sample result and blank contaminant value were greater than the PQL and less than 10 times the blank contaminant value, the sample result was qualified as detected estimated (J+) at the concentration reported in the sample results.

> No Action If a sample result and blank contaminant values were greater than the PQL, the result was not amended.

2.2.2.1 Method Blanks

No contaminants were detected in the method blanks for this analysis.

2.2.2.2 Equipment and Field Blanks

The chromium result for sample M-79 was qualified as detected estimated (J+) due to contamination present in one of the equipment blanks. The details regarding the qualification of results are presented in Attachment A, Section IV.

2.3 Comparability

The laboratory used standard analytical methods for all of the analyses. In all cases, the Sample Quantitation Limits (SQLs) attained were at or below the PQLs. The comparability of the data is regarded as acceptable.

2.4 Completeness

The completeness level attained for metal field samples was 100 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

3.0 WET CHEMISTRY

A total of one water sample was analyzed for ammonia as nitrogen by EPA Method 350.1, inorganic nitrogen by Calculation Method, and nitrate as nitrogen, nitrite as nitrogen, and chloride by EPA Method 300.0; 16 water samples were analyzed for specific conductance by Standard Method 2510B, total organic carbon by Standard Method 5310C, and total organic halides by EPA SW 846 Method 9020; 26 water samples were analyzed for hexavalent chromium by EPA SW 846 Method 7196; 465 water samples were analyzed for perchlorate by EPA Method 314.0; 197 water samples were analyzed for pH by EPA SW 846 Method 9040 and Standard Method 4500-H,B; and 465 water samples were analyzed for total

dissolved solids by EPA Method 160.1. All wet chemistry data were assessed to be valid with the exception of two of the 1,206 total results which were rejected based on holding time exceedances. This section discusses the QA/QC supporting documentation as defined by the PARCC criteria and evaluated based on the DQOs.

3.1 Precision and Accuracy

3.1.1 Instrument Calibration

As previously discussed in Section 2.1.1, initial and continuing calibration results provide a means of evaluating accuracy.

The correlation coefficients in the initial calibrations were within the acceptance criteria of ≥ 0.995 and the %Rs in the continuing calibration verification met the acceptance criteria of 90-110%.

3.1.2 MS/MSD Samples

All MS/MSD %Rs and RPDs met the acceptance criteria.

3.1.3 Duplicate (DUP) Samples

All DUP RPDs met the acceptance criteria.

3.1.4 LCS/LCSD Samples

Sixteen results for perchlorate were qualified as detected estimated (J+) due to LCS/LCSD percent recoveries outside of the acceptance criteria. The details regarding the qualification of results are presented in Attachment B, Section VI.

3.1.5 Field Duplicate Samples

The field duplicate samples were evaluated for acceptable precision with RPDs for the compounds. Two hexavalent chromium results were qualified as detected estimated (J) due to high RPD in field duplicate pair M-12A and MD-2. The details regarding the qualification of results are presented in Attachment B, Section IX.

3.1.6 Analyte Quantitation and Target Identification

Raw data were evaluated for the Stage 4 samples. All analyte quantitation and target identifications were acceptable.

3.2 Representativeness

3.2.1 Sample Preservation and Holding Times

The evaluation of holding times to verify compliance with the method was conducted. All water samples met the 48 hour holding time criteria for nitrate as nitrogen, nitrite as nitrogen, and inorganic nitrogen and the 28-day analysis holding time criteria for ammonia as nitrogen, chloride, conductivity, total organic carbon, and total organic halides.

Due to a severe holding time criteria exceedance the hexavalent chromium results for samples M-10 and MD-1 were qualified as rejected (R). Additionally, one hundred fourteen results for hexavalent chromium, pH, and TDS were qualified as detected estimated (J-) or non-detected estimated (UJ). The

8

analysis holding time criteria for water samples is 24 hours for hexavalent chromium, 48 hours for pH and 7 days for TDS. The details regarding the qualification of results are presented in Attachment B, Section I.

3.2.2 Blanks

As previously discussed in Section 2.2.2, method blanks, field blanks and equipment blanks were analyzed to evaluate representativeness.

3.2.2.1 Method Blanks

No contaminants were detected in the method blanks for this analysis.

3.2.2.2 Equipment and Field Blanks

No data were qualified due to the contaminants detected in the method blanks for this analysis.

3.3 Comparability

The laboratory used standard analytical methods for all of the analyses. In all cases, the SQLs attained were at or below the PQLs. The comparability of the data is regarded as acceptable.

3.4 Completeness

The completeness level attained for wet chemistry field samples was 99.8 percent. This percentage was calculated as the total number of accepted sample results divided by the total number of sample results multiplied by 100.

4.0 VARIANCES IN ANALYTICAL PERFORMANCE

The laboratory used standard analytical methods for all of the analyses throughout the project. No systematic variances in analytical performance were noted in the laboratory case narratives.

5.0 SUMMARY OF PARCC CRITERIA

The validation reports present the PARCC results for all SDGs. Each PARCC criterion is discussed in detail in the following sections.

5.1 Precision and Accuracy

Precision and accuracy were evaluated using data quality indicators such as calibration, surrogates, MS/MSD, DUP, LCS/LCSD, and field duplicates. The precision and accuracy of the data set were considered acceptable after integration of result qualification.

All calibrations were performed as required and met the acceptance criteria.. All surrogate, MS/MSD, DUP, LCS/LCSD, and field duplicate percent recoveries and RPDs met acceptance criteria with the exceptions noted in Sections 3.1.4 and 3.1.5. All ICP interference check sample %Rs met acceptance criteria.

5.2 Representativeness

All samples for each method and matrix were evaluated for holding time compliance. All samples were associated with a method blank in each individual SDG. The representativeness of the project data is

9

considered acceptable after integration of result qualification as noted in Section 2.2.2.2.

5.3   Comparability

Sampling frequency requirements were met in obtaining necessary field blanks and field duplicates. The laboratory used standard analytical methods for the analyses. The analytical results were reported in correct standard units. Sample preservation, and sample integrity criteria were met. Holding times were within QC criteria with the exceptions noted in Section 3.2.1. The overall comparability is considered acceptable.

5.4   Completeness

Of the 1,502 total analytes reported, 2 sample results were rejected. The completeness for the SDG is as follows:

Parameter	Total Analytes	No. of Rejects	% Completeness
Metals	296	0	100
Wet Chemistry	1,206	2	99.8
Total	**1,502**	**2**	**99.9**

The completeness percentage based on rejected data met the 90 percent DQO goal.

6.0   CONCLUSIONS AND RECOMMENDATIONS

The analytical data quality assessment for the water sample laboratory analytical results generated during the Semi-Annual Remedial Performance Sampling at the Tronox LLC facility in Henderson, Nevada established that the overall project requirements and completeness levels were met. The 2 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 Stage 2A and Stage 4 data validation all other results are considered valid and usable for all purposes.

10

7.0 REFERENCES

NDEP Data Verification and Validation Requirements - Supplement established for the BMI Plant Sites and Common Areas Projects, Henderson, Nevada, April, 13, 2009,

Basic Remediation Company (BRC) Standard Operating Procedures, SOP-40 Data Review/Valdiation, Revision 1, July 2007,

Revised Phase B Quality Assurance Project Plan Tronox LLC Facility, Henderson, Nevada (QAPP), Revision, May 2009,

Region 9 Superfund Data Evaluation/Validation Guidance, R6QA/006.1, Draft, December 2001,

USEPA 2004. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* October 2004.

____,1996. EPA SW 846 *Third Edition, Test Methods for Evaluating Solid Waste, update I, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III,* December 1996; update IV, February 2007

TABLE I

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling　　Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO$_4$ (314.0)	TDS (160.1)							
ART-1	2907070103	water		07/06/09	X	X							
ART-2	2907070104	water		07/06/09	X	X							
ART-4	2907070105	water		07/06/09	X	X							
ART-6	2907070106	water		07/06/09	X	X							
ART-7	2907070107	water		07/06/09	X	X							
ART-8	2907070108	water		07/06/09	X	X							
PC-99R2/R3	2907070109	water		07/06/09	X	X							
PC-115R	2907070110	water		07/06/09	X	X							
PC-116R	2907070111	water		07/06/09	X	X							
SF-1	2907070112	water		07/06/09	X	X							
PC-117	2907070113	water		07/06/09	X	X							
PC-118	2907070114	water		07/06/09	X	X							
PC-119	2907070115	water		07/06/09	X	X							
PC-120	2907070116	water		07/06/09	X	X							
PC-121	2907070117	water		07/06/09	X	X							
PC-133	2907070118	water		07/06/09	X	X							
ART-9	2907070119	water		07/06/09	X	X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

1

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Parameters/Analytical Method	
					CLO₄ (314.0)	TDS (160.1)
M-87	2907160023	water		07/15/09	X	X
PC-98R	2907160024	water		07/15/09	X	X
PC-86	2907160025	water		07/14/09	X	X
PC-90	2907160026	water		07/14/09	X	X
PC-56	2907160027	water		07/13/09	X	X
PC-58	2907160028	water		07/13/09	X	X
PC-59	2907160029	water		07/13/09	X	X
PC-60	2907160030	water		07/13/09	X	X
PC-62	2907160031	water		07/13/09	X	X
PC-68	2907160032	water		07/13/09	X	X
PC-122	2907160033	water		07/15/09	X	X
ARP-1	2907160034	water		07/14/09	X	X
ARP-4A	2907160035	water		07/15/09	X	X
ARP-5A	2907160036	water		07/15/09	X	X
ARP-6B	2907160037	water		07/15/09	X	X
ARP-7	2907160038	water		07/15/09	X	X
PC-53	2907160039	water		07/15/09	X	X

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

SDG#: 272642			VALIDATION SAMPLE TABLE				LDC#: 21772B

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO₄ (314.0)	TDS (160.1)					
PC-103	2907160040	water		07/15/09	X	X					
MW-K5	2907160041	water		07/15/09	X	X					
PC-91	2907160042	water		07/14/09	X	X					
PC-97	2907160043	water		07/14/09	X	X					
PC-18	2907160044	water		07/15/09	X	X					
PC-55	2907160045	water		07/14/09	X	X					
PC-101R	2907160046	water		07/15/09	X	X					

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

3

SDG#: 272829   **VALIDATION SAMPLE TABLE**   LDC#: 21772C

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO$_4$ (314.0)	TDS (160.1)
PC-123	2908040023	water		08/02/09	X		X	X
PC-124	2908040024	water		08/02/09	X		X	X
PC-125	2908040025	water		08/02/09	X		X	X
PC-126	2908040026	water		08/02/09	X		X	X
PC-127	2908040027	water		08/02/09	X		X	X
PC-128	2908040028	water		08/02/09	X		X	X
PC-129	2908040029	water		08/03/09	X		X	X
PC-130	2908040030	water		08/03/09	X		X	X
PC-131	2908040031	water		08/03/09	X		X	X
PC-132	2908040032	water		08/03/09	X		X	X
M-96	2908040033	water		08/03/09	X		X	X
PC-54	2908040034	water		08/03/09	X		X	X
PC-71	2908040035	water	FD	08/03/09	X		X	X
PC-72	2908040036	water		08/03/09	X		X	X
PC-73	2908040037	water		08/03/09	X		X	X
PC-37	2908040038	water		08/03/09	X		X	X
M-23	2908040039	water		08/03/09	X		X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

4

SDG#: 272829					VALIDATION SAMPLE TABLE					LDC#: 21772C

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)		
I-AA	29080404040	water		08/03/09	X		X	X		
EB-1	29080404041	water	EB	08/03/09	X	X	X	X		
FB-1	29080404042	water	FB	08/03/09	X	X	X	X		
MD-3	29080404044	water	FD	08/03/09	X		X	X		

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

5

	SDG#: 272830							LDC#: 21772D

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)						
ART-1	2908040045	water		08/03/09	X	X	X						
ART-2	2908040046	water		08/03/09	X	X	X						
ART-3	2908040047	water		08/03/09	X	X	X						
ART-4	2908040048	water		08/03/09	X	X	X						
ART-6	2908040049	water		08/03/09	X	X	X						
ART-7	2908040050	water		08/03/09	X	X	X						
PC-99R2/R3	2908040051	water		08/03/09	X	X	X						
PC-115R	2908040052	water		08/03/09	X	X	X						
PC-116R	2908040053	water		08/03/09	X	X	X						
SF-1	2908040054	water		08/03/09	X	X	X						
PC-117	2908040055	water		08/03/09	X	X	X						
PC-118	2908040056	water		08/03/09	X	X	X						
PC-119	2908040057	water		08/03/09	X	X	X						
PC-120	2908040058	water		08/03/09	X	X	X						
PC-121	2908040059	water		08/03/09	X	X	X						
PC-133	2908040060	water		08/03/09	X	X	X						
ART-9	2908040061	water		08/03/09	X	X	X						

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

6

| SDG#: 272832 | | VALIDATION SAMPLE TABLE | | | | | LDC#: 21772E |

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)
I-O	2908040066	water		08/03/09	X	X	X
I-P	2908040067	water		08/03/09	X	X	X
I-U	2908040068	water		08/03/09	X	X	X
I-T	2908040069	water		08/03/09	X	X	X
I-G	2908040070	water		08/03/09	X	X	X
I-Q	2908040071	water		08/03/09	X	X	X
I-F	2908040072	water		08/03/09	X	X	X
I-N	2908040073	water		08/03/09	X	X	X
I-E	2908040074	water		08/03/09	X	X	X
I-M	2908040075	water		08/03/09	X	X	X
I-D	2908040076	water		08/03/09	X	X	X
I-C	2908040077	water		08/03/09	X	X	X
I-S	2908040078	water		08/03/09	X	X	X
I-L	2908040079	water		08/03/09	X	X	X
I-R	2908040080	water		08/03/09	X	X	X
I-B	2908040081	water		08/03/09	X	X	X
I-H	2908040082	water		08/03/09	X	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

7

| SDG#: 272832 | | | | | VALIDATION SAMPLE TABLE | | | | LDC#: 21772E |

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)						
I-AR	2908040083	water		08/03/09	X	X	X						

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

8

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cond. (2510B)	pH (4500)	TDS (160.1)	TOC (5310C)	TOX (9020)
M-5A(2908050008)	2908050008	water		08/05/09	X	X	X	X	X
M-5A(2908050009)	2908050009	water		08/05/09	X	X		X	X
M-5A(2908050010)	2908050010	water		08/05/09	X	X		X	X
M-5A(2908050011)	2908050011	water		08/05/09	X	X		X	X
M-7B(2908050012)	2908050012	water		08/05/09	X	X	X	X	X
M-7B(2908050013)	2908050013	water		08/05/09	X	X		X	X
M-7B(2908050014)	2908050014	water		08/05/09	X	X		X	X
M-7B(2908050015)	2908050015	water		08/05/09	X	X		X	X

9

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)
M-64	2908050016	water		08/03/09	X		X	X
M-65	2908050017	water	FD1	08/03/09	X		X	X
M-66	2908050018	water		08/03/09	X		X	X
EB-2	2908050019	water	EB	08/03/09	X	X	X	X
M-79	2908050020	water		08/03/09	X		X	X
M-69	2908050021	water		08/03/09	X		X	X
M-135	2908050022	water		08/03/09	X		X	X
M-99	2908050023	water		08/04/09	X		X	X
M-131	2908050024	water		08/04/09	X		X	X
M-57A	2908050025	water	FD2	08/04/09	X		X	X
M-25	2908050026	water		08/04/09	X		X	X
MD-4	2908050027	water	FD2	08/04/09	X		X	X
MD-5	2908050028	water	FD1	08/04/09	X		X	X
M-92	2908050029	water		08/04/09	X		X	X
M-97	2908050030	water		08/04/09	X		X	X
I-5	2908050031	water		08/04/09	X		X	X
I-J	2908050032	water		08/04/09	X		X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicae
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

10

SDG#: 272842											LDC#: 21772F

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)			
I-Z	2908050033	water		08/04/09	X		X	X			
I-I	2908050034	water		08/04/09	X		X	X			
I-V	2908050035	water		08/04/09	X		X	X			

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

11

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)
M-31A	2908060018	water		08/05/09	X		X	X
M-50	2908060019	water		08/05/09	X		X	X
M-34	2908060020	water		08/05/09	X		X	X
M-35	2908060021	water		08/05/09	X		X	X
M-19	2908060022	water		08/05/09	X		X	X
M-39	2908060023	water		08/05/09	X		X	X
M-68	2908060024	water		08/05/09	X		X	X
M-67	2908060025	water		08/05/09	X		X	X
M-74	2908060026	water		08/05/09	X		X	X
M-73	2908060027	water		08/05/09	X		X	X
M-88	2908060028	water		08/05/09	X		X	X
M-84	2908060029	water	FD2	08/05/09	X	X	X	X
M-36	2908060030	water		08/05/09	X	X	X	X
M-38	2908060031	water		08/05/09	X		X	X
M-11	2908060032	water	FD1	08/05/09	X	X	X	X
M-12A	2908060033	water		08/05/09	X	X	X	X
M-10	2908060034	water		08/05/09	X	X	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

SDG#: 272853					VALIDATION SAMPLE TABLE						LDC#: 21772G

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)			
M-44	2908060035	water		08/05/09	X	X	X	X			
M-37	2908060036	water		08/05/09	X	X	X	X			
MD-1	2908060037	water	FD1	08/05/09	X	X	X	X			
MD-2	2908060038	water	FD2	08/05/09	X	X	X	X			

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

13

SDG#: 272855R						VALIDATION SAMPLE TABLE						LDC#: 22325B

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cond. (2510B)	pH (4500)	TDS (160.1)	TOC (5310C)	TOX (9020)			
M-6A(2908060040)	2908060040	water		08/06/09	X	X	X	X	X			
M-6A(2908060041)	2908060041	water		08/06/09	X	X		X	X			
M-6A(2908060042)	2908060042	water		08/06/09	X	X		X	X			
M-6A(2908060043)	2908060043	water		08/06/09	X	X		X	X			
H-28A(290806044)	2908060044	water		08/06/09	X	X	X	X	X			
H-28A(290806045)	2908060045	water		08/06/09	X	X		X	X			
H-28A(290806046)	2908060046	water		08/06/09	X	X		X	X			
H-28A(290806047)	2908060047	water		08/06/09	X	X		X	X			

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

14

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)							
M-87	2908070021	water		08/05/09	X	X	X							
M-70	2908070022	water		08/05/09	X	X	X							
M-71	2908070023	water		08/05/09	X	X	X							
M-72	2908070024	water		08/05/09	X	X	X							
M-22A	2908070025	water		08/05/09	X	X	X							
M-89	2908070026	water		08/05/09	X	X	X							
M-17A	2908070027	water		08/05/09	X	X	X							
M-115	2908070028	water		08/05/09	X	X	X							
M-14A	2908070029	water		08/05/09	X	X	X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

15

SDG#: 272919 LDC#: 217721

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)
M-87	2908120011	water		08/10/09	X	X	X
PC-98R	2908120012	water		08/11/09	X	X	X
PC-86	2908120013	water		08/10/09	X	X	X
PC-90	2908120014	water		08/10/09	X	X	X
PC-56	2908120015	water		08/10/09	X	X	X
PC-58	2908120016	water		08/10/09	X	X	X
PC-59	2908120017	water		08/10/09	X	X	X
PC-60	2908120018	water		08/10/09	X	X	X
PC-62	2908120019	water		08/10/09	X	X	X
PC-68	2908120020	water		08/10/09	X	X	X
PC-122	2908120021	water		08/11/09	X	X	X
PC-91	2908120022	water		08/10/09	X	X	X
PC-97	2908120023	water		08/10/09	X	X	X
PC-18	2908120024	water		08/10/09	X	X	X
PC-55	2908120025	water		08/11/09	X	X	X
L-635	2908120026	water		08/10/09	X	X	X
ARP-1	2908120028	water		08/10/09	X	X	X

Parameters/Analytical Method

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

16

SDG#: 272919

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)							
ARP-4A	2908120029	water		08/11/09	X	X	X							
ARP-5A	2908120030	water		08/11/09	X	X	X							
ARP-6B	2908120031	water		08/11/09	X	X	X							
ARP-7	2908120032	water		08/11/09	X	X	X							
PC-53	2908120033	water		08/11/09	X	X	X							
PC-103	2908120034	water		08/11/09	X	X	X							
MW-K5	2908120035	water		08/11/09	X	X	X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

17

SDG#: 272959							LDC#: 21772J					

Project Name: July – December Annual Performance Sampling

VALIDATION SAMPLE TABLE

Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)					
MW-K4	23908200001	water		08/19/09	X	X	X					

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

18

SDG#: 314053

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO₄ (314.0)	TDS (160.1)											
ART-1	200909090674	water		09/09/09	X	X											
ART-2	200909090675	water		09/09/09	X	X											
ART-3	200909090676	water		09/09/09	X	X											
ART-4	200909090677	water		09/09/09	X	X											
ART-6	200909090678	water		09/09/09	X	X											
ART-7	200909090679	water		09/09/09	X	X											
ART-8	200909090680	water		09/09/09	X	X											
PC-99R2/R3	200909090681	water		09/09/09	X	X											
PC-115R	200909090682	water		09/09/09	X	X											
PC-116R	200909090683	water		09/09/09	X	X											
SF-1	200909090684	water		09/09/09	X	X											
PC-117	200909090685	water		09/09/09	X	X											
PC-118	200909090686	water		09/09/09	X	X											
PC-119	200909090687	water		09/09/09	X	X											
PC-120	200909090688	water		09/09/09	X	X											
PC-121	200909090689	water		09/09/09	X	X											
PC-133	200909090690	water		09/09/09	X	X											

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

19

SDG#: 314053					VALIDATION SAMPLE TABLE								LDC#: 22325Z

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO₄ (314.0)	TDS (160.1)							
ART-9	200909090691	water		09/09/09	X	X							
PC-120DUP	2009090090688DUP	water	DUP	09/09/09		X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

20

| | | VALIDATION SAMPLE TABLE | | | | | | LDC#: 22325AA |

SDG#: 314808

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)								
I-AR	200909170495	water		09/16/09	X								

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

21

SDG#: 314872						LDC#: 22325BB

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO$_4$ (314.0)	TDS (160.1)
PC-91	20090918021/2	water		09/17/09	X	X
PC-97	20090918021/3	water		09/17/09	X	X
PC-18	20090918021/4	water		09/17/09	X	X
PC-55	20090918021/5	water		09/17/09	X	X
PC-101R	20090918021/6	water		09/17/09	X	X
L-635	20090918021/7	water		09/17/09	X	X
M-87	20090918021/8	water		09/17/09	X	X
PC-98R	20090918021/9	water		09/17/09	X	X
PC-86	20090918022/0	water		09/17/09	X	X
PC-90	20090918022/1	water		09/17/09	X	X
PC-56	20090918022/2	water		09/16/09	X	X
PC-58	20090918022/3	water		09/16/09	X	X
PC-59	20090918022/4	water		09/16/09	X	X
PC-60	20090918022/5	water		09/16/09	X	X
PC-62	20090918022/6	water		09/16/09	X	X
PC-68	20090918022/7	water		09/16/09	X	X
PC-122	20090918022/8	water		09/17/09	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

22

| | | VALIDATION SAMPLE TABLE | | | | | LDC#: 22325BB |

SDG#: 314872

Project Name: July – December Annual Performance Sampling

Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO$_4$ (314.0)	TDS (160.1)									
MW-K4	2009091180229	water		09/17/09	X	X									
ARP-1	2009091180230	water		09/17/09	X	X									
ARP-4A	2009091180231	water		09/17/09	X	X									
ARP-5A	2009091180232	water		09/17/09	X	X									
ARP-6B	2009091180233	water		09/17/09	X	X									
ARP-7	2009091180234	water		09/17/09	X	X									
PC-53	2009091180235	water		09/17/09	X	X									
PC-103	2009091180236	water		09/17/09	X	X									
MW-K5	2009091180237	water		09/17/09	X	X									

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

23

SDG#: 315239						VALIDATION SAMPLE TABLE							LDC#: 22325C

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)							
M-149(200909230780)	200909230780	water		09/16/09	X	X							
M-150(200909230781)	200909230781	water		09/18/09	X	X							

24

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

					Parameters/Analytical Method					
										LDC#: 22325D

SDG#: 315523

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)				
M-152(200909280048)	200909280048	water		09/28/09	X	X				
M-151(200909280050)	200909280050	water		09/28/09	X	X				
M-151(200909280050)MS	200909280050MS	water	MS	09/28/09		X				
M-151(200909280050)MSD	200909280050MSD	water	MSD	09/28/09		X				

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

25

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO$_4$ (314.0)	TDS (160.1)								
ART-1	200910060505	water		10/05/09	X	X								
ART-2	200910060507	water		10/05/09	X	X								
ART-3	200910060509	water		10/05/09	X	X								
ART-4	200910060511	water		10/05/09	X	X								
ART-6	200910060512	water		10/05/09	X	X								
ART-7	200910060513	water		10/05/09	X	X								
ART-8	200910060514	water		10/05/09	X	X								
PC-99R2/R3	200910060515	water		10/05/09	X	X								
PC-115R	200910060516	water		10/05/09	X	X								
PC-116R	200910060517	water		10/05/09	X	X								
SF-1	200910060518	water		10/05/09	X	X								
PC-117	200910060519	water		10/05/09	X	X								
PC-118	200910060520	water		10/05/09	X	X								
PC-119	200910060521	water		10/05/09	X	X								
PC-120	200910060522	water		10/05/09	X	X								
PC-133	200910060523	water		10/05/09	X	X								
ART-9	200910060524	water		10/05/09	X	X								

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

26

			SDG#: 316594		VALIDATION SAMPLE TABLE											LDC#: 22325l		

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)										
I-AB	200910100019	water		10/09/09	X	X	X										
M-153	200910100020	water		10/09/09	X	X	X										
M-149	200910100021	water		10/09/09	X	X	X										

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

27

| | | | SDG#: 317028 | | VALIDATION SAMPLE TABLE | | LDC#: 22325E |

Project Name: July – December Annual Performance Sampling

Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO$_4$ (314.0)	TDS (160.1)
M-87	200910150229	water		10/14/09	X	X
PC-98R	200910150230	water		10/14/09	X	X
9C-86	200910150231	water		10/13/09	X	X
PC-90	200910150232	water		10/13/09	X	X
PC-56	200910150233	water		10/12/09	X	X
PC-58	200910150234	water		10/12/09	X	X
PC-59	200910150235	water		10/12/09	X	X
PC-60	200910150236	water		10/12/09	X	X
PC-62	200910150237	water		10/12/09	X	X
PC-68	200910150238	water		10/12/09	X	X
PC-122	200910150239	water		10/14/09	X	X
PC-91	200910150240	water		10/13/09	X	X
PC-97	200910150241	water		10/13/09	X	X
PC-18	200910150242	water		10/13/09	X	X
PC-55	200910150243	water		10/13/09	X	X
PC-101R	200910150244	water		10/14/09	X	X
L635	200910150245	water		10/13/09	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

SDG#: 317028   **VALIDATION SAMPLE TABLE**   **LDC#: 22325E**

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO₄ (314.0)	TDS (160.1)										
MW-K4	200910150246	water		10/14/09	X	X										
ARP-1	200910150247	water		10/13/09	X	X										
ARP-4A	200910150248	water		10/14/09	X	X										
ARP-5A	200910150249	water		10/14/09	X	X										
ARP-6B	200910150250	water		10/14/09	X	X										
ARP-7	200910150251	water		10/14/09	X	X										
PC-53	200910150252	water		10/14/09	X	X										
PC-103	200910150253	water		10/14/09	X	X										
MW-K5	200910150254	water		10/14/09	X	X										

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

29

SDG#: 318319

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (200.7)	CLO₄ (314.0)	TDS (160.1)					
ART-1	200911030145	water		11/02/09	X	X	X					
ART-2	200911030147	water		11/02/09	X	X	X					
ART-3	200911030148	water		11/02/09	X	X	X					
ART-4	200911030149	water		11/02/09	X	X	X					
ART-6	200911030150	water		11/02/09	X	X	X					
ART-7	200911030151	water		11/02/09	X	X	X					
ART-8	200911030152	water		11/02/09	X	X	X					
PC-99R2/R3	200911030153	water		11/02/09	X	X	X					
PC-115R	200911030154	water		11/02/09	X	X	X					
PC-116R	200911030155	water		11/02/09	X	X	X					
SF-1	200911030156	water		11/02/09	X	X	X					
PC-117	200911030157	water		11/02/09	X	X	X					
PC-118	200911030158	water		11/02/09	X	X	X					
PC-119	200911030160	water		11/02/09	X	X	X					
PC-120	200911030161	water		11/02/09	X	X	X					
PC-121	200911030163	water		11/02/09	X	X	X					
PC-133	200911030164	water		11/02/09	X	X	X					

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

30

SDG#: 318319					VALIDATION SAMPLE TABLE											LDC#: 22325Q

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (200.7)	CLO₄ (314.0)	TDS (160.1)								
ART-9	200911030165	water		11/02/09	X	X	X								
PC-133DUP	200911030164DUP	water	DUP	11/02/09		X	X								

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

31

| SDG#: 318428 | | | | | VALIDATION SAMPLE TABLE | | | | LDC#: 22325L |

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO$_4$ (314.0)	TDS (160.1)	pH (9040)
PC-123	200911030637	water		11/02/09	X		X	X	X
PC-124	200911030639	water		11/02/09	X		X	X	X
PC-125	200911030641	water		11/02/09	X		X	X	X
PC-126	200911030642	water		11/02/09	X		X	X	X
PC-127	200911030643	water		11/02/09	X		X	X	X
PC-128	200911030644	water		11/02/09	X		X	X	X
PC-129	200911030645	water		11/02/09	X		X	X	X
PC-130	200911030646	water		11/02/09	X		X	X	X
PC-131	200911030647	water		11/02/09	X		X	X	X
PC-132	200911030648	water		11/02/09	X		X	X	X
M-96	200911030649	water		11/02/09	X		X	X	X
PC-54	200911030650	water		11/02/09	X		X	X	X
PC-71	200911030651	water		11/02/09	X		X	X	X
PC-72	200911030652	water		11/02/09	X		X	X	X
PC-73	200911030653	water		11/02/09	X		X	X	X
PC-37	200911030654	water	FD	11/02/09	X		X	X	X
M-23	200911030655	water		11/02/09	X		X	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

| SDG#: 318428 | VALIDATION SAMPLE TABLE | | | | | | | | LDC#: 22325L |

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)	pH (9040)
M-95	200911030656	water		11/02/09	X	X	X	X	X
M-44	200911030657	water		11/02/09	X	X	X	X	X
FB-1	200911030658	water	FB	11/02/09	X	X	X	X	X
MD-3	200911030659	water	FD	11/02/09	X		X	X	X
PC-125MS	200911030641MS	water	MS	11/02/09	X				
PC-125MSD	200911030641MSD	water	MSD	11/02/09	X				
PC-126MS	200911030642MS	water	MS	11/02/09	X				
PC-126MSD	200911030642MSD	water	MSD	11/02/09	X				
PC-132DUP	200911030648DUP	water	DUP	11/02/09				X	X
FB-1MS	200911030658MS	water	MS	11/02/09	X				
FB-1MSD	200911030658MSD	water	MSD	11/02/09	X				
FB-1DUP	200911030658DUP	water	DUP	11/02/09					X

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

33

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)	pH (9040)								
I-P	200911040232	water		11/02/09	X	X	X	X								
I-T	200911040234	water		11/02/09	X	X	X	X								
I-L	200911040236	water		11/02/09	X	X	X	X								
I-F	200911040238	water		11/02/09	X	X	X	X								
I-C	200911040240	water		11/02/09	X	X	X	X								
I-M	200911040242	water		11/02/09	X	X	X	X								
I-D	200911040244	water		11/02/09	X	X	X	X								
I-E	200911040246	water		11/02/09	X	X	X	X								
I-B	200911040248	water		11/02/09	X	X	X	X								
I-R	200911040250	water		11/02/09	X	X	X	X								
I-H	200911040252	water		11/02/09	X	X	X	X								
I-U	200911040254	water		11/02/09	X	X	X	X								
I-Q	200911040256	water		11/02/09	X	X	X	X								
I-G	200911040258	water		11/02/09	X	X	X	X								
I-N	200911040260	water		11/02/09	X	X	X	X								
I-O	200911040262	water		11/02/09	X	X	X	X								
I-S	200911040264	water		11/02/09	X	X	X	X								

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)	pH (9040)
I-FDUP	200911040238DUP	water	DUP	11/02/09				X
I-BMS	200911040248MS	water	MS	11/02/09	X			
I-BMSD	200911040248MSD	water	MSD	11/02/09	X			
I-UDUP	200911040254DUP	water	DUP	11/02/09				X
I-SDUP	200911040264DUP	water	DUP	11/02/09				X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

35

SDG#: 318522											LDC#: 22325H	

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Metals (200.7)	TDS (160.1)	NO₂-N NO₃-N (300.0)	NH₃-N (350.1)	Cl (300.0)	Inorg. N (Calc.)		
M-10	200911040521	water		11/03/09	X	X	X	X	X	X		
M-10DUP	200911040521DUP	water	DUP	11/03/09		X						

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

36

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CrIV (7196)	CLO₄ (314.0)	TDS (160.1)	pH (9040)
I-AA	200911040746	water		11/03/09	X			X	X
M-31	200911040748	water		11/03/09	X		X	X	X
M-64	200911040750	water		11/03/09	X		X	X	X
M-65	200911040752	water		11/03/09	X		X	X	X
M-66	200911040754	water		11/03/09	X		X	X	X
M-79	200911040756	water		11/03/09	X		X	X	X
M-69	200911040758	water		11/03/09	X		X	X	X
M-135	200911040760	water	FD1	11/03/09	X		X	X	X
M-99	200911040762	water		11/03/09	X		X	X	X
M-57A	200911040765	water		11/03/09	X		X	X	X
M-25	200911040767	water		11/03/09	X		X	X	X
M-92	200911040769	water		11/03/09	X		X	X	X
M-97	200911040771	water		11/03/09	X		X	X	X
M-37	200911040773	water		11/03/09	X	X	X	X	X
EB-1	200911040775	water	EB	11/03/09	X	X	X	X	X
MD-4	200911040777	water	FD1	11/03/09	X		X	X	X
M-10	200911040779	water	FD2	11/03/09	X	X	X	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

37

SDG#: 318567   **VALIDATION SAMPLE TABLE**   LDC#: 22325G

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CrIV (7196)	CLO₄ (314.0)	TDS (160.1)	pH (9040)
MD-1	200911040781	water	FD2	11/03/09	X	X	X	X	X
I-AAMS	200911040746MS	water	MS	11/03/09	X				
I-AAMSD	200911040746MSD	water	MSD	11/03/09	X				
M-69MS	200911040758MS	water	MS	11/03/09	X				
M-69MSD	200911040758MSD	water	MSD	11/03/09	X				
M-135DUP	200911040760DUP	water	DUP	11/03/09				X	
EB-1MS	200911040775MS	water	MS	11/03/09		X			
EB-1MSD	200911040775MSD	water	MSD	11/03/09		X			
M-10MS	200911040779MS	water	MS	11/03/09	X				
M-10MSD	200911040779MSD	water	MSD	11/03/09	X				

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

38

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)	pH (9040)
M-50	20911050350	water		11/04/09	X		X	X	X
M-34	20911050351	water		11/04/09	X		X	X	X
M-35	20911050352	water		11/04/09	X		X	X	X
M-19	20911050353	water		11/04/09	X		X	X	X
M-39	20911050354	water		11/04/09	X		X	X	X
M-68	20911050355	water		11/04/09	X		X	X	X
I-K	20911050356	water		11/04/09	X		X	X	X
I-J	20911050357	water		11/04/09	X		X	X	X
I-Z	20911050358	water		11/04/09	X		X	X	X
I-I	20911050359	water		11/04/09	X		X	X	X
I-V	20911050360	water		11/04/09	X		X	X	X
M-67	20911050361	water		11/04/09	X		X	X	X
M-74	20911050362	water		11/04/09	X		X	X	X
M-73	20911050363	water		11/04/09	X		X	X	X
M-88	20911050364	water		11/04/09	X		X	X	X
M-31A	20911050365	water		11/04/09	X		X	X	X
M-52	20911050366	water		11/04/09	X		X	X	X

Parameters/Analytical Method

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

39

VALIDATION SAMPLE TABLE

SDG#: 318643

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)	pH (9040)
M-84	20911050367	water		11/04/09	X	X	X	X	X
M-21A	20911050368	water		11/04/09	X	X	X	X	X
M-11	20911050369	water	FD	11/04/09	X	X	X	X	X
EB-2	20911050370	water	EB	11/04/09	X	X	X	X	X
MD-2	20911050371	water	FD	11/04/09	X	X	X	X	X
M-84MS	20911050367MS	water	MS	11/04/09		X			
M-84MSD	20911050367MSD	water	MSD	11/04/09		X			
I-IDUP	20911050359DUP	water	DUP	11/04/09					X
M-11DUP	20911050369DUP	water	DUP	11/04/09					X
EB-2MS	20911050370MS	water	MS	11/04/09			X		
EB-2MSD	20911050370MSD	water	MSD	11/04/09			X		
MD-2DUP	20911050371DUP	water	DUP	11/04/09				X	X

40

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

SDG#: 318694					VALIDATION SAMPLE TABLE			LDC#: 22325M

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO₄ (314.0)	TDS (160.1)							
M-149	200911050600	water		11/14/09	X	X							

41

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

SDG#: 318725					VALIDATION SAMPLE TABLE									LDC#: 22325J

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	Cr(VI) (7196)	CLO₄ (314.0)	TDS (160.1)	pH (9040)					
M-87	200911060096	water		11/05/09	X		X	X	X					
M-70	200911060097	water		11/05/09	X		X	X	X					
M-71	200911060098	water		11/05/09	X		X	X	X					
M-72	200911060099	water		11/05/09	X		X	X	X					
M-22A	200911060100	water		11/05/09	X		X	X	X					
M-38	200911060101	water		11/05/09	X		X	X	X					
M-89	200911060102	water		11/05/09	X		X	X	X					
M-17A	200911060103	water		11/05/09	X		X	X	X					
M-75	200911060104	water		11/05/09	X		X	X	X					
M-76	200911060105	water		11/05/09	X		X	X	X					
M-115	200911060106	water		11/05/09	X		X	X	X					
M-14A	200911060107	water		11/05/09	X		X	X	X					
M-100	200911060108	water		11/05/09	X	X	X	X	X					
M-36	200911060109	water		11/05/09	X	X	X	X	X					
M-71DUP	200911060098DUP	water	DUP	11/05/09					X					
M-100DUP	200911060108DUP	water	DUP	11/05/09					X					
M-36DUP	200911060109DUP	water	DUP	11/05/09					X					

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

42

SDG#: 318771				VALIDATION SAMPLE TABLE													LDC#: 22325P

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)							
M-153	200911070004	water		11/05/09	X	X	X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

43

SDG#: 318805					VALIDATION SAMPLE TABLE											LDC#: 22325R

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)									
M-150	200911070093	water		11/06/09	X	X	X									
M-154	200911070094	water		11/06/09	X	X	X									
M-154MS	200911070094MS	water	MS	11/06/09	X											
M-154MSD	200911070094MSD	water	MSD	11/06/09	X											

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

44

SDG#: 318985								LDC#: 22325N

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling

					Parameters/Analytical Method			
Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)	
M-152	200911100509	water		11/09/09	X	X	X	
EB110909-GW	200911100510	water	EB	11/09/09	X	X	X	

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

SDG#: 319237					VALIDATION SAMPLE TABLE							LDC#: 22325S

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)					
M-156	200911120101	water		11/11/09	X	X	X					
M-156MS	200911120101MS	water	MS	11/11/09	X	X						
M-156MSD	200911120101MSD	water	MSD	11/11/09	X	X						
M-156DUP	200911120101DUP	water	DUP	11/11/09			X					

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

46

SDG#: 319316			VALIDATION SAMPLE TABLE				LDC#: 22325T

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)
M-87	200911130137	water		11/10/09	X	X	X
PC-98R	200911130138	water		11/10/09	X	X	X
PC-86	200911130139	water		11/10/09	X	X	X
PC-90	200911130140	water		11/10/09	X	X	X
PC-56	200911130141	water		11/09/09	X	X	X
PC-58	200911130142	water		11/09/09	X	X	X
PC-59	200911130143	water		11/09/09	X	X	X
PC-60	200911130144	water		11/09/09	X	X	X
PC-62	200911130145	water		11/09/09	X	X	X
PC-68	200911130146	water		11/09/09	X	X	X
PC-122	200911130147	water		11/12/09	X	X	X
MW-K4	200911130148	water		11/10/09	X	X	X
ARP-1	200911130149	water		11/11/09	X	X	X
ARP-4A	200911130150	water		11/10/09	X	X	X
ARP-5A	200911130151	water		11/10/09	X	X	X
ARP-6B	200911130152	water		11/10/09	X	X	X
ARP-7	200911130153	water		11/10/09	X	X	X

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)					
PC-53	200911130154	water		11/10/09	X	X	X					
PC-103	200911130155	water		11/10/09	X	X	X					
MW-K5	200911130156	water		11/10/09	X	X	X					
PC-91	200911130157	water		11/10/09	X	X	X					
PC-97	200911130158	water		11/10/09	X	X	X					
PC-18	200911130159	water		11/09/09	X	X	X					
PC-55	200911130160	water		11/09/09	X	X	X					
PC-101R	200911130161	water		11/12/09	X	X	X					
L-635	200911130162	water		11/11/09	X	X	X					
PC-98RMS	200911130138MS	water	MS	11/10/09	X							
PC-98RMSD	200911130138MSD	water	MSD	11/10/09	X							
PC-86DUP	200911130139DUP	water	DUP	11/10/09			X					
PC-56MS	200911130141MS	water	MS	11/09/09	X							
PC-56MSD	200911130141MSD	water	MSD	11/09/09	X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

											LDC#: 22325U

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)				
M-151	200911030207	water		11/12/09	X	X	X				

SDG#: 319329

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

49

		VALIDATION SAMPLE TABLE						LDC#: 22325V

SDG#: 319377

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)							
M-155	200911140058	water		11/13/09	X	X	X							
M-155D	200911140059	water		11/13/09	X	X	X							

Shaded cells indicate sample underwent Stage 4
TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

50

SDG#: 319730

LDC#: 22325X

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)					
I-AB	200911190038	water		11/17/09	X	X	X					
M-132	200911190039	water		11/17/09	X	X	X					
M-133	200911190040	water		11/17/09	X	X	X					
M-134	200911190041	water		11/17/09	X	X	X					
M-136	200911190042	water		11/17/09	X	X	X					

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

51

SDG#: 320853

VALIDATION SAMPLE TABLE

Project Name: July – December Annual Performance Sampling   Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO₄ (314.0)	TDS (160.1)							
ART-1	200912080046	water		12/07/09	X	X							
ART-2	200912080047	water		12/07/09	X	X							
ART-3	200912080048	water		12/07/09	X	X							
ART-4	200912080049	water		12/07/09	X	X							
ART-6	200912080050	water		12/07/09	X	X							
ART-7	200912080051	water		12/07/09	X	X							
ART-8	200912080052	water		12/07/09	X	X							
PC-99R2/R3	200912080053	water		12/07/09	X	X							
PC-115R	200912080054	water		12/07/09	X	X							
PC-116R	200912080055	water		12/07/09	X	X							
SF-1	200912080057	water		12/07/09	X	X							
PC117	200912080058	water		12/07/09	X	X							
PC-118	200912080059	water		12/07/09	X	X							
PC-119	200912080060	water		12/07/09	X	X							
PC-120	200912080061	water		12/07/09	X	X							
PC-133	200912080062	water		12/07/09	X	X							
ART-9	200912080063	water		12/07/09	X	X							

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

52

Project Name: July – December Annual Performance Sampling

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO$_4$ (314.0)	TDS (160.1)
MW-K4	200912190039	water		12/17/09		X	X
ARP-1	200912190040	water		12/16/09		X	X
ARP-4A	200912190041	water		12/17/09		X	X
ARP-5A	200912190042	water		12/17/09		X	X
ARP-6B	200912190043	water		12/17/09		X	X
ARP-7	200912190044	water		12/17/09		X	X
PC-53	200912190045	water		12/17/09		X	X
PC-103	200912190046	water		12/17/09		X	X
MW-K5	200912190047	water		12/17/09		X	X
PC-91	200912190048	water		12/16/09		X	X
PC-97	200912190049	water		12/16/09		X	X
PC-18	200912190050	water		12/16/09		X	X
PC-55	200912190051	water		12/16/09		X	X
PC-101R	200912190052	water		12/16/09		X	X
L-635	200912190053	water		12/16/09		X	X
PC-88	200912190054	water		12/16/09	X	X	X
PC-92	200912190055	water		12/16/09	X	X	X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

53

SDG#: 321887				VALIDATION SAMPLE TABLE			LDC#: 22325Y
Project Name: July – December Annual Performance Sampling					Parameters/Analytical Method		
Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO₄ (314.0)	TDS (160.1)
PC-93	200912190056	water		12/16/09	X	X	X
PC-94	200912190057	water		12/16/09	X	X	X
M-87	200912190058	water		12/17/09		X	X
PC-98R	200912190059	water		12/17/09		X	X
PC-86	200912190060	water		12/16/09		X	X
PC-90	200912190061	water		12/16/09		X	X
PC-56	200912190062	water		12/14/09		X	X
PC-58	200912190063	water		12/14/09		X	X
PC-59	200912190064	water		12/14/09		X	X
PC-60	200912190065	water		12/14/09		X	X
PC-62	200912190066	water		12/14/09		X	X
PC-68	200912190067	water		12/14/09		X	X
PC-122	200912190068	water		12/17/09		X	X
PC-92DUP	200912190055DUP	water	DUP	12/16/09			X
PC-86DUP	200912190060DUP	water	DUP	12/16/09			X
PC-56DUP	200912190062DUP	water	DUP	12/14/09			X
PC-68DUP	200912190067DUP	water	DUP	12/14/09			X

Shaded cells indicate sample underwent Stage 4

TB = Trip Blank, EB = Equipment Blank, FB = Field Blank, FD = Field Duplicate
DUP = Laboratory Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table II. Qualification Codes and Definitions

Code	Definition
a	qualified due to low abundance (radiochemical activity)
b	qualified due to blank contamination
be	qualified due to equipment blank contamination
bf	qualified due to field blank contamination
bl	qualified due to lab blank contamination
c	qualified due to calibration problems
cp	qualified due to insufficient ingrowth (radiochemical only)
fd	qualified due to field duplicate imprecision
h	qualified due to holding time exceedance
i	qualified due to internal standard areas
k	qualified as Estimated Maximum Possible Concentrations (dioxins only)
l	qualified due to LCS recoveries
ld	qualified due to lab duplicate imprecision (matrix duplicate, MSD, LCSD)
m	qualified due to matrix spike recoveries
nb	qualified due to negative lab blank contamination (nondetect results only)
p	qualified as a false positive due to contamination during shipping
q	qualified due to quantitation problem
s	qualified due to surrogate recoveries
t	qualified due to elevated helium tracer concentrations
x	qualified due to low % solids
y	qualified due to serial dilution results
z	qualified due to ICS results

Table III.   Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	Units	Validation Qualifier	Reason Code	Reason Code Definition	Qualification Finding
272842	M-79	8/3/2009	6010B	7440-47-3	Chromium	0.081		mg/l	J+	be	Equipment Blank	0.015 mg/L
272829	EB-1	8/3/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	41 Hours
272829	FB-1	8/3/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	41.25 Hours
272842	EB-2	8/3/2009	7196	18540-29-9	Chromium-hexavalent	0.01		mg/l	J-	h	Holding Time	40.5 Hours
272853	M-11	8/5/2009	7196	18540-29-9	Chromium-hexavalent	3.42	d	mg/l	J-	h	Holding Time	26.25 Hours
272853	M-12A	8/5/2009	7196	18540-29-9	Chromium-hexavalent	19.5	d	mg/l	J	fd,h	Field Duplicate RPD / Holding Time	80 % / 27.25 Hours
272853	M-36	8/5/2009	7196	18540-29-9	Chromium-hexavalent	19.5	d	mg/l	J-	h	Holding Time	27.75 Hours
272853	M-44	8/5/2009	7196	18540-29-9	Chromium-hexavalent	0.564	d	mg/l	J-	h	Holding Time	25.5 Hours
272853	M-84	8/5/2009	7196	18540-29-9	Chromium-hexavalent	0.06	d	mg/l	J-	h	Holding Time	28.25 Hours
272853	MD-2	8/5/2009	7196	18540-29-9	Chromium-hexavalent	4.2	d	mg/l	J	fd,h	Field Duplicate RPD / Holding Time	80 % / 27.25 Hours
318428	FB-1	11/2/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	47.75 Hours
318428	M-44	11/2/2009	7196	18540-29-9	Chromium-hexavalent	0.82		mg/l	J-	h	Holding Time	51 Hours
318428	M-95	11/2/2009	7196	18540-29-9	Chromium-hexavalent	1		mg/l	J-	h	Holding Time	51.5 Hours
318567	EB-1	11/3/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	30.75 Hours
318567	M-10	11/3/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	R	h	Holding Time	52 Hours
318567	M-37	11/3/2009	7196	18540-29-9	Chromium-hexavalent	0.007		mg/l	J-	h	Holding Time	51.75 Hours
318567	MD-1	11/3/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	R	h	Holding Time	52.25 Hours
318643	EB-2	11/4/2009	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	25.5 Hours
318643	M-11	11/4/2009	7196	18540-29-9	Chromium-hexavalent	2.9		mg/l	J-	h	Holding Time	24.75 Hours
318643	M-84	11/4/2009	7196	18540-29-9	Chromium-hexavalent	0.015	u	mg/l	J-	h	Holding Time	25.5 Hours
318643	MD-2	11/4/2009	7196	18540-29-9	Chromium-hexavalent	3		mg/l	J-	h	Holding Time	24.75 Hours
318643	M-12A	11/4/2009	7196	18540-29-9	Chromium-hexavalent	11		mg/l	J-	h	Holding Time	26 Hours
318725	M-100	11/5/2009	7196	18540-29-9	Chromium-hexavalent	0.2		mg/l	J-	h	Holding Time	26 Hours
318725	M-36	11/5/2009	7196	18540-29-9	Chromium-hexavalent	35		mg/l	J-	h	Holding Time	25.5 Hours
272829	PC-123	8/2/2009	314.0	14797-73-0	Perchlorate	405000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-124	8/2/2009	314.0	14797-73-0	Perchlorate	5780	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-125	8/2/2009	314.0	14797-73-0	Perchlorate	2640	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-126	8/2/2009	314.0	14797-73-0	Perchlorate	14200	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-127	8/2/2009	314.0	14797-73-0	Perchlorate	392000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-128	8/2/2009	314.0	14797-73-0	Perchlorate	229000	d	ug/l	J+	l	LCS %R	123.2 %
272829	M-96	8/3/2009	314.0	14797-73-0	Perchlorate	266000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-129	8/3/2009	314.0	14797-73-0	Perchlorate	464000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-130	8/3/2009	314.0	14797-73-0	Perchlorate	511000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-131	8/3/2009	314.0	14797-73-0	Perchlorate	6430	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-132	8/3/2009	314.0	14797-73-0	Perchlorate	2210	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-37	8/3/2009	314.0	14797-73-0	Perchlorate	336000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-54	8/3/2009	314.0	14797-73-0	Perchlorate	235000	d	ug/l	J+	l	LCS %R	123.2 %
272829	PC-71	8/3/2009	314.0	14797-73-0	Perchlorate	417000	d	ug/l	J+	l	LCS %R	123.2 %

Table III. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	Units	Validation Qualifier	Reason Code	Reason Code Definition	Qualification Finding
272829	PC-72	8/3/2009	314.0	14797-73-0	Perchlorate	253000	d	ug/l	J+	1	LCS %R	123.2 %
272829	PC-73	8/3/2009	314.0	14797-73-0	Perchlorate	383000	d	ug/l	J+	1	LCS %R	123.2 %
272841	M-5A	8/4/2009	SM4500H-B	LAB PH	pH	7.7		s.u.	J	h	Holding Time	66.5 Hours
272841	M-5A	8/4/2009	SM4500H-B	LAB PH	pH	7.7		s.u.	J	h	Holding Time	66.5 Hours
272841	M-5A	8/4/2009	SM4500H-B	LAB PH	pH	7.7		s.u.	J	h	Holding Time	66.5 Hours
272841	M-5A	8/4/2009	SM4500H-B	LAB PH	pH	7.7		s.u.	J	h	Holding Time	66.5 Hours
272841	M-7B	8/4/2009	SM4500H-B	LAB PH	pH	7.8		s.u.	J	h	Holding Time	66 Hours
272841	M-7B	8/4/2009	SM4500H-B	LAB PH	pH	7.8		s.u.	J	h	Holding Time	66 Hours
272841	M-7B	8/4/2009	SM4500H-B	LAB PH	pH	7.7		s.u.	J	h	Holding Time	66 Hours
272841	M-7B	8/4/2009	SM4500H-B	LAB PH	pH	7.6		s.u.	J	h	Holding Time	66 Hours
318428	FB-1	11/2/2009	9040	E-10139	pH	5.7		Units	J	h	Holding Time	8 Days
318428	M-23	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	51 Hours
318428	M-44	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	50.25 Hours
318428	M-95	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	50.5 Hours
318428	M-96	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	53 Hours
318428	MD-3	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	51.75 Hours
318428	PC-123	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	54.5 Hours
318428	PC-124	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	54.25 Hours
318428	PC-125	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	54.25 Hours
318428	PC-126	11/2/2009	9040	E-10139	pH	7.4		Units	J	h	Holding Time	54 Hours
318428	PC-127	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	53.75 Hours
318428	PC-128	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	53.75 Hours
318428	PC-129	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	55.5 Hours
318428	PC-130	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	55.25 Hours
318428	PC-131	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	53.5 Hours
318428	PC-132	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	53.25 Hours
318428	PC-37	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	51.25 Hours
318428	PC-54	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	52.5 Hours
318428	PC-71	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	51.75 Hours
318428	PC-72	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	51.75 Hours
318428	PC-73	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	51.5 Hours
318484	I-B	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	61.5 Hours
318484	I-C	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	49.75 Hours
318484	I-D	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50 Hours
318484	I-E	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.25 Hours
318484	I-F	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.25 Hours
318484	I-G	11/2/2009	9040	E-10139	pH	7.2		Units	J	h	Holding Time	50.75 Hours
318484	I-H	11/2/2009	9040	E-10139	pH	7.3		Units	J	h	Holding Time	51 Hours
318484	I-L	11/2/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	50.25 Hours
318484	I-M	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.5 Hours

Table III.   Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	Units	Validation Qualifier	Reason Code	Reason Code Definition	Qualification Finding
318484	I-N	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.75 Hours
318484	I-O	11/2/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	51.25 Hours
318484	I-P	11/2/2009	9040	E-10139	pH	7.4		Units	J	h	Holding Time	51.25 Hours
318484	I-Q	11/2/2009	9040	E-10139	pH	7		Units	J	h	Holding Time	51 Hours
318484	I-R	11/2/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	61.5 Hours
318484	I-S	11/2/2009	9040	E-10139	pH	7.8		Units	J	h	Holding Time	50.75 Hours
318484	I-T	11/2/2009	9040	E-10139	pH	7		Units	J	h	Holding Time	51.5 Hours
318484	I-U	11/2/2009	9040	E-10139	pH	7.3		Units	J	h	Holding Time	51.75 Hours
318567	EB-1	11/3/2009	9040	E-10139	pH	6		Units	J	h	Holding Time	57.5 Hours
318567	I-AA	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	59 Hours
318567	M-131	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	58.75 Hours
318567	M-135	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	56.75 Hours
318567	M-25	11/3/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	56.5 Hours
318567	M-37	11/3/2009	9040	E-10139	pH	7.3		Units	J	h	Holding Time	54 Hours
318567	M-57A	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	59.25 Hours
318567	M-64	11/3/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	58.25 Hours
318567	M-65	11/3/2009	9040	E-10139	pH	7.3		Units	J	h	Holding Time	58 Hours
318567	M-66	11/3/2009	9040	E-10139	pH	7.3		Units	J	h	Holding Time	57.75 Hours
318567	M-69	11/3/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	57 Hours
318567	M-79	11/3/2009	9040	E-10139	pH	7.9		Units	J	h	Holding Time	57.5 Hours
318567	M-92	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	56 Hours
318567	M-97	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	55.5 Hours
318567	M-99	11/3/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	56.5 Hours
318567	MD-1	11/3/2009	9040	E-10139	pH	7.4		Units	J	h	Holding Time	54.5 Hours
318567	MD-4	11/3/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	56.5 Hours
318643	I-I	11/4/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.5 Hours
318643	I-J	11/4/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	50.5 Hours
318643	I-K	11/4/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	50.5 Hours
318643	I-V	11/4/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.5 Hours
318643	I-Z	11/4/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	50.5 Hours
318643	M-19	11/4/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	50.75 Hours
318643	M-34	11/4/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	51.25 Hours
318643	M-35	11/4/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	51 Hours
318643	M-39	11/4/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	50.5 Hours
318643	M-50	11/4/2009	9040	E-10139	pH	7.5		Units	J	h	Holding Time	51.25 Hours
318643	M-52	11/4/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	48.25 Hours
318643	M-68	11/4/2009	9040	E-10139	pH	7.6		Units	J	h	Holding Time	50.5 Hours
318725	M-100	11/5/2009	9040	E-10139	pH	8.1		Units	J	h	Holding Time	102.25 Hours
318725	M-115	11/5/2009	9040	E-10139	pH	8		Units	J	h	Holding Time	103 Hours
318725	M-14A	11/5/2009	9040	E-10139	pH	8		Units	J	h	Holding Time	103.25 Hours

Table III. Overall Qualified Results

SDG	Client Sample ID	Sample Date	Method	Client Analyte ID	Analyte	Lab Result	Lab Qualifier	Units	Validation Qualifier	Reason Code	Reason Code Definition	Qualification Finding
318725	M-17A	11/5/2009	9040	E-10139	pH	7.8		Units	J	h	Holding Time	104.75 Hours
318725	M-22A	11/5/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	105.75 Hours
318725	M-36	11/5/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	102.25 Hours
318725	M-38	11/5/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	105.25 Hours
318725	M-70	11/5/2009	9040	E-10139	pH	8		Units	J	h	Holding Time	106 Hours
318725	M-71	11/5/2009	9040	E-10139	pH	7.8		Units	J	h	Holding Time	106 Hours
318725	M-72	11/5/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	106 Hours
318725	M-75	11/5/2009	9040	E-10139	pH	8.2		Units	J	h	Holding Time	102.25 Hours
318725	M-76	11/5/2009	9040	E-10139	pH	8		Units	J	h	Holding Time	104.25 Hours
318725	M-87	11/5/2009	9040	E-10139	pH	7.8		Units	J	h	Holding Time	107 Hours
318725	M-89	11/5/2009	9040	E-10139	pH	7.7		Units	J	h	Holding Time	105 Hours
272830	ART-7	8/3/2009	160.1	TDS	Total Dissolved Solids	9600		mg/l	J-	h	Holding Time	9 Days
272830	PC-118	8/3/2009	160.1	TDS	Total Dissolved Solids	3712		mg/l	J-	h	Holding Time	9 Days
272842	M-64	8/3/2009	160.1	TDS	Total Dissolved Solids	8980		mg/l	J-	h	Holding Time	9 Days
272842	M-66	8/3/2009	160.1	TDS	Total Dissolved Solids	17300		mg/l	J-	h	Holding Time	9 Days

ATTACHMENT A

Metals Data Validation Report

Chromium by EPA SW 846 Method 6010B and EPA Method 200.7
Boron, Chromium, Iron, and Manganese by EPA Method 200.7

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. ICPMS Tune

ICP-MS was not utilized in these SDGs.

III. Calibration

An initial calibration was performed for samples on which a Stage 4 review was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met for samples on which a Stage 4 review was performed.

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Samples EB-1 (from SDGs 272829, 318567, 318522), EB-2 (from SDGs 272832, 272842, 318643), EB110909-GW (from SDG 318985) were identified as equipment blanks. No contaminant concentrations were found in these blanks with the following exceptions:

SDG	Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
272832 272842	EB-2	8/3/09	Chromium	0.015 mg/L	I-O I-P I-U I-T I-G I-Q I-F I-N I-E I-M I-D I-C I-S I-L I-R I-B I-H I-AR M-79

Samples FB-1 (from SDGs 272829 and 318428) were identified as field blanks. No contaminant concentrations were found in these blanks.

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified with the following exceptions:

SDG	Sample	Analyte	Reported Concentration	Modified Final Concentration
272842	M-79	Chromium	0.081 mg/L	0.081J+ mg/L

No field blanks were identified in all other SDGs.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

The frequency of analysis and criteria for analysis were met for samples on which a Stage 4 review was performed.

VI. Matrix Spike Analysis

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.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

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 for all SDGs.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in these SDGs.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in these SDGs.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

All sample result verifications were acceptable for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2A criteria.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples PC-131 and MD-3 (from SDG 272829), samples M-57A and MD-4 and samples M-25 and MD-5 (both pairs from SDG 272842), samples M-12A and MD-2 and samples M-37 and MD-1 (both pairs from SDG 272853), samples M-135 and MD-4 and samples M-10 and MD-1 (both pairs from SDG 318567), samples M-11 and MD-2 (from SDG 318643), PC-37 and MD-3 (from SDG 318428), samples M-155 and M-155D (from SDG 319377) were identified as field duplicates. No metal contaminants were detected in any of the samples with the following exceptions:

3

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-57A	MD-4				
272842	Chromium	0.066	0.068	3 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-25	and MD-5				
272842	Chromium	12	12	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-12A	MD-2				
272853	Chromium	10	10	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-37	MD-1				
272853	Chromium	0.021	0.021	-	0 (≤0.010)	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-12A	MD-2				
272853	Chromium	10	10	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-37	MD-1				
272853	Chromium	0.021	0.021	-	0 (≤0.010)	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-135	MD-4				
318567	Chromium	0.079	0.075	5 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-10	MD-1				
318567	Chromium	0.65	0.67	3 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-11	MD-2				
318643	Chromium	2.9	2.7	7 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-37	MD-3				
318428	Chromium	0.17	0.17	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-155	M-155D				
319377	Chromium	0.026	0.028	-	0.002 (≤0.01)	-	-

2009 Annual Remedial Performance Sampling
Metals - Data Qualification Summary - SDGs 272829, 272830, 272832, 272842, 272853, 272884, 272919, 272959, 315239, 315523, 318567, 318522, 316594, 318725, 318643, 318428, 318985, 318484, 318771, 318319, 318805, 319237, 319316, 319329, 319377, 319730, 321887

No Sample Data Qualified in these SDGs

2009 Annual Remedial Performance Sampling
Metals - Laboratory Blank Data Qualification Summary - SDGs 272829, 272830, 272832, 272842, 272853, 272884, 272919, 272959, 315239, 315523, 318567, 318522, 316594, 318725, 318643, 318428, 318985, 318484, 318771, 318319, 318805, 319237, 319316, 319329, 319377, 319730, 321887

No Sample Data Qualified in these SDGs

2009 Annual Remedial Performance Sampling
Metals - Field Blank Data Qualification Summary - SDGs 272829, 272830, 272832, 272842, 272853, 272884, 272919, 272959, 315239, 315523, 318567, 318522, 316594, 318725, 318643, 318428, 318985, 318484, 318771, 318319, 318805, 319237, 319316, 319329, 319377, 319730, 321887

SDG	Sample	Analyte	Modified Final Concentration	A or P
272842	M-79	Chromium	0.081J+ mg/L	A

ATTACHMENT B

Wet Chemistry Data Validation Report

Ammonia as Nitrogen by EPA Method 350.1
Specific Conductance by Standard Method 2510B
Hexavalent Chromium by EPA SW 846 Method 7196
Inorganic Nitrogen by Calculation Method
Nitrate as Nitrogen, Nitrite as Nitrogen, and Chloride by EPA Method 300.0
Perchlorate by EPA Method 314.0
pH by EPA SW 846 Method 9040 and Standard Method 4500
Total Dissolved Solids by EPA Method 160.1
Total Organic Carbon by Standard Method 5310C
Total Organic Halides by EPA SW 846 Method 9020

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

SDG	Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
272829	EB-1	Hexavalent chromium	41 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272829	FB-1 FB-1MS FB-1MSD	Hexavalent chromium	41.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272830 272842	ART-7 PC-118 M-64 M-66	Total dissolved solids	9 days	7 days	J- (all detects) UJ (all non-detects)	A
272842	EB-2	Hexavalent chromium	40.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272853	M-84	Hexavalent chromium	28.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272853	M-36	Hexavalent chromium	27.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272853	M-11	Hexavalent chromium	26.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272853	M-12A MD-2	Hexavalent chromium	27.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272853 318725 318643	M-44 M-36 M-84 EB-2	Hexavalent chromium	25.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
272841	M-5A(2908050008) M-5A(2908050009) M-5A(2908050010) M-5A(2908050011)	pH	66.5 hours	48 hours	J (all detects) UJ (all non-detects)	P

SDG	Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
272841	M-7B(2908050012) M-7B(2908050013) M-7B(2908050014) M-7B(2908050015)	pH	66 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	I-AA	pH	59 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-131	pH	58.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-64	pH	58.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-65	pH	58 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-66	pH	57.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-79 EB-1	pH	57.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-69	pH	57 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-135	pH	56.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-99 M-25 MD-4 M-99DUP	pH	56.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-57A	pH	59.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-92	pH	56 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567 318428	M-97 PC-129	pH	55.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567 318428	M-37 PC-126	pH	54 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567 318428	MD-1 PC-123	pH	54.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318567	M-37	Hexavalent chromium	51.75 hours	24 hours	J- (all detects) R (all non-detects)	P

SDG	Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
318567	EB-1	Hexavalent chromium	30.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
318567	M-10	Hexavalent chromium	52 hours	24 hours	J- (all detects) R (all non-detects)	P
318567	MD-1	Hexavalent chromium	52.25 hours	24 hours	J- (all detects) R (all non-detects)	P
318725	M-87	pH	107 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-70 M-71 M-72	pH	106 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-22A	pH	105.75 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-38	pH	105.25 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-89	pH	105 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-17A	pH	104.75 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-75 M-100 M-36	pH	102.25 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-76	pH	104.25 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-115	pH	103 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-14A	pH	103.25 hours	48 hours	J (all detects) R (all non-detects)	P
318725	M-71DUP M-100DUP M-36DUP8	pH	4 days	48 hours	J (all detects) R (all non-detects)	P
318725 318643	M-100 M-12A	Hexavalent chromium	26 hours	24 hours	J- (all detects) UJ (all non-detects)	P
318643 318428 318484	M-50 M-34 PC-37 I-P I-O	pH	51.25 hours	48 hours	J (all detects) UJ (all non-detects)	P

3

SDG	Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
318643 318428 318484	M-35 M-23 I-H I-Q	pH	51 hours	48 hours	J (all detects) UJ (all non-detects)	P
318643 318484	M-19 I-G I-N I-S	pH	50.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
318643 318428 318484	M-39 M-68 I-K I-J I-Z I-I I-V M-95 I-M	pH	50.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318643	M-52	pH	48.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318643	M-11 MD-2	Hexavalent chromium	24.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
318428 318643 318484	PC-132DUP I-IDUP I-FDUP I-UDUP I-SDUP	pH	Not reported	48 hours	J (all detects) UJ (all non-detects)	P
318428	PC-130	pH	55.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	PC-124 PC-125	pH	54.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	PC-127 PC-128	pH	53.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	PC-131	pH	53.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	PC-132	pH	53.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	M-96	pH	53 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	PC-54	pH	52.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428 318484	PC-71 PC-72 MD-3 I-U	pH	51.75 hours	48 hours	J (all detects) UJ (all non-detects)	P

SDG	Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
318428 318484	PC-73 I-T	pH	51.5 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428 318484	M-44 I-L I-F I-E	pH	50.25 hours	48 hours	J (all detects) UJ (all non-detects)	P
318428	FB-1	pH	8 days	48 hours	J (all detects) R (all non-detects)	P
318428	M-95	Hexavalent chromium	51.5 hours	24 hours	J- (all detects) R (all non-detects)	P
318428	M-44	Hexavalent chromium	51 hours	24 hours	J- (all detects) R (all non-detects)	P
318428	FB-1	Hexavalent chromium	47.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
318484	I-C	pH	49.75 hours	48 hours	J (all detects) UJ (all non-detects)	P
318484	I-D	pH	50 hours	48 hours	J (all detects) UJ (all non-detects)	P
318484	I-B I-R	pH	61.5 hours	48 hours	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 for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2A criteria.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2A criteria.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant

concentrations were found in the initial, continuing and preparation blanks.

Samples EB-1 (from SDGs 272829, 318567, 318522), EB-2 (from SDGs 272832 and 318643), and EB110909-GW (from SDG 318985) were identified as equipment blanks. No contaminant concentrations were found in these blanks with the following exceptions:

SDG	Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
272829	EB-1	8/3/09	Perchlorate	5.5 ug/L	M-96
272832	EB-2	8/3/09	Hexavalent chromium Perchlorate Total dissolved solids	0.010 mg/L 439 ug/L 12 mg/L	M-79
318567	EB-1	11/3/09	Perchlorate	89 ug/L	M-131 M-64 M-65 M-66 M-79 M-69 M-135 M-99 M-57A M-25 M-92 M-97 M-37 MD-4 M-10 MD-1
318567	EB-1	11/3/09	pH	6.0 units	I-AA M-131 M-64 M-65 M-66 M-79 M-69 M-135 M-99 M-57A M-25 M-92 M-97 M-37 MD-4 M-10 MD-1

SDG	Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
318643	EB-2	11/4/09	Perchlorate pH	23 ug/L 6.6 units	M-50 M-34 M-35 M-19 M-39 M-68 I-K I-J I-Z I-I I-V M-67 M-74 M-73 M-88 M-31A M-52 M-84 M-12A M-11 MD-2

Samples FB-1 (from SDGs 272829 and 318428) were identified as field blanks. No contaminant concentrations were found in these blanks with the following exceptions:

SDG	Field Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
318428	FB-1	11/2/09	pH	5.7 units	PC-123 PC-124 PC-125 PC-126 PC-127 PC-128 PC-129 PC-130 PC-131 PC-132 M-96 PC-54 PC-71 PC-72 PC-73 PC-37 M-23 M-95 M-44 MD-3

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified.

No field blanks were identified in the other SDGs.

IV. 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.

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) and relative percent differences (RPD) were within QC limits with the following exceptions:

SDG	LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
272829	LCS1 (PC-123 PC-124 PC-125 PC-126 PC-127 PC-128 PC-129 PC-130 PC-131 PC-132 M-96 PC-54 PC-71 PC-72 PC-73 PC-37)	Perchlorate	123.2 (85-115)	-	-	J+ (all detects)	P

Although the LCS percent recovery (%R) was not within QC limits for one compound in SDG 272642, the LCSD percent recovery (%R) was within QC limits and no data were qualified.

Although the LCS percent recovery (%R) and LCS/LCSD relative percent difference (RPD) were not within QC limits for compounds in SDGs 272853 and 272884, the LCSD percent recovery (%R) was within QC limits and no data were qualified.

VII. Sample Result Verification

All sample result verifications were acceptable for samples on which a Stage 4 review was performed. Raw data were not evaluated for the samples reviewed by Stage 2A criteria.

VIII. Overall Assessment of Data

The overall assessment of data was acceptable. In the case where more than one result was reported for an individual sample, the least technically acceptable results were rejected as follows:

SDG	Sample	Compound	Flag	A or P
318428	MD-3	Perchlorate	R	A

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

IX. Field Duplicates

Samples PC-131 and MD-3 (from SDG 272829), samples M-57A and MD-4 and samples M-25 and MD-5 (both pairs from SDG 272842), samples M-12A and MD-2 and samples M-37 and MD-1 (both pairs from SDG 272853), samples M-135 and MD-4 and samples M-10 and MD-1 (both pairs from SDG 318567), samples M-11 and MD-2 (from SDG 318643), samples PC-37 and MD-3 and samples PC-37 and MD-3RE (both pairs from SDG 318428), samples M-155 and M-155D (from SDG 319377), were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flags	A or P
		PC-131	MD-3				
272829	Perchlorate	6430 ug/L	7050 ug/L	9 (≤30)	-	-	-
272829	Total dissolved solids	8900 mg/L	9600 mg/L	8 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-57A	MD-4				
272842	Total dissolved solids	3192 mg/L	3168 mg/L	1 (≤30)	-	-	-
272842	Perchlorate	23800 ug/L	24200 ug/L	2 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-25	MD-5				
272842	Total dissolved solids	9200 mg/L	9300 mg/L	1 (≤30)	-	-	-
272842	Perchlorate	463000 ug/L	470000 ug/L	2 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-12A	MD-2				
272853	Hexavalent chromium	9.8 mg/L	4.2 mg/L	80 (≤30)	-	J (all detects)	A
272853	Total dissolved solids	7150 mg/L	7090 mg/L	1 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-12A	MD-2				
272853	Perchlorate	254000 ug/L	271000 ug/L	6 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-37	MD-1				
272853	Hexavalent chromium	0.005 mg/L	0.005 mg/L	-	0 (≤0.0050)	-	-
272853	Total dissolved solids	4900 mg/L	5020 mg/L	2 (≤30)	-	-	-
272853	Perchlorate	1980000 ug/L	1980000 ug/L	0 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-135	MD-4				
318567	pH	7.7 units	7.7 units	0 (≤30)	-	-	-
318567	Total dissolved solids	3600 mg/L	3600 mg/L	0 (≤30)	-	-	-
318567	Perchlorate	45900 ug/L	42800 ug/L	7 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-10	MD-1				
318567	pH	7.4 units	7.4 units	0 (≤30)	-	-	-
318567	Total dissolved solids	2900 mg/L	3000 mg/L	3 (≤30)	-	-	-
318567	Perchlorate	20000 ug/L	19400 ug/L	3 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-11	MD-2				
318643	Hexavalent chromium	2.9 mg/L	3.0 mg/L	3 (≤30)	-	-	-
318643	pH	8.0 units	8.0 units	0 (≤30)	-	-	-
318643	Total dissolved solids	3200 mg/L	3220 mg/L	1 (≤30)	-	-	-
318643	Perchlorate	39900 ug/L	41000 ug/L	3 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-137	MD-3				
318428	pH	7.6 units	7.6 units	0 (≤30)	-	-	-
318428	Total dissolved solids	6400 mg/L	7100 mg/L	10 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-137	MD-3RE				
318428	Perchlorate	319000 ug/L	275000 ug/L	15 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-155	M-155D				
319377	Total dissolved solids	550	560	2 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling

Wet Chemistry - Data Qualification Summary - SDG 272476, 272642, 272829, 272830, 272832, 272842, 272853, 272884, 272919, 272959, 272841, 273966, 315239, 315523, 317028, 316157, 318567, 318522, 316594, 318725, 318643, 318428, 318694, 318985, 318484, 318771, 318319, 318805, 319237, 319316, 319329, 319377, 320853, 319730, 321887, 314053

SDG	Sample	Analyte	Flag	A or P	Reason
272829 272842 272853 318567 318725 318643 318428	EB-1 FB-1 EB-2 M-84 M-36 M-11 M-12A M-44 MD-2 M-100 M-36 M-84 M-12A M-11 EB-2 MD-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
272830 272842	ART-7 PC-118 M-64 M-66	Total dissolved solids	J- (all detects) UJ (all non-detects)	A	Technical holding times

SDG	Sample	Analyte	Flag	A or P	Reason
272841 318643 318428 318484	M-5A(2908050008) M-5A(2908050009) M-5A(2908050010) M-5A(2908050011) M-7B(2908050012) M-7B(2908050013) M-7B(2908050014) M-7B(2908050015) M-50 M-34 M-35 M-19 M-39 M-68 I-K I-J I-Z I-I I-V M-52 PC-123 PC-124 PC-125 PC-126 PC-127 PC-128 PC-129 PC-130 PC-131 PC-132 M-96 PC-54 PC-71 PC-72 PC-73 PC-37 M-23 M-95 M-44 MD-3 I-P I-T I-L I-F I-C I-M I-D I-E I-B I-R I-H I-U I-Q I-G I-N I-O I-S	pH	J (all detects) UJ (all non-detects)	P	Technical holding times

SDG	Sample	Analyte	Flag	A or P	Reason
318567 318725 318428	I-AA M-131 M-64 M-65 M-66 M-79 M-69 M-135 M-99 M-57A M-25 M-92 M-97 M-37 EB-1 MD-4 MD-1 M-87 M-70 M-71 M-72 M-22A M-38 M-89 M-17A M-75 M-76 M-115 M-14A M-100 M-36 FB-1	pH	J (all detects) R (all non-detects)	P	Technical holding times
318567 318428	M-37 M-10 MD-1 M-95 M-44	Hexavalent chromium	J- (all detects) R (all non-detects)	P	Technical holding times
272829	PC-123 PC-124 PC-125 PC-126 PC-127 PC-128 PC-129 PC-130 PC-131 PC-132 M-96 PC-54 PC-71 PC-72 PC-73 PC-37	Perchlorate	J+ (all detects)	P	Laboratory control samples (%R)
318428	MD-3	Perchlorate	R	A	Overall assessment of data
272853	M-12A MD-2	Hexavalent chromium	J (all detects)	A	Field duplicates (RPD)

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDGs 272476, 272642, 272829, 272830, 272832, 272842, 272853, 272884, 272919, 272959, 272841, 273966, 315239, 315523, 317028, 316157, 318567, 318522, 316594, 318725, 318643, 318428, 318694, 318985, 318484, 318771, 318319, 318805, 319237, 319316, 319329, 319377, 320853, 319730, 321887, 314053

No Sample Data Qualified in these SDGs

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDGs 272476, 272642, 272829, 272830, 272832, 272842, 272853, 272884, 272919, 272959, 272841, 273966, 315239, 315523, 317028, 316157, 318567, 318522, 316594, 318725, 318643, 318428, 318694, 318985, 318484, 318771, 318319, 318805, 319237, 319316, 319329, 319377, 320853, 319730, 321887, 314053

No Sample Data Qualified in these SDGs