APPENDIX D
ANALYTICAL DATA REVIEW MEMORANDUM

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

August 5, 2009

SUBJECT: Data Validation Summary Report 2008-2009 Annual Remedial Performance Sampling Tronox Facility Henderson, Nevada

Dear Ms. Crowley,

Data Validation Summary Report 2008-2009 Annual Remedial Performance Sampling Tronox 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 2008 - June 2009
Annual Remedial Performance Sampling
Tronox LLC Facility
Henderson, Nevada

Prepared for

Tronox LLC
Henderson, Nevada

Prepared by

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

August 5, 2009

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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
SVOC	Semivolatile Organic Compound
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 July 2008 through June 2009 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 981 environmental and quality control (QC) samples. The analyses were performed by the following methods:

Chromium by EPA SW 846 Method 6010B
Wet Chemistry:
Total Dissolved Solids (TDS) by EPA Method 160.1 and Standard Method 2540C
Nitrate as Nitrogen by EPA Method 300.0
Nitrate/Nitrite as Nitrogen by EPA Method 353.2
Perchlorate by EPA Method 314.0
Hexavalent Chromium by EPA SW 846 Method 7196
Chlorate and Nitrate as Nitrogen by EPA SW 846 Method 9056

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), surrogate spikes, 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. Surrogate spikes are either isotopically labeled compounds or compounds that are not typically detected in the 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, trip 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 sample 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 632 water samples were analyzed for chromium by EPA SW 846 Method 6010B. All metal data were assessed to be valid since none of the 632 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 ≥ 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 Samples

All LCS %Rs met acceptance criteria.

2.1.4 Field Duplicate Samples

The field duplicate samples were evaluated for acceptable precision with RPDs for the compounds. Two chromium results were qualified as detected estimated (J) due to high RPD in field duplicate pair PC-71 and MD-4. The details regarding the qualification of results are presented in Attachment A, Section XIV.

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 chromium.

2.2.2 Blanks

Method blanks were analyzed to evaluate representativeness.

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

No contaminants were detected in the equipment and field blanks for this analysis.

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. Target compounds detected below the reporting limits flagged (J) by the laboratory should be considered estimated. 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 978 water samples were analyzed for TDS by EPA Method 160.1 and Standard Method 2540C and perchlorate by EPA Method 314.0; a total of 18 water samples were analyzed for nitrate as nitrogen by EPA Method 300.0; a total of 6 water samples were analyzed for nitrate/nitrite as nitrogen by EPA Method 353.2; a total of 53 water samples were analyzed for hexavalent chromium by EPA SW 846 Method 7196; a total of 26 water samples were analyzed for chlorate by EPA SW 846 Method 9056, and a total of 20 water samples were analyzed for nitrate as nitrogen by EPA SW 846 Method 9056. All wet chemistry data were assessed to be valid with the exception of two of the 2,079 total results which was 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

Due to a high DUP RPD, the TDS result for sample PC-55 was qualified as detected estimated (J). The details regarding the qualification of results are presented in Attachment B, Section V.

3.1.4 LCS/LCSD Samples

Twenty results for TDS and 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. All RPDs met the acceptance criteria.

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 28-day analysis holding time criteria for chlorate.

Due to a severe holding time criteria exceedance the nitrate as nitrogen result for sample M-10 and the hexavalent chromium result for sample EB-1 were qualified as rejected (R). Additionally, one hundred nineteen results for TDS, nitrate as nitrogen, nitrate/nitrite as nitrogen, perchlorate, and hexavalent chromium were qualified as detected estimated (J) or non-detected estimated (UJ). The analysis holding time criteria for water samples is 7 days for TDS, 48 hours for nitrate as nitrogen, 28 days for nitrate/nitrite as nitrogen and perchlorate, and 24 hours for hexavalent chromium. 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

Three results for perchlorate and hexavalent chromium were qualified as detected estimated (J+) due to contamination present in equipment blanks. The affected samples were M-5A, M-84, and M-92. The details regarding the qualification of results are presented in Attachment B, Section III.

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. Target compounds detected below the reporting limits flagged (J) by the laboratory should be considered estimated. The comparability of the data is regarded as acceptable.

3.4 Completeness

The completeness level attained for wet chemistry field samples was 99.9 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 with the exception of TDS for sample FB-1. The laboratory reported the results as NA due to possible error in sample analysis. The details regarding the sample result are presented in Attachment B, Section VII.

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, and LCS/LCSD. 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 and LCS/LCSD percent recoveries and RPDs met acceptance criteria with the exceptions noted in Sections 2.1.4, 3.1.3, and 3.1.4. 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 considered acceptable.

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 2,711 total analytes reported, 2 sample results were rejected. The completeness for the SDG is as follows:

Parameter	Total Analytes	No. of Rejects	% Completeness
Metals	632	0	100
Wet Chemistry	2,079	2	99.9
Total	**2,711**	**2**	**99.9**

The completeness percentage based on rejected data met the 90 percent DQO goal. A less quantifiable loss of data occurred in the application of blank qualifications as specifically noted in Section 3.2.2.2.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The analytical data quality assessment for the water sample laboratory analytical results generated during the July 2008 through June 2009 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.

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

SDG#: 248147 **VALIDATION SAMPLE TABLE** **LDC#:** 21107A

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
M-87	2807180210	water		07/15/08	X	X									
PC-98R	2807180211	water		07/17/08	X	X									
PC-86	2807180212	water		07/15/08	X	X									
PC-90	2807180213	water		07/15/08	X	X									
PC-56	2807180214	water		07/14/08	X	X									
PC-58	2807180215	water		07/14/08	X	X									
PC-59	2807180216	water		07/14/08	X	X									
PC-60	2807180217	water		07/14/08	X	X									
PC-62	2807180218	water		07/14/08	X	X									
PC-68	2807180219	water		07/14/08	X	X									
PC-122	2807180220	water		07/15/08	X	X									
MW-K4	2807180221	water		07/17/08	X	X									
ARP-1	2807180222	water		07/15/08	X	X									
ARP-4A	2807180223	water		07/17/08	X	X									
ARP-5A	2807180224	water		07/17/08	X	X									
ARP-6B	2807180225	water		07/17/08	X	X									
PC-53	2807180226	water		07/17/08	X	X									
PC-103	2807180227	water		07/17/08	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#: 248147 **VALIDATION SAMPLE TABLE** **LDC#:** 21107A

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
MW-K5	2807180228	water		07/17/08	X	X									
PC-91	2807180229	water		07/15/08	X	X									
PC-97	2807180230	water		07/15/08	X	X									
PC-17	2807180231	water		07/15/08	X	X									
PC-18	2807180232	water		07/15/08	X	X									
PC-55	2807180233	water		07/15/08	X	X									
L-635	2807180234	water		07/16/08	X	X									
L-637	2807180235	water		07/16/08	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#: 249697 **VALIDATION SAMPLE TABLE** **LDC#:** 21107B

Project Name: 2008 Annual Remedial 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	2808050610	water		08/04/08	X		X	X							
PC-124	2808050611	water		08/04/08	X		X	X							
PC-125	2808050612	water		08/04/08	X		X	X							
PC-126	2808050613	water		08/04/08	X		X	X							
PC-127	2808050614	water		08/04/08	X		X	X							
PC-128	2808050615	water		08/04/08	X		X	X							
PC-129	2808050616	water		08/04/08	X		X	X							
PC-130	2808050617	water		08/04/08	X		X	X							
PC-131	2808050618	water		08/04/08	X		X	X							
PC-132	2808050619	water		08/04/08	X		X	X							
M-96	2808050620	water		08/04/08	X		X	X							
PC-54	2808050621	water		08/04/08	X		X	X							
M-48	2808050622	water		08/04/08	X		X	X							
PC-71	2808050623	water	FD1	08/04/08	X		X	X							
PC-72	2808050624	water		08/04/08	X		X	X							
PC-73	2808050625	water		08/04/08	X		X	X							
PC-37	2808050626	water		08/04/08	X		X	X							
M-23	2808050627	water	FD2	08/04/08	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#: 249697 **VALIDATION SAMPLE TABLE** **LDC#:** 21107B

Project Name: 2008 Annual Remedial 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)								
M-95	2808050628	water		08/04/08	X	X	X	X								
M-44	2808050629	water		08/04/08	X	X	X	X								
FB-1	2808050630	water	FB	08/04/08	X	X	X	X								
MD-3	2808050631	water	FD1	08/04/08	X		X	X								
MD-4	2808050632	water	FD2	08/04/08	X		X	X								
PC-124MS	2808050611MS	water	MS	08/04/08			X									
PC-124MSD	2808050611MSD	water	MSD	08/04/08			X									
PC-124DUP	2808050611DUP	water	DUP	08/04/08				X								
PC-73MS	2808050625MS	water	MS	08/04/08	X											
PC-73MSD	2808050625MSD	water	MSD	08/04/08	X											
FB-1MS	2808050630MS	water	MS	08/04/08	X	X										
FB-1MSD	2808050630MSD	water	MSD	08/04/08	X	X										
MD-3DUP	2808050631DUP	water	DUP	08/04/08				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#: 249779 **VALIDATION SAMPLE TABLE** **LDC#:** 21107C

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-5A	2808060296	water		08/05/08	X	X	X								
M-6A	2808060340	water		08/05/08			X								
M-7B	2808060345	water		08/05/08			X								
M-5ADUP	2808060296DUP	water	DUP	08/05/08			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#: 249900 **VALIDATION SAMPLE TABLE** **LDC#:** 21107D

Project Name: 2008 Annual Remedial 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	2808070156	water		08/05/08	X	X	X								
I-P	2808070157	water		08/05/08	X	X	X								
I-H	2808070158	water		08/05/08	X	X	X								
I-U	2808070159	water		08/05/08	X	X	X								
I-T	2808070160	water		08/05/08	X	X	X								
I-G	2808070161	water		08/05/08	X	X	X								
I-Q	2808070162	water		08/05/08	X	X	X								
I-F	2808070163	water		08/05/08	X	X	X								
I-N	2808070164	water		08/05/08	X	X	X								
I-E	2808070165	water		08/05/08	X	X	X								
I-M	2808070166	water		08/05/08	X	X	X								
I-D	2808070167	water		08/05/08	X	X	X								
I-C	2808070168	water		08/05/08	X	X	X								
I-S	2808070169	water		08/05/08	X	X	X								
I-L	2808070170	water		08/05/08	X	X	X								
I-R	2808070171	water		08/05/08	X	X	X								
I-B	2808070172	water		08/05/08	X	X	X								
I-AR	2808070173	water		08/05/08	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#: 249900	VALIDATION SAMPLE TABLE														LDC#: 21107D
Project Name: 2008 Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
I-FDUP	2808070163DUP	water	DUP	08/05/08			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#: 249949 **VALIDATION SAMPLE TABLE** **LDC#:** 21107E

Project Name: 2008 Annual Remedial 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)							
I-AA	2808070384	water		08/05/08	X		X	X							
M-131	2808070394	water		08/05/08	X		X	X							
M-64	2808070395	water		08/05/08	X		X	X							
M-65	2808070396	water	FD	08/05/08	X		X	X							
M-66	2808070397	water		08/05/08	X		X	X							
M-79	2808070399	water		08/05/08	X		X	X							
M-69	2808070400	water		08/05/08	X		X	X							
M-135	2808070401	water		08/05/08	X		X	X							
M-99	2808070402	water		08/05/08	X		X	X							
M-25	2808070403	water		08/05/08	X		X	X							
M-57A	2808070404	water		08/05/08	X		X	X							
M-37	2808070410	water		08/05/08	X	X	X	X							
EB-1	2808070418	water	EB	08/05/08	X	X	X	X							
MD-5	2808070427	water	FD	08/05/08	X		X	X							
I-AAMS	2808070384MS	water	MS	08/05/08	X										
I-AAMSD	2808070384MSD	water	MSD	08/05/08	X										
EB-1MS	2808070418MS	water	MS	08/05/08			X								
EB-1MSD	2808070418MSD	water	MSD	08/05/08			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#: 250101 **VALIDATION SAMPLE TABLE** **LDC#:** 21107F

Project Name: 2008 Annual Remedial 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)							
I-Z	2808080390	water		08/06/08	X		X	X							
I-I	2808080399	water		08/06/08	X		X	X							
I-V	2808080400	water		08/06/08	X		X	X							
M-67	2808080402	water		08/06/08	X		X	X							
M-74	2808080403	water		08/06/08	X		X	X							
M-73	2808080404	water		08/06/08	X		X	X							
M-88	2808080406	water		08/06/08	X		X	X							
M-12A	2808080409	water		08/06/08	X	X	X	X							
M-11	2808080411	water	FD	08/06/08	X	X	X	X							
MD-1	2808080412	water	FD	08/06/08	X	X	X	X							
EB-2	2808080413	water	EB	08/06/08	X	X	X	X							
EB-2MS	2808080413MS	water	MS	08/06/08		X									
EB-2MSD	2808080413MSD	water	MSD	08/06/08		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#: 250123 **VALIDATION SAMPLE TABLE** **LDC#:** 21107G

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-92	2808080454	water		08/06/08	X	X	X								
M-97	2808080465	water		08/06/08	X	X	X								
M-31A	2808080469	water		08/06/08	X	X	X								
M-50	2808080471	water		08/06/08	X	X	X								
M-34	2808080472	water		08/06/08	X	X	X								
M-35	2808080473	water		08/06/08	X	X	X								
M-19	2808080474	water		08/06/08	X	X	X								
M-39	2808080475	water		08/06/08	X	X	X								
M-68	2808080476	water		08/06/08	X	X	X								
M-61	2808080477	water		08/06/08	X	X	X								
I-K	2808080478	water		08/06/08	X	X	X								
I-J	2808080479	water		08/06/08	X	X	X								
M-19MS	2808080474MS	water	MS	08/06/08	X										
M-19MSD	2808080474MSD	water	MSD	08/06/08	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#: 250139 **VALIDATION SAMPLE TABLE** **LDC#:** 21107H

Project Name: 2008 Annual Remedial 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)								
M-87	2808090007	water		08/07/08	X		X	X								
M-70	2808090008	water		08/07/08	X		X	X								
M-71	2808090009	water		08/07/08	X		X	X								
M-72	2808090010	water		08/07/08	X		X	X								
M-38	2808090011	water		08/07/08	X		X	X								
M-22A	2808090012	water		08/07/08	X		X	X								
M-89	2808090013	water		08/07/08	X		X	X								
M-17A	2808090014	water		08/07/08	X		X	X								
M-115	2808090015	water		08/07/08	X		X	X								
M-14A	2808090016	water		08/07/08	X		X	X								
M-36	2808090017	water		08/07/08	X	X	X	X								
M-84	2808090018	water	FD	08/07/08	X	X	X	X								
M-10	2808090019	water		08/07/08	X	X	X	X								
MD-2	2808090020	water	FD	08/07/08	X	X	X	X								
M-100	2808090021	water		08/07/08	X	X	X	X								
M-17ADUP	2808090014DUP	water	DUP	08/07/08				X								
M-84MS	2808090018MS	water	MS	08/07/08	X	X										
M-84MSD	2808090018MSD	water	MSD	08/07/08	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#: 250388 **VALIDATION SAMPLE TABLE** **LDC#:** 21107I

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-1	2808120321	water		08/11/08	X	X	X								
ART-2	2808120323	water		08/11/08	X	X	X								
ART-3	2808120324	water		08/11/08	X	X	X								
ART-4	2808120325	water		08/11/08	X	X	X								
ART-7	2808120326	water		08/11/08	X	X	X								
ART-8	2808120327	water		08/11/08	X	X	X								
PC-99R2/R3	2808120328	water		08/11/08	X	X	X								
PC-115R	2808120329	water		08/11/08	X	X	X								
PC-116R	2808120330	water		08/11/08	X	X	X								
SF-1	2808120331	water		08/11/08	X	X	X								
PC-117	2808120332	water		08/11/08	X	X	X								
PC-118	2808120333	water		08/11/08	X	X	X								
PC-119	2808120334	water		08/11/08	X	X	X								
PC-120	2808120335	water		08/11/08	X	X	X								
PC-121	2808120336	water		08/11/08	X	X	X								
PC-133	2808120337	water		08/11/08	X	X	X								
ART-9	2808120338	water		08/11/08	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#: 250388	VALIDATION SAMPLE TABLE														LDC#: 21107I
Project Name: 2008 Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	**Lab ID #**	**Matrix**	**QC Type**	**Date Collected**	**Cr (6010B)**	**CLO_4 (314.0)**	**TDS (160.1)**								
PC-99R2/R3DUP	2808120328DUP	water	DUP	08/11/08			X								
PC-117MS	2808120332MS	water	MS	08/11/08	X										
PC-117MSD	2808120332MSD	water	MSD	08/11/08	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#: 250906	VALIDATION SAMPLE TABLE														LDC#: 21107J
Project Name: 2008 Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
H-28A	2808150273	water		08/13/08	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#: 251027 **VALIDATION SAMPLE TABLE** **LDC#:** 21107K

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-55	2808160441	water		08/11/08	X	X	X								
PC-58	2808160445	water		08/12/08	X	X	X								
PC-56	2808160446	water		08/12/08	X	X	X								
PC-60	2808160447	water		08/12/08	X	X	X								
PC-59	2808160448	water		08/12/08	X	X	X								
PC-62	2808160449	water		08/12/08	X	X	X								
PC-68	2808160450	water		08/12/08	X	X	X								
PC-97	2808160451	water		08/13/08	X	X	X								
PC-86	2808160452	water		08/13/08	X	X	X								
PC-90	2808160453	water		08/13/08	X	X	X								
PC-91	2808160454	water		08/13/08	X	X	X								
PC-17	2808160455	water		08/13/08	X	X	X								
PC-18	2808160456	water		08/13/08	X	X	X								
ARP-1	2808160457	water		08/13/08	X	X	X								
PC-134	2808160458	water		08/13/08	X	X	X								
PC-135	2808160459	water		08/13/08	X	X	X								
PC-122	2808160465	water		08/14/08	X	X	X								
ARP-6B	2808160466	water		08/14/08	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#: 251027 **VALIDATION SAMPLE TABLE** **LDC#:** 21107K

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ARP-5A	2808160467	water		08/14/08	X	X	X								
ARP-4A	2808160468	water		08/14/08	X	X	X								
MW-K4	2808160469	water		08/14/08	X	X	X								
MW-K5	2808160470	water		08/14/08	X	X	X								
PC-53	2808160471	water		08/14/08	X	X	X								
PC-103	2808160472	water		08/14/08	X	X	X								
PC-98R	2808160473	water		08/14/08	X	X	X								
M-87	2808160474	water		08/13/08	X	X	X								
L-635	2808160475	water		08/14/08	X	X	X								
L-637	2808160476	water		08/14/08	X	X	X								
PC-55MS	2808160441MS	water	MS	08/11/08		X									
PC-55MSD	2808160441MSD	water	MSD	08/11/08		X									
PC-55DUP	2808160441DUP	water	DUP	08/11/08			X								
PC-86MS	2808160452MS	water	MS	08/13/08	X										
PC-86MSD	2808160452MSD	water	MSD	08/13/08	X										
PC-18DUP	2808160456DUP	water	DUP	08/13/08			X								
MW-K4MS	2808160469MS	water	MS	08/14/08	X										
MW-K4MSD	2808160469MSD	water	MSD	08/14/08	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#: 251181 **VALIDATION SAMPLE TABLE** **LDC#:** 21107L

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-6	2808190232	water		08/18/08	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#: 253362 **VALIDATION SAMPLE TABLE** **LDC#:** 21107M

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1	2809090223	water		09/08/08	X	X									
ART-2	2809090224	water		09/08/08	X	X									
ART-3	2809090225	water		09/08/08	X	X									
ART-4	2809090226	water		09/08/08	X	X									
ART-6	2809090227	water		09/08/08	X	X									
ART-7	2809090228	water		09/08/08	X	X									
ART-8	2809090229	water		09/08/08	X	X									
PC-99R2/R3	2809090230	water		09/08/08	X	X									
PC-115R	2809090231	water		09/08/08	X	X									
PC-116R	2809090232	water		09/08/08	X	X									
SF-1	2809090233	water		09/08/08	X	X									
PC-117	2809090234	water		09/08/08	X	X									
PC-118	2809090235	water		09/08/08	X	X									
PC-119	2809090236	water		09/08/08	X	X									
PC-120	2809090237	water		09/08/08	X	X									
PC-121	2809090238	water		09/08/08	X	X									
PC-133	2809090239	water		09/08/08	X	X									
ART-9	2809090240	water		09/08/08	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#: 253362	VALIDATION SAMPLE TABLE														LDC#: 21107M
Project Name: 2008 Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	**Lab ID #**	**Matrix**	**QC Type**	**Date Collected**	**CLO_4 (314.0)**	**TDS (160.1)**									
PC-116RDUP	2809090232DUP	water	DUP	09/08/08		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#: 253834 **VALIDATION SAMPLE TABLE** **LDC#:** 21107N

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
M-87	2809120111	water		09/11/08	X	X									
PC-98R	2809120112	water		09/10/08	X	X									
PC-86	2809120113	water		09/09/08	X	X									
PC-90	2809120114	water		09/09/08	X	X									
PC-56	2809120115	water		09/08/08	X	X									
PC-58	2809120116	water		09/08/08	X	X									
PC-59	2809120117	water		09/08/08	X	X									
PC-60	2809120118	water		09/08/08	X	X									
PC-62	2809120119	water		09/08/08	X	X									
PC-68	2809120120	water		09/08/08	X	X									
PC-91	2809120121	water		09/09/08	X	X									
PC-97	2809120122	water		09/09/08	X	X									
PC-17	2809120123	water		09/09/08	X	X									
PC-18	2809120124	water		09/09/08	X	X									
PC-55	2809120125	water		09/09/08	X	X									
L-635	2809120126	water		09/09/08	X	X									
L-637	2809120127	water		09/09/08	X	X									
MWK-4	2809120128	water		09/10/08	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#: 253834 **VALIDATION SAMPLE TABLE** **LDC#:** 21107N

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ARP-1	2809120129	water		09/09/08	X	X									
ARP-4A	2809120130	water		09/10/08	X	X									
ARP-5A	2809120131	water		09/10/08	X	X									
ARP-6B	2809120131	water		09/10/08	X	X									
PC-53	2809120133	water		09/10/08	X	X									
PC-103	2809120134	water		09/10/08	X	X									
MWK-5	2809120135	water		09/10/08	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#: 256589 **VALIDATION SAMPLE TABLE** **LDC#:** 21107O

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1	2810140535	water		10/13/08	X	X									
ART-2	2810140536	water		10/13/08	X	X									
ART-3	2810140537	water		10/13/08	X	X									
ART-4	2810140538	water		10/13/08	X	X									
ART-6	2810140539	water		10/13/08	X	X									
ART-7	2810140540	water		10/13/08	X	X									
ART-8	2810140541	water		10/13/08	X	X									
PC-99R2/R3	2810140542	water		10/13/08	X	X									
PC-115R	2810140543	water		10/13/08	X	X									
PC-116R	2810140544	water		10/13/08	X	X									
SF-1	2810140546	water		10/13/08	X	X									
PC-117	2810140547	water		10/13/08	X	X									
PC-118	2810140548	water		10/13/08	X	X									
PC-119	2810140549	water		10/13/08	X	X									
PC-120	2810140550	water		10/13/08	X	X									
PC-121	2810140551	water		10/13/08	X	X									
PC-133	2810140552	water		10/13/08	X	X									
ART-9	2810140553	water		10/13/08	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#: 256589	VALIDATION SAMPLE TABLE															LDC#: 21107O
Project Name: 2008 Annual Remedial Performance Sampling	Parameters/Analytical Method															
Client ID #	**Lab ID #**	**Matrix**	**QC Type**	**Date Collected**	**CLO_4 (314.0)**	**TDS (160.1)**										
ART-1MS	2810140535MS	water	MS	10/13/08	X											
ART-1MSD	2810140535MSD	water	MSD	10/13/08	X											
ART-1DUP	2810140535DUP	water	DUP	10/13/08		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#: 257010 **VALIDATION SAMPLE TABLE** **LDC#:** 21107P

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
M-87	2810180021	water		10/15/08	X	X									
PC-98R	2810180022	water		10/15/08	X	X									
PC-86	2810180023	water		10/14/08	X	X									
PC-90	2810180024	water		10/14/08	X	X									
PC-56	2810180025	water		10/14/08	X	X									
PC-58	2810180026	water		10/14/08	X	X									
PC-59	2810180027	water		10/14/08	X	X									
PC-60	2810180028	water		10/14/08	X	X									
PC-62	2810180029	water		10/14/08	X	X									
PC-68	2810180030	water		10/14/08	X	X									
MW-K4	2810180031	water		10/15/08	X	X									
ARP-1	2810180032	water		10/14/08	X	X									
ARP-4A	2810180033	water		10/15/08	X	X									
ARP-5A	2810180034	water		10/15/08	X	X									
ARP-6B	2810180035	water		10/15/08	X	X									
PC-53	2810180036	water		10/15/08	X	X									
PC-103	2810180037	water		10/15/08	X	X									
MW-K5	2810180038	water		10/15/08	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#: 257010 **VALIDATION SAMPLE TABLE** **LDC#:** 21107P

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
PC-91	2810180039	water		10/14/08	X	X									
PC-97	2810180040	water		10/14/08	X	X									
PC-17	2810180041	water		10/14/08	X	X									
PC-18	2810180042	water		10/14/08	X	X									
PC-55	2810180043	water		10/14/08	X	X									
L-635	2810180044	water		10/14/08	X	X									
L-637	2810180045	water		10/14/08	X	X									
PC-86MS	2810180023MS	water	MS	10/14/08	X										
PC-86MSD	2810180023MSD	water	MSD	10/14/08	X										
PC-60DUP	2810180028DUP	water	DUP	10/14/08		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#: 258290 **VALIDATION SAMPLE TABLE** **LDC#:** 21107Q

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
I-AR	2811050369	water		11/03/08	X	X	X								
I-O	2811050370	water		11/03/08	X	X	X								
I-P	2811050371	water		11/03/08	X	X	X								
I-H	2811050372	water		11/03/08	X	X	X								
I-U	2811050373	water		11/03/08	X	X	X								
I-T	2811050374	water		11/03/08	X	X	X								
I-G	2811050375	water		11/03/08	X	X	X								
I-Q	2811050376	water		11/03/08	X	X	X								
I-F	2811050377	water		11/03/08	X	X	X								
I-N	2811050378	water		11/03/08	X	X	X								
I-E	2811050379	water		11/03/08	X	X	X								
I-M	2811050380	water		11/03/08	X	X	X								
I-D	2811050381	water		11/03/08	X	X	X								
I-C	2811050382	water		11/03/08	X	X	X								
I-S	2811050383	water		11/03/08	X	X	X								
I-L	2811050384	water		11/03/08	X	X	X								
I-R	2811050385	water		11/03/08	X	X	X								
I-B	2811050386	water		11/03/08	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#: 258290 **VALIDATION SAMPLE TABLE** **LDC#:** 21107Q

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
I-ARMS	2811050369MS	water	MS	11/03/08	X										
I-ARMSD	2811050369MSD	water	MSD	11/03/08	X										
I-ARDUP	2811050369DUP	water	DUP	11/03/08			X								
I-NMS	2811050378MS	water	MS	11/03/08		X									
I-NMSD	2811050378MSD	water	MSD	11/03/08		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#: 258305 **VALIDATION SAMPLE TABLE** **LDC#:** 21107R

Project Name: 2008 Annual Remedial 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	2811050409	water		11/03/08	X		X	X								
PC-124	2811050410	water		11/03/08	X		X	X								
PC-125	2811050411	water		11/03/08	X		X	X								
PC-126	2811050412	water		11/03/08	X		X	X								
PC-127	2811050413	water		11/03/08	X		X	X								
PC-128	2811050414	water	FD	11/03/08	X		X	X								
PC-131	2811050415	water		11/03/08	X		X	X								
PC-132	2811050416	water		11/03/08	X		X	X								
FB-1	2811050417	water	FB	11/03/08	X		X	X								
M-96	2811050418	water		11/03/08	X		X	X								
PC-54	2811050419	water		11/03/08	X		X	X								
I-AA	2811050420	water		11/03/08	X		X	X								
M-66	2811050421	water		11/03/08	X		X	X								
M-65	2811050422	water		11/03/08	X		X	X								
M-64	2811050423	water		11/03/08	X		X	X								
MD-3	2811050424	water	FD	11/03/08	X		X	X								
M-95	2811050425	water		11/03/08	X	X	X	X								
PC-125DUP	2811050411DUP	water	DUP	11/03/08				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#: 258305 **VALIDATION SAMPLE TABLE** **LDC#:** 21107R

Project Name: 2008 Annual Remedial 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)							
FB-1MS	2811050417MS	water	MS	11/03/08	X										
FB-1MSD	2811050417MSD	water	MSD	11/03/08	X										
M-95MS	2811050425MS	water	MS	11/03/08		X									
M-95MSD	2811050425MSD	water	MSD	11/03/08		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#: 258410 **VALIDATION SAMPLE TABLE** **LDC#:** 21107S

Project Name: 2008 Annual Remedial 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-129	2811060290	water		11/04/08	X		X	X								
PC-130	2811060291	water		11/04/08	X		X	X								
PC-71	2811060292	water	FD	11/04/08	X		X	X								
PC-72	2811060293	water		11/04/08	X		X	X								
PC-73	2811060294	water		11/04/08	X		X	X								
M-44	2811060295	water		11/04/08	X		X	X								
PC-37	2811060296	water		11/04/08	X		X	X								
M-48	2811060297	water		11/04/08	X		X	X								
MD-4	2811060298	water	FD	11/04/08	X		X	X								
M-57A	2811060299	water		11/04/08	X		X	X								
EB-1	2811060300	water	EB	11/04/08	X	X	X	X								
M-131	2811060302	water		11/04/08	X		X	X								
M-79	2811060308	water		11/04/08	X		X	X								
M-69	2811060309	water		11/04/08	X		X	X								
M-135	2811060310	water		11/04/08	X		X	X								
M-25	2811060311	water		11/04/08	X		X	X								
M-37	2811060313	water		11/04/08	X	X	X	X								
M-99	2811060314	water		11/04/08	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#: 258410 **VALIDATION SAMPLE TABLE** **LDC#:** 21107S

Project Name: 2008 Annual Remedial 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)							
M-44DUP	2811060295DUP	water	DUP	11/04/08				X							
M-57ADUP	2811060299DUP	water	DUP	11/04/08				X							
EB-1MS	2811060300MS	water	MS	11/04/08		X									
EB-1MSD	2811060300MSD	water	MSD	11/04/08		X									
M-131MS	2811060302MS	water	MS	11/04/08			X								
M-131MSD	2811060302MSD	water	MSD	11/04/08			X								
M-79MS	2811060308MS	water	MS	11/04/08	X										
M-79MSD	2811060308MSD	water	MSD	11/04/08	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#: 258563 **VALIDATION SAMPLE TABLE** **LDC#:** 21107T

Project Name: 2008 Annual Remedial 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)							
M-92	2811070244	water		11/05/08	X		X	X							
M-97	2811070246	water		11/05/08	X		X	X							
M-31A	2811070247	water		11/05/08	X		X	X							
M-52	2811070248	water		11/05/08	X		X	X							
M-50	2811070249	water		11/05/08	X		X	X							
M-34	2811070250	water		11/05/08	X		X	X							
M-35	2811070251	water		11/05/08	X		X	X							
M-19	2811070252	water		11/05/08	X		X	X							
M-39	2811070253	water		11/05/08	X		X	X							
M-68	2811070254	water		11/05/08	X		X	X							
M-61	2811070255	water		11/05/08	X		X	X							
I-K	2811070256	water		11/05/08	X		X	X							
I-J	2811070257	water		11/05/08	X		X	X							
I-Z	2811070258	water		11/05/08	X		X	X							
I-I	2811070259	water		11/05/08	X		X	X							
I-V	2811070260	water		11/05/08	X		X	X							
M-84	2811070261	water		11/05/08	X	X	X	X							
M-10	2811070264	water		11/05/08	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#: 258563 **VALIDATION SAMPLE TABLE** **LDC#:** 21107T

Project Name: 2008 Annual Remedial 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)								
EB-2	2811070265	water	EB	11/05/08	X	X	X	X								
M-11	2811070266	water	FD	11/05/08	X	X	X	X								
MD-1	2811070273	water	FD	11/05/08	X	X	X	X								
M-10MS	2811070264MS	water	MS	11/05/08	X											
M-10MSD	2811070264MSD	water	MSD	11/05/08	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#: 258623 **VALIDATION SAMPLE TABLE** **LDC#:** 21107U

Project Name: 2008 Annual Remedial 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)								
M-67	2811080088	water		11/06/08	X		X	X								
M-133	2811080089	water		11/06/08	X		X	X								
M-74	2811080090	water		11/06/08	X		X	X								
M-73	2811080091	water		11/06/08	X		X	X								
M-88	2811080092	water		11/06/08	X		X	X								
M-87	2811080093	water		11/06/08	X		X	X								
M-70	2811080094	water		11/06/08	X		X	X								
M-71	2811080095	water		11/06/08	X		X	X								
M-72	2811080096	water		11/06/08	X		X	X								
M-38	2811080097	water		11/06/08	X		X	X								
M-36	2811080098	water		11/06/08	X	X	X	X								
M-12A	2811080099	water	FD	11/06/08	X	X	X	X								
M-100	2811080100	water		11/06/08	X	X	X	X								
M-22A	2811080101	water		11/06/08	X		X	X								
M-89	2811080102	water		11/06/08	X		X	X								
M-17A	2811080103	water		11/06/08	X		X	X								
MD-2	2811080104	water	FD	11/06/08	X	X	X	X								
M-70MS	2811080094MS	water	MS	11/06/08	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#: 258623 **VALIDATION SAMPLE TABLE** **LDC#:** 21107U

Project Name: 2008 Annual Remedial 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)							
M-70MSD	2811080094MSD	water	MSD	11/06/08	X										
M-100MS	2811080100MS	water	MS	11/06/08		X									
M-100MSD	2811080100MSD	water	MSD	11/06/08		X									
MD-2DUP	2811080104DUP	water	DUP	11/06/08				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#: 258639 **VALIDATION SAMPLE TABLE** **LDC#:** 21107V

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-76	2811080129	water		11/07/08	X	X	X								
M-75	2811080130	water		11/07/08	X	X	X								
M-115	2811080131	water		11/07/08	X	X	X								
M-14A	2811080132	water		11/07/08	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#: 258779 **VALIDATION SAMPLE TABLE** **LDC#:** 21107W

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-1	2811110250	water		11/10/08	X	X	X								
ART-2	2811110251	water		11/10/08	X	X	X								
ART-3	2811110252	water		11/10/08	X	X	X								
ART-4	2811110253	water		11/10/08	X	X	X								
ART-6	2811110254	water		11/10/08	X	X	X								
ART-7	2811110255	water		11/10/08	X	X	X								
ART-8	2811110256	water		11/10/08	X	X	X								
PC-99R2/R3	2811110257	water		11/10/08	X	X	X								
PC-115R	2811110258	water		11/10/08	X	X	X								
PC-116R	2811110259	water		11/10/08	X	X	X								
SF-1	2811110260	water		11/10/08	X	X	X								
PC-117	2811110261	water		11/10/08	X	X	X								
PC-118	2811110262	water		11/10/08	X	X	X								
PC-119	2811110263	water		11/10/08	X	X	X								
PC-120	2811110264	water		11/10/08	X	X	X								
PC-121	2811110265	water		11/10/08	X	X	X								
PC-133	2811110266	water		11/10/08	X	X	X								
ART-9	2811110267	water		11/10/08	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#: 258779 **VALIDATION SAMPLE TABLE** **LDC#:** 21107W

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-3DUP	2811110252DUP	water	DUP	11/10/08			X								
SF-1MS	2811110260MS	water	MS	11/10/08	X										
SF-1MSD	2811110260MSD	water	MSD	11/10/08	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#: 259063 **VALIDATION SAMPLE TABLE** **LDC#:** 21107X

Project Name: 2008 Annual Remedial 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	2811130246	water		11/11/08	X	X	X								
PC-98R	2811130247	water		11/12/08	X	X	X								
PC-86	2811130248	water		11/11/08	X	X	X								
PC-90	2811130249	water		11/11/08	X	X	X								
PC-56	2811130250	water		11/10/08	X	X	X								
PC-58	2811130251	water		11/10/08	X	X	X								
PC-59	2811130252	water		11/10/08	X	X	X								
PC-60	2811130253	water		11/10/08	X	X	X								
PC-62	2811130254	water		11/10/08	X	X	X								
PC-68	2811130255	water		11/10/08	X	X	X								
PC-122	2811130256	water		11/11/08	X	X	X								
MW-K4	2811130257	water		11/12/08	X	X	X								
ARP-1	2811130258	water		11/11/08	X	X	X								
ARP-4A	2811130259	water		11/12/08	X	X	X								
ARP-5A	2811130260	water		11/12/08	X	X	X								
ARP-6B	2811130261	water		11/12/08	X	X	X								
PC-53	2811130262	water		11/12/08	X	X	X								
PC-103	2811130263	water		11/12/08	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#: 259063 **VALIDATION SAMPLE TABLE** **LDC#:** 21107X

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
MW-K5	2811130264	water		11/12/08	X	X	X								
PC-91	2811130265	water		11/11/08	X	X	X								
PC-97	2811130266	water		11/11/08	X	X	X								
PC-18	2811130267	water		11/11/08	X	X	X								
PC-55	2811130268	water		11/11/08	X	X	X								
L-635	2811130269	water		11/11/08	X	X	X								
L-637	2811130270	water		11/12/08	X	X	X								
PC-58DUP	2811130251DUP	water	DUP	11/10/08			X								
ARP-5AMS	2811130260MS	water	MS	11/12/08	X										
ARP-5AMSD	2811130260MSD	water	MSD	11/12/08	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#: 261012 **VALIDATION SAMPLE TABLE** **LDC#:** 21107Y

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1	2812100419	water		12/08/08	X	X									
ART-2	2812100420	water		12/08/08	X	X									
ART-3	2812100421	water		12/08/08	X	X									
ART-4	2812100422	water		12/08/08	X	X									
ART-6	2812100423	water		12/08/08	X	X									
ART-7	2812100424	water		12/08/08	X	X									
ART-8	2812100425	water		12/08/08	X	X									
PC-99R2/R3	2812100426	water		12/08/08	X	X									
PC-115R	2812100427	water		12/08/08	X	X									
PC-116R	2812100428	water		12/08/08	X	X									
SF-1	2812100429	water		12/09/08	X	X									
PC-117	2812100430	water		12/08/08	X	X									
PC-118	2812100431	water		12/08/08	X	X									
PC-119	2812100432	water		12/08/08	X	X									
PC-120	2812100433	water		12/08/08	X	X									
PC-121	2812100434	water		12/08/08	X	X									
PC-133	2812100435	water		12/08/08	X	X									
ART-9	2812100436	water		12/08/08	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#: 261012 **VALIDATION SAMPLE TABLE** **LDC#:** 21107Y

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1DUP	2812100419DUP	water	DUP	12/08/08		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#: 261275 **VALIDATION SAMPLE TABLE** **LDC#:** 21107Z

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
M-87	2812130125	water		12/10/08	X	X									
PC-98R	2812130126	water		12/11/08	X	X									
PC-86	2812130127	water		12/09/08	X	X									
PC-90	2812130128	water		12/09/08	X	X									
PC-56	2812130129	water		12/08/08	X	X									
PC-58	2812130130	water		12/08/08	X	X									
PC-59	2812130131	water		12/08/08	X	X									
PC-60	2812130132	water		12/08/08	X	X									
PC-62	2812130133	water		12/08/08	X	X									
PC-68	2812130134	water		12/08/08	X	X									
PC-122	2812130135	water		12/08/08	X	X									
MW-K4	2812130136	water		12/11/08	X	X									
ARP-1	2812130137	water		12/09/08	X	X									
ARP-4A	2812130138	water		12/11/08	X	X									
ARP-5A	2812130139	water		12/11/08	X	X									
ARP-6B	2812130140	water		12/11/08	X	X									
ARP-7	2812130141	water		12/09/08	X	X									
PC-53	2812130142	water		12/11/08	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#: 261275 **VALIDATION SAMPLE TABLE** **LDC#:** 21107Z

Project Name: 2008 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
PC-103	2812130143	water		12/11/08	X	X									
MW-K5	2812130144	water		12/11/08	X	X									
PC-91	2812130145	water		12/09/08	X	X									
PC-97	2812130146	water		12/09/08	X	X									
PC-17	2812130147	water		12/09/08	X	X									
PC-18	2812130148	water		12/09/08	X	X									
PC-55	2812130149	water		12/10/08	X	X									
L-635	2812130150	water		12/10/08	X	X									
L-637	2812130151	water		12/10/08	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#: 263577 **VALIDATION SAMPLE TABLE** **LDC#:** 21040A

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
M-87	2901160237	water		01/14/09	X	X									
PC-98R	2901160239	water		01/15/09	X	X									
PC-86	2901160240	water		01/13/09	X	X									
PC-90	2901160241	water		01/13/09	X	X									
PC-56	2901160242	water		01/12/09	X	X									
PC-58	2901160243	water		01/12/09	X	X									
PC-59	2901160244	water		01/12/09	X	X									
PC-60	2901160245	water		01/12/09	X	X									
PC-62	2901160246	water		01/12/09	X	X									
PC-68	2901160247	water		01/12/09	X	X									
PC-122	2901160248	water		01/13/09	X	X									
MW-K4	2901160249	water		01/15/09	X	X									
ARP-1	2901160250	water		01/14/09	X	X									
ARP-4A	2901160251	water		01/15/09	X	X									
ARP-5A	2901160252	water		01/15/09	X	X									
ARP-6B	2901160253	water		01/15/09	X	X									
ARP-7	2901160254	water		01/13/09	X	X									
PC-53	2901160255	water		01/15/09	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#: 263577 **VALIDATION SAMPLE TABLE** **LDC#:** 21040A

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
PC-103	2901160256	water		01/15/09	X	X									
MW-K5	2901160257	water		01/15/09	X	X									
PC-91	2901160258	water		01/13/09	X	X									
PC-97	2901160259	water		01/13/09	X	X									
PC-17	2901160260	water		01/13/09	X	X									
PC-18	2901160261	water		01/14/09	X	X									
PC-55	2901160262	water		01/14/09	X	X									
L-635	2901160263	water		01/14/09	X	X									
L-637	2901160264	water		01/14/09	X	X									
M-87DUP	2901160237DUP	water	DUP	01/14/09		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

SDG#: 264580 **VALIDATION SAMPLE TABLE** **LDC#:** 21040B

Project Name: Annual Remedial 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	2902030358	water		02/02/09	X		X	X								
PC-124	2902030359	water		02/02/09	X		X	X								
PC-125	2902030360	water		02/02/09	X		X	X								
PC-126	2902030361	water		02/02/09	X		X	X								
PC-127	2902030362	water		02/02/09	X		X	X								
PC-128	2902030363	water		02/02/09	X		X	X								
PC-129	2902030364	water		02/02/09	X		X	X								
PC-130	2902030365	water		02/02/09	X		X	X								
PC-131	2902030366	water		02/02/09	X		X	X								
PC-132	2902030367	water		02/02/09	X		X	X								
M-96	2902030368	water		02/02/09	X		X	X								
PC-54	2902030369	water		02/02/09	X		X	X								
M-48	2902030370	water		02/02/09	X		X	X								
M-44	2902030371	water		02/02/09	X		X	X								
PC-71	2902030372	water		02/02/09	X		X	X								
PC-72	2902030373	water		02/02/09	X		X	X								
PC-73	2902030374	water		02/02/09	X		X	X								
PC-37	2902030375	water	FD2	02/02/09	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

SDG#: 264580 **VALIDATION SAMPLE TABLE** **LDC#:** 21040B

Project Name: Annual Remedial 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)							
M-95	2902030376	water	FD1	02/02/09	X	X	X	X							
MD-1	2902030385	water	FD1	02/02/09	X	X	X	X							
MD-3	2902030387	water	FD2	02/02/09	X		X	X							
FB-1	2902030388	water	FB	02/02/09	X	X	X								
PC-123DUP	2902030358DUP	water	DUP	02/02/09				X							
M-48MS	2902030370MS	water	MS	02/02/09	X										
M-48MSD	2902030370MSD	water	MSD	02/02/09	X										
FB-1MS	2902030388MS	water	MS	02/02/09	X	X									
FB-1MSD	2902030388MSD	water	MSD	02/02/09	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

SDG#: 264598 **VALIDATION SAMPLE TABLE** **LDC#:** 21040C

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-1	2902030440	water		02/02/09	X	X	X								
ART-2	2902030442	water		02/02/09	X	X	X								
ART-3	2902030443	water		02/02/09	X	X	X								
ART-4	2902030444	water		02/02/09	X	X	X								
ART-6	2902030445	water		02/02/09	X	X	X								
ART-7	2902030446	water		02/02/09	X	X	X								
ART-8	2902030447	water		02/02/09	X	X	X								
PC-99R2/R3	2902030448	water		02/02/09	X	X	X								
PC-115R	2902030449	water		02/02/09	X	X	X								
PC-116R	2902030450	water		02/02/09	X	X	X								
SF-1	2902030451	water		02/02/09	X	X	X								
PC-117	2902030452	water		02/02/09	X	X	X								
PC-118	2902030453	water		02/02/09	X	X	X								
PC-119	2902030454	water		02/02/09	X	X	X								
PC-120	2902030455	water		02/02/09	X	X	X								
PC-121	2902030456	water		02/02/09	X	X	X								
PC-133	2902030457	water		02/02/09	X	X	X								
ART-9	2902030458	water		02/02/09	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

SDG#: 264598 **VALIDATION SAMPLE TABLE** **LDC#:** 21040C

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
SF-1DUP	2902030451DUP	water	DUP	02/02/09			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

SDG#: 264727 **VALIDATION SAMPLE TABLE** **LDC#:** 21040D

Project Name: Annual Remedial 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	2902050032	water		02/03/09	X	X	X								
I-P	2902050034	water		02/03/09	X	X	X								
I-H	2902050035	water		02/03/09	X	X	X								
I-U	2902050036	water		02/03/09	X	X	X								
I-T	2902050037	water		02/03/09	X	X	X								
I-G	2902050038	water		02/03/09	X	X	X								
I-Q	2902050039	water		02/03/09	X	X	X								
I-F	2902050040	water		02/03/09	X	X	X								
I-N	2902050041	water		02/03/09	X	X	X								
I-E	2902050042	water		02/03/09	X	X	X								
I-M	2902050043	water		02/03/09	X	X	X								
I-D	2902050044	water		02/03/09	X	X	X								
I-C	2902050045	water		02/03/09	X	X	X								
I-S	2902050046	water		02/03/09	X	X	X								
I-R	2902050047	water		02/03/09	X	X	X								
I-L	2902050048	water		02/03/09	X	X	X								
I-B	2902050049	water		02/03/09	X	X	X								
I-AR	2902050050	water		02/03/09	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

SDG#: 264727 **VALIDATION SAMPLE TABLE** **LDC#:** 21040D

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
I-PDUP	2902050034DUP	water	DUP	02/03/09			X								
I-BMS	2902050049MS	water	MS	02/03/09	X										
I-BMSD	2902050049MSD	water	MSD	02/03/09	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

SDG#: 264774 **VALIDATION SAMPLE TABLE** **LDC#:** 21040E

Project Name: Annual Remedial 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)							
I-AA	2902050191	water		02/03/09	X		X	X							
M-64	2902050199	water		02/03/09	X		X	X							
M-65	2902050200	water		02/03/09	X		X	X							
M-66	2902050201	water		02/03/09	X		X	X							
M-79	2902050202	water		02/03/09	X		X	X							
M-69	2902050203	water		02/03/09	X		X	X							
M-135	2902050204	water		02/03/09	X		X	X							
M-131	2902050205	water		02/03/09	X		X	X							
M-57A	2902050206	water		02/03/09	X		X	X							
M-99	2902050207	water		02/03/09	X		X	X							
M-25	2902050208	water	FD	02/03/09	X		X	X							
M-37	2902050209	water		02/03/09	X	X	X	X							
MD-4	2902050210	water	FD	02/03/09	X		X	X							
EB-1	2902050211	water	EB	02/03/09	X	X	X	X							
I-AADUP	2902050191DUP	water	DUP	02/03/09				X							
M-135MS	2902050204MS	water	MS	02/03/09	X										
M-135MSD	2902050204MSD	water	MSD	02/03/09	X										
EB-1MS	2902050211MS	water	MS	02/03/09		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#: 264774 **VALIDATION SAMPLE TABLE** **LDC#:** 21040E

Project Name: Annual Remedial 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)							
EB-1MSD	2902050211MSD	water	MSD	02/03/09		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#: 264820 **VALIDATION SAMPLE TABLE** **LDC#:** 21040F

Project Name: Annual Remedial 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)							
M-92	2902050371	water		02/04/09	X		X	X							
M-97	2902050372	water		02/04/09	X		X	X							
M-31A	2902050373	water		02/04/09	X		X	X							
M-52	2902050374	water		02/04/09	X		X	X							
M-50	2902050375	water		02/04/09	X		X	X							
M-34	2902050376	water		02/04/09	X		X	X							
M-35	2902050377	water		02/04/09	X		X	X							
M-19	2902050378	water		02/04/09	X		X	X							
M-39	2902050379	water		02/04/09	X		X	X							
M-68	2902050380	water		02/04/09	X		X	X							
M-61	2902050381	water		02/04/09	X		X	X							
M-67	2902050382	water		02/04/09	X		X	X							
M-74	2902050383	water		02/04/09	X		X	X							
M-73	2902050384	water		02/04/09	X		X	X							
M-88	2902050385	water		02/04/09	X		X	X							
I-V	2902050386	water		02/04/09	X		X	X							
I-K	2902050387	water		02/04/09	X		X	X							
I-J	2902050388	water		02/04/09	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

SDG#: 264820 **VALIDATION SAMPLE TABLE** **LDC#:** 21040F

Project Name: Annual Remedial 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)							
I-Z	2902050389	water		02/04/09	X		X	X							
I-I	2902050390	water		02/04/09	X		X	X							
M-12A	2902050393	water		02/04/09	X	X	X	X							
EB-2	2902050394	water	EB	02/04/09	X	X	X	X							
M-10	2902050395	water		02/04/09	X	X	X	X							
M-92DUP	2902050371DUP	water	DUP	02/04/09				X							
M-97MS	2902050372MS	water	MS	02/04/09			X								
M-97MSD	2902050372MSD	water	MSD	02/04/09			X								
EB-2MS	2902050394MS	water	MS	02/04/09	X	X									
EB-2MSD	2902050394MSD	water	MSD	02/04/09	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#: 264946 **VALIDATION SAMPLE TABLE** **LDC#:** 21040G

Project Name: Annual Remedial 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)							
M-87	2902070062	water		02/05/09	X		X	X							
M-70	2902070063	water		02/05/09	X		X	X							
M-71	2902070064	water		02/05/09	X		X	X							
M-72	2902070065	water		02/05/09	X		X	X							
M-22A	2902070066	water		02/05/09	X		X	X							
M-38	2902070067	water		02/05/09	X		X	X							
M-89	2902070068	water		02/05/09	X		X	X							
M-100	2902070069	water		02/05/09	X	X	X	X							
M-84	2902070070	water	FD	02/05/09	X	X	X	X							
M-36	2902070071	water		02/05/09	X	X	X	X							
M-11	2902070072	water		02/05/09	X	X	X	X							
MD-2	2902070073	water	FD	02/05/09	X	X	X	X							
M-87DUP	2902070062DUP	water	DUP	02/05/09				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

SDG#: 264958 **VALIDATION SAMPLE TABLE** **LDC#:** 21040H

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-17A	2902070090	water		02/06/09	X	X	X								
M-76	2902070091	water		02/06/09	X	X	X								
M-75	2902070092	water		02/06/09	X	X	X								
M-115	2902070093	water		02/06/09	X	X	X								
M-14A	2902070094	water		02/06/09	X	X	X								
M-115MS	2902070093MS	water	MS	02/06/09		X									
M-115MSD	2902070093MSD	water	MSD	02/06/09		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

SDG#: 265481 **VALIDATION SAMPLE TABLE** **LDC#:** 21040I

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
MW-K4	2902140029	water		02/11/09	X	X	X								
ARP-1	2902140030	water		02/11/09	X	X	X								
ARP-4A	2902140031	water		02/11/09	X	X	X								
ARP-5A	2902140032	water		02/11/09	X	X	X								
ARP-6B	2902140033	water		02/11/09	X	X	X								
PC-53	2902140034	water		02/11/09	X	X	X								
PC-103	2902140035	water		02/11/09	X	X	X								
MW-5K	2902140036	water		02/11/09	X	X	X								
M-87	2902140037	water		02/11/09	X	X	X								
PC-98R	2902140038	water		02/11/09	X	X	X								
PC-86	2902140039	water		02/10/09	X	X	X								
PC-90	2902140040	water		02/10/09	X	X	X								
PC-56	2902140041	water		02/09/09	X	X	X								
PC-58	2902140042	water		02/09/09	X	X	X								
PC-59	2902140043	water		02/09/09	X	X	X								
PC-60	2902140044	water		02/09/09	X	X	X								
PC-62	2902140045	water		02/09/09	X	X	X								
PC-68	2902140046	water		02/09/09	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#: 265481 **VALIDATION SAMPLE TABLE** **LDC#:** 21040I

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-91	2902140047	water		02/10/09	X	X	X								
PC-97	2902140048	water		02/10/09	X	X	X								
PC-18	2902140049	water		02/10/09	X	X	X								
PC-55	2902140050	water		02/10/09	X	X	X								
L-635	2902140051	water		02/12/09	X	X	X								
L-637	2902140052	water		02/12/09	X	X	X								
MW-K4MS	2902140029MS	water	MS	02/11/09	X										
MW-K4MSD	2902140029MSD	water	MSD	02/11/09	X										
ARP-5ADUP	2902140032DUP	water	DUP	02/11/09			X								
PC-103DUP	2902140035DUP	water	DUP	02/11/09			X								
PC-98RMS	2902140038MS	water	MS	02/11/09	X										
PC-98RMSD	2902140038MSD	water	MSD	02/11/09	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

SDG#: 265658 **VALIDATION SAMPLE TABLE** **LDC#:** 21040J

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-23	2902180119	water		02/17/09	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

SDG#: 266452 **VALIDATION SAMPLE TABLE** **LDC#:** 21040K

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1	29063030142	water		03/02/09	X	X									
ART-2	29063030143	water		03/02/09	X	X									
ART-3	29063030144	water		03/02/09	X	X									
ART-4	29063030145	water		03/02/09	X	X									
ART-7	29063030146	water		03/02/09	X	X									
PC-99R2/R3	29063030147	water		03/02/09	X	X									
PC-115R	29063030148	water		03/02/09	X	X									
PC-116R	29063030149	water		03/02/09	X	X									
SF-1	29063030150	water		03/02/09	X	X									
PC-117	29063030151	water		03/02/09	X	X									
PC-118	29063030152	water		03/02/09	X	X									
PC-119	29063030153	water		03/02/09	X	X									
PC-120	29063030154	water		03/02/09	X	X									
PC-121	29063030155	water		03/02/09	X	X									
PC-133	29063030156	water		03/02/09	X	X									
ART-9	29063030157	water		03/02/09	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

SDG#: 267194 **VALIDATION SAMPLE TABLE** **LDC#:** 21040L

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
M-87	2903120180	water		03/11/09	X	X									
PC-98R	2903120181	water		03/11/09	X	X									
PC-86	2903120182	water		03/10/09	X	X									
PC-90	2903120183	water		03/10/09	X	X									
PC-56	2903120184	water		03/09/09	X	X									
PC-58	2903120185	water		03/09/09	X	X									
PC-59	2903120186	water		03/09/09	X	X									
PC-60	2903120187	water		03/09/09	X	X									
PC-62	2903120188	water		03/09/09	X	X									
PC-68	2903120189	water		03/09/09	X	X									
PC-91	2903120190	water		03/10/09	X	X									
PC-97	2903120191	water		03/10/09	X	X									
PC-18	2903120192	water		03/10/09	X	X									
PC-55	2903120193	water		03/10/09	X	X									
MW-K4	2903120194	water		03/11/09	X	X									
ARP-1	2903120195	water		03/11/09	X	X									
ARP-4A	2903120196	water		03/11/09	X	X									
ARP-5A	2903120197	water		03/11/09	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#: 267194	VALIDATION SAMPLE TABLE														LDC#: 21040L
Project Name: Annual Remedial Performance Sampling				Parameters/Analytical Method											
Client ID #	**Lab ID #**	**Matrix**	**QC Type**	**Date Collected**	**CLO_4 (314.0)**	**TDS (160.1)**									
ARP-6B	2903120198	water		03/11/09	X	X									
PC-53	2903120199	water		03/11/09	X	X									
PC-103	2903120200	water		03/11/09	X	X									
MW-K5	2903120201	water		03/11/09	X	X									
ART-8	2903120202	water		03/09/09	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

SDG#: 268707 **VALIDATION SAMPLE TABLE** **LDC#:** 21040M

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1	2904070330	water		04/06/09	X	X									
ART-2	2904070331	water		04/06/09	X	X									
ART-3	2904070332	water		04/06/09	X	X									
ART-4	2904070333	water		04/06/09	X	X									
ART-7	2904070334	water		04/06/09	X	X									
ART-8	2904070335	water		04/06/09	X	X									
PC-99R2/R3	2904070336	water		04/06/09	X	X									
PC-115R	2904070337	water		04/06/09	X	X									
PC-116R	2904070338	water		04/06/09	X	X									
SF-1	2904070339	water		04/06/09	X	X									
PC-117	2904070340	water		04/06/09	X	X									
PC-118	2904070341	water		04/06/09	X	X									
PC-120	2904070342	water		04/06/09	X	X									
PC-121	2904070343	water		04/06/09	X	X									
PC-133	2904070344	water		04/06/09	X	X									
ART-9	2904070345	water		04/06/09	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

SDG#: 269377 **VALIDATION SAMPLE TABLE** **LDC#:** 21040N

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
MW-K4	2904160331	water		04/15/09	X	X									
ARP-1	2904160332	water		04/14/09	X	X									
ARP-4A	2904160333	water		04/15/09	X	X									
ARP-5A	2904160334	water		04/15/09	X	X									
ARP-6B	2904160335	water		04/15/09	X	X									
PC-53	2904160336	water		04/15/09	X	X									
PC-103	2904160337	water		04/15/09	X	X									
MW-K5	2904160338	water		04/15/09	X	X									
M-87	2904160339	water		04/15/09	X	X									
PC-98R	2904160340	water		04/15/09	X	X									
PC-86	2904160341	water		04/14/09	X	X									
PC-90	2904160342	water		04/14/09	X	X									
PC-56	2904160343	water		04/14/09	X	X									
PC-58	2904160344	water		04/14/09	X	X									
PC-59	2904160345	water		04/14/09	X	X									
PC-60	2904160346	water		04/14/09	X	X									
PC-62	2904160347	water		04/14/09	X	X									
PC-68	2904160348	water		04/14/09	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

SDG#: 269377 **VALIDATION SAMPLE TABLE** **LDC#:** 21040N

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
PC-91	2904160349	water		04/14/09	X	X									
PC-97	2904160350	water		04/14/09	X	X									
PC-18	2904160351	water		04/14/09	X	X									
PC-55	2904160352	water		04/14/09	X	X									
PC-101R	2904160353	water		04/14/09	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

SDG#: 270339 **VALIDATION SAMPLE TABLE** **LDC#:** 21040O

Project Name: Annual Remedial 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)	Chlorate (9056)	NO_3-N (9056)					
PC-123	2905060024	water		05/04/09	X		X	X							
PC-124	2905060025	water		05/04/09	X		X	X	X	X					
PC-125	2905060026	water		05/04/09	X		X	X							
PC-126	2905060027	water		05/04/09	X		X	X	X	X					
PC-127	2905060028	water		05/04/09	X		X	X							
PC-128	2905060029	water		05/04/09	X		X	X	X	X					
PC-129	2905060030	water		05/04/09	X		X	X							
PC-130	2905060031	water		05/04/09	X		X	X	X	X					
PC-131	2905060032	water		05/04/09	X		X	X							
PC-132	2905060033	water		05/04/09	X		X	X	X	X					
M-96	2905060034	water		05/04/09	X		X	X							
PC-54	2905060035	water	FD2	05/04/09	X		X	X							
PC-37	2905060036	water		05/04/09	X		X	X							
PC-71	2905060037	water		05/04/09	X		X	X							
PC-72	2905060038	water		05/04/09	X		X	X							
PC-73	2905060039	water		05/04/09	X		X	X							
M-23	2905060040	water		05/04/09	X		X	X	X	X					
M-95	2905060041	water	FD1	05/04/09	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#: 270339 **VALIDATION SAMPLE TABLE** **LDC#:** 21040O

Project Name: Annual Remedial 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)	Chlorate (9056)	NO_3-N (9056)					
M-44	2905060042	water		05/04/09	X	X	X	X							
FB-1	2905060043	water	FB	05/04/09	X	X	X	X							
MD-1	2905060049	water	FD1	05/04/09	X	X	X	X							
MD-3	2905060050	water	FD2	05/04/09	X		X	X							
PC-126MS	2905060027MS	water	MS	05/04/09	X										
PC-126MSD	2905060027MSD	water	MSD	05/04/09	X										
PC-126DUP	2905060027DUP	water	DUP	05/04/09				X							
M-23MS	2905060040MS	water	MS	05/04/09	X										
M-23MSD	2905060040MSD	water	MSD	05/04/09	X										
PC-129DUP	2905060030DUP	water	DUP	05/04/09				X							
MD-1MS	2905060049MS	water	MS	05/04/09		X									
MD-1MSD	2905060049MSD	water	MSD	05/04/09		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

SDG#: 270369 **VALIDATION SAMPLE TABLE** **LDC#:** 21040P

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-5A	2905060129	water		05/05/09	X	X	X								
M-5AMS	2905060129MS	water	MS	05/05/09	X										
M-5AMSD	2905060129MSD	water	MSD	05/05/09	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

SDG#: 270376 **VALIDATION SAMPLE TABLE** **LDC#:** 21040Q

Project Name: Annual Remedial 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	2905060173	water		05/05/09	X	X	X								
I-P	2905060174	water		05/05/09	X	X	X								
I-H	2905060175	water		05/05/09	X	X	X								
I-U	2905060176	water		05/05/09	X	X	X								
I-T	2905060177	water		05/05/09	X	X	X								
I-G	2905060178	water		05/05/09	X	X	X								
I-Q	2905060179	water		05/05/09	X	X	X								
I-F	2905060180	water		05/05/09	X	X	X								
I-N	2905060181	water		05/05/09	X	X	X								
I-E	2905060182	water		05/05/09	X	X	X								
I-M	2905060183	water		05/05/09	X	X	X								
I-D	2905060184	water		05/05/09	X	X	X								
I-C	2905060185	water		05/05/09	X	X	X								
I-S	2905060186	water		05/05/09	X	X	X								
I-L	2905060187	water		05/05/09	X	X	X								
I-R	2905060188	water		05/05/09	X	X	X								
I-B	2905060189	water		05/05/09	X	X	X								
I-AR	2905060190	water		05/05/09	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

SDG#: 270390 **VALIDATION SAMPLE TABLE** **LDC#:** 21040R

Project Name: Annual Remedial 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)	Chlorate (9056)	NO_3-N (9056)					
I-AA	2905060238	water		05/05/09	X		X	X							
M-131	2905060239	water		05/05/09	X		X	X							
M-57A	2905060240	water	FD	05/05/09	X		X	X							
M-79	2905060241	water		05/05/09	X		X	X							
M-69	2905060242	water		05/05/09	X		X	X							
M-135	2905060243	water		05/05/09	X		X	X							
M-25	2905060244	water		05/05/09	X		X	X	X	X					
M-99	2905060245	water		05/05/09	X		X	X							
M-37	2905060246	water		05/05/09	X	X	X	X	X	X					
MD-4	2905060247	water	FD	05/05/09	X		X	X							
EB-1	2905060248	water	EB	05/05/09	X	X	X	X							
M-135DUP	2905060243DUP	water	DUP	05/05/09				X							
EB-1MS	2905060248MS	water	MS	05/05/09		X									
EB-1MSD	2905060248MSD	water	MSD	05/05/09		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

SDG#: 270439 **VALIDATION SAMPLE TABLE** **LDC#:** 21040S

Project Name: Annual Remedial 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)	Chlorate (9056)	NO_3-N (9056)					
M-92	2905070081	water		05/06/09	X		X	X							
M-97	2905070082	water		05/06/09	X		X	X							
M-33	2905070083	water		05/06/09	X		X	X							
M-31A	2905070084	water		05/06/09	X		X	X							
M-52	2905070085	water		05/06/09	X		X	X							
M-50	2905070086	water		05/06/09	X		X	X							
M-21	2905070087	water		05/06/09	X		X	X							
M-34	2905070088	water	FD	05/06/09	X		X	X							
M-35	2905070089	water		05/06/09	X		X	X							
M-19	2905070090	water		05/06/09	X		X	X							
M-39	2905070091	water		05/06/09	X		X	X	X	X					
M-68	2905070092	water		05/06/09	X		X	X							
M-74	2905070093	water		05/06/09	X		X	X							
M-73	2905070094	water		05/06/09	X		X	X							
M-88	2905070095	water		05/06/09	X		X	X							
M-11	2905070096	water		05/06/09	X	X	X	X	X	X					
M-12A	2905070097	water		05/06/09	X	X	X	X	X	X					
M-13	2905070098	water		05/06/09	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

SDG#: 270439 **VALIDATION SAMPLE TABLE** **LDC#:** 21040S

Project Name: Annual Remedial 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)	Chlorate (9056)	NO_3-N (9056)					
MD-5	2905070099	water	FD	05/06/09	X		X	X							
EB-2	2905070100	water	EB	05/06/09	X	X	X	X							
M-74DUP	2905070093DUP	water	DUP	05/06/09				X							
M-12AMS	2905070097MS	water	MS	05/06/09		X									
M-12AMSD	2905070097MSD	water	MSD	05/06/09		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

SDG#: 270442 **VALIDATION SAMPLE TABLE** **LDC#:** 21040T

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
I-K	2905070108	water		05/06/09	X	X	X								
I-J	2905070009	water		05/06/09	X	X	X								
I-I	2905070110	water		05/06/09	X	X	X								
I-Z	2905070111	water		05/06/09	X	X	X								
I-V	2905070112	water		05/06/09	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#: 270507 **VALIDATION SAMPLE TABLE** **LDC#:** 21040U

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
PC-77	2905080074	water		05/06/09	X	X									
PC-74	2905080075	water		05/06/09	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

SDG#: 270531	VALIDATION SAMPLE TABLE														LDC#: 21041F
Project Name: 2009 Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	**Lab ID #**	**Matrix**	**QC Type**	**Date Collected**	**Cr (6010B)**	**TDS (160.1)**	**NO_3-N (300.0)**								
M-10	2905080170	water		05/07/09	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#: 270564	VALIDATION SAMPLE TABLE														LDC#: 21040V
Project Name: Annual Remedial Performance Sampling				Parameters/Analytical Method											
Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
HMW9	2905110076	water		05/07/09	X	X									
PC-96	2905110077	water		05/07/09	X	X									
PC-112	2905110078	water		05/07/09	X	X									
PC-110	2905110079	water		05/07/09	X	X									
PC-107	2905110080	water		05/07/09	X	X									
PC-112DUP	2905110078DUP	water	DUP	05/07/09		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

SDG#: 270567 **VALIDATION SAMPLE TABLE** **LDC#:** 21041Q

Project Name: 2009 Annual Remedial 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)	Chlorate (9056)	NO3/ NO2-N (353.2)					
M-87	2905110089	water		05/07/09	X		X	X							
M-70	2905110090	water		05/07/09	X		X	X							
M-71	2905110091	water		05/07/09	X		X	X							
M-72	2905110092	water		05/07/09	X		X	X							
M-38	2905110093	water		05/07/09	X		X	X							
M-36	2905110094	water	FD	05/07/09	X	X	X	X	X	X					
M-84	2905110095	water		05/07/09	X	X	X	X							
M-100	2905110096	water		05/07/09	X	X	X	X							
M-10	2905110097	water		05/07/09	X	X	X	X	X	X					
MD-2	2905110098	water	FD	05/07/09	X	X	X	X	X	X					
M-22A	2905110099	water		05/07/09	X		X	X							
M-89	2905110100	water		05/07/09	X		X	X							
M-84MS	2905110095MS	water	MS	05/07/09	X										
M-84MSD	2905110095MSD	water	MSD	05/07/09	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

SDG#: 270578 **VALIDATION SAMPLE TABLE** **LDC#:** 21040W

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	Chlorate (9056)	NO_3-N (9056)						
PC-94	2905120033	water		05/08/09		X	X								
PC-93	2905120034	water		05/08/09	X	X	X	X	X						
PC-2	2905120035	water		05/08/09	X	X	X	X	X						
HSW-1	2905120036	water		05/08/09		X	X								
HM-2	2905120037	water		05/08/09		X	X								
PC-104	2905120038	water		05/08/09	X	X	X								
HMW14	2905120039	water		05/08/09		X	X								
PC-2MS	2905120035MS	water	MS	05/08/09					X						
PC-2MSD	2905120035MSD	water	MSD	05/08/09					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

SDG#: 270579 **VALIDATION SAMPLE TABLE** **LDC#:** 21040X

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-17A	2905120040	water		05/08/09	X	X	X								
M-2A	2905120041	water		05/08/09	X	X	X								
M-76	2905120042	water		05/08/09	X	X	X								
M-75	2905120043	water		05/08/09	X	X	X								
M-115	2905120044	water		05/08/09	X	X	X								
M-14A	2905120045	water		05/08/09	X	X	X								
M-14ADUP	2905120045DUP	water	DUP	05/08/09			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

SDG#: 270628 **VALIDATION SAMPLE TABLE** **LDC#:** 21041T

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-1	2905120248	water		05/11/09	X	X	X								
ART-2	2905120250	water		05/11/09	X	X	X								
ART-3	2905120251	water		05/11/09	X	X	X								
ART-4	2905120252	water		05/11/09	X	X	X								
ART-6	2905120253	water		05/11/09	X	X	X								
ART-7	2905120254	water		05/11/09	X	X	X								
ART-8	2905120255	water		05/11/09	X	X	X								
PC-99R2/R3	2905120256	water		05/11/09	X	X	X								
PC-115R	2905120257	water		05/11/09	X	X	X								
PC-116R	2905120258	water		05/11/09	X	X	X								
SF-1	2905120259	water		05/11/09	X	X	X								
PC-117	2905120260	water		05/11/09	X	X	X								
PC-118	2905120261	water		05/11/09	X	X	X								
PC-119	2905120262	water		05/11/09	X	X	X								
PC-120	2905120263	water		05/11/09	X	X	X								
PC-121	2905120264	water		05/11/09	X	X	X								
PC-133	2905120265	water		05/11/09	X	X	X								
ART-9	2905120266	water		05/11/09	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

SDG#: 270628 **VALIDATION SAMPLE TABLE** **LDC#:** 21041T

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
ART-6DUP	2905120253DUP	water	DUP	05/11/09			X								
PC-121MS	2905120264MS	water	MS	05/11/09	X										
PC-121MSD	2905120264MSD	water	MSD	05/11/09	X										
PC-133MS	2905120265MS	water	MS	05/11/09	X										
PC-133MSD	2905120265MSD	water	MSD	05/11/09	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

SDG#: 270639 **VALIDATION SAMPLE TABLE** **LDC#:** 21040Y

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-108	2905120278	water		05/11/09		X	X								
HMW-15	2905120280	water		05/11/09		X	X								
HMW-13	2905120281	water		05/11/09		X	X								
PC-79	2905120283	water		05/11/09	X	X	X								
PC-79MS	2905120283MS	water	MS	05/11/09		X									
PC-79MSD	2905120283MSD	water	MSD	05/11/09		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

SDG#: 270704 **VALIDATION SAMPLE TABLE** **LDC#:** 21041G

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	Chlorate (9056)	NO_3-N (9056)	NO_3/ NO_2-N (353.2)					
PC-91	2905130175	water		05/12/09	X	X	X	X		X					
PC-86	2905130176	water		05/12/09	X	X	X	X	X						
PC-90	2905130177	water		05/12/09	X	X	X	X	X						
PC-103	2905130178	water		05/12/09	X	X	X	X		X					
MW-K5	2905130179	water		05/12/09	X	X	X	X	X						
PC-56	2905130180	water		05/12/09	X	X	X								
PC-68	2905130181	water		05/12/09	X	X	X								
PC-60	2905130182	water		05/12/09	X	X	X								
PC-58	2905130183	water		05/12/09	X	X	X								
PC-62	2905130184	water		05/12/09	X	X	X								
PC-59	2905130185	water		05/12/09	X	X	X								
PC-98R	2905130186	water		05/12/09	X	X	X								
MW-K4	2905130187	water		05/12/09	X	X	X								
ARP-7	2905130188	water		05/12/09	X	X	X								
M-87	2905130189	water		05/12/09	X	X	X								
PC-97	2905130190	water		05/12/09	X	X	X								
ARP-6B	2905130191	water		05/12/09	X	X	X								
ARP-5A	2905130192	water		05/12/09	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#: 270704 **VALIDATION SAMPLE TABLE** **LDC#:** 21041G

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	Chlorate (9056)	NO_3-N (9056)	NO_3/ NO_2-N (353.2)					
ARP-4A	2905130193	water		05/12/09	X	X	X								
PC-53	2905130194	water		05/12/09	X	X	X								
PC-91MS	2905130175MS	water	MS	05/12/09		X									
PC-91MSD	2905130175MSD	water	MSD	05/12/09		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

SDG#: 270708 **VALIDATION SAMPLE TABLE** **LDC#:** 21040Z

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
HMW16	2905130203	water		05/12/09		X	X								
PC-24	2905130204	water		05/12/09	X	X	X								
PC-50	2905130205	water		05/12/09	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#: 270794 **VALIDATION SAMPLE TABLE** **LDC#:** 21041H

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-101R	2905140258	water		05/13/09	X	X	X								
PC-18	2905140259	water		05/13/09	X	X	X								
PC-55	2905140260	water		05/13/09	X	X	X								
ARP-1	2905140261	water		05/13/09	X	X	X								
L-635	2905140262	water		05/13/09	X	X	X								
PC-92	2905140263	water		05/13/09	X	X	X								
PC-122	2905140264	water		05/13/09	X	X	X								
PC-92DUP	2905140263DUP	water	DUP	05/13/09			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

SDG#: 270815 **VALIDATION SAMPLE TABLE** **LDC#:** 21041A

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-65	2905150035	water		05/13/09	X	X	X								
PC-66	2905150036	water		05/13/09	X	X	X								
PC-67	2905150037	water		05/13/09	X	X	X								
PC-28	2905150038	water		05/13/09	X	X	X								
PC-31	2905150039	water		05/13/09	X	X	X								
PC-40	2905150040	water		05/13/09	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

SDG#: 270845 **VALIDATION SAMPLE TABLE** **LDC#:** 21041I

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	Chlorate (9056)	NO_3-N (9056)						
H-58A	290516004	water		05/14/09	X	X	X								
H-48	290516005	water		05/14/09	X	X	X								
MC-65	290516006	water		05/14/09	X	X	X								
PC-21A	290516007	water		05/14/09	X	X	X	X	X						
MC-6	290516008	water		05/14/09		X	X								
MC-7	290516009	water		05/14/09		X	X								
MC-69	290516010	water		05/14/09		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

SDG#: 270857 **VALIDATION SAMPLE TABLE** **LDC#:** 21041B

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
MC-3	2905160043	water		05/15/09	X	X									
MC-29	2905160044	water		05/15/09	X	X									
MC-51	2905160045	water		05/15/09	X	X									
MC-50	2905160046	water		05/15/09	X	X									
MC-45	2905160047	water		05/15/09	X	X									
MC-97	2905160048	water		05/15/09	X	X									
MC-93	2905160049	water		05/15/09	X	X									
MC-3DUP	2905160043DUP	water	DUP	05/15/09		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

SDG#: 270989 **VALIDATION SAMPLE TABLE** **LDC#:** 21041J

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	Chlorate (9056)	NO_3-N (9056)						
FB0151909	2905200126	water	FB	05/19/09	X	X									
HSS	2905200127	water		05/19/09		X	X								
EB051909	2905200128	water	EB	05/19/09		X	X								
FB051909-2	2905200129	water	FB	05/19/09	X	X									
PC-82	2905200139	water		05/19/09		X	X	X	X						
FB051909-2MS	2905200129MS	water	MS	05/19/09	X										
FB051909-2MSD	2905200129MSD	water	MSD	05/19/09	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

SDG#: 270992 **VALIDATION SAMPLE TABLE** **LDC#:** 21041K

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	Chlorate (9056)	NO_3-N (9056)	NO_3/ NO_2-N (353.2)					
M-39	2905200140	water		05/19/09	X	X	X	X		X					
FB M-39	2905200141	water	FB	05/19/09	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

SDG#: 271048 **VALIDATION SAMPLE TABLE** **LDC#:** 21041C

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-64	2905210058	water		05/20/09	X	X	X								
FB052009	2905210060	water	FB	05/20/09	X	X	X								
EB052009	2905210061	water	EB	05/20/09	X	X	X								
M-65	2905210062	water		05/20/09	X	X	X								
M-134	2905210063	water	FD	05/20/09	X	X	X								
DUPLICATE	2905210064	water	FD	05/20/09	X	X	X								
PC-64DUP	2905210058DUP	water	DUP	05/20/09			X								
FB052009MS	2905210060MS	water	MS	05/20/09	X										
FB052009MSD	2905210060MSD	water	MSD	05/20/09	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

SDG#: 271066 **VALIDATION SAMPLE TABLE** **LDC#:** 21041U

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
CLDR-2	2905210121	water		05/20/09	X	X	X								
M-130	2905210124	water		05/20/09	X	X	X								
M-129	2905210125	water		05/20/09	X	X	X								
M-67	2905210126	water		05/20/09	X	X	X								
M-66	2905210127	water		05/20/09	X	X	X								
FB-CLDR-2	2905210128	water	FB	05/20/09	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#: 271121 **VALIDATION SAMPLE TABLE** **LDC#:** 21041D

Project Name: Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-64	2905220113	water		05/21/09	X	X	X								
M-136	2905220114	water		05/21/09	X	X	X								
MW-16	2905220115	water		05/21/09	X	X	X								
FB052109	2905220116	water	FB	05/21/09	X	X	X								
EB052109	2905220117	water	EB	05/21/09	X	X	X								
MW-132	2905220118	water	FD	05/21/09	X	X	X								
MW-133	2905220119	water		05/21/09	X	X	X								
M-126	2905220120	water		05/21/09	X	X	X								
M-127	2905220121	water		05/21/09	X	X	X								
DUPLICATE	2905220122	water	FD	05/21/09	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#: 271160 **VALIDATION SAMPLE TABLE** **LDC#:** 21041L

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-125	2905260003	water	FD	05/22/09		X	X								
M-128	2905260004	water		05/22/09		X	X								
M-124	2905260005	water		05/22/09	X	X	X								
FB052209	2905260006	water	FB	05/22/09		X	X								
M-123	2905260007	water		05/22/09		X	X								
DUPLICATE	2905260008	water	FD	05/22/09		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#: 271248 **VALIDATION SAMPLE TABLE** **LDC#:** 21041M

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
HM-2	2905270103	water		05/26/09		X	X								
M-111A	2905270104	water		05/26/09	X	X	X								
FB052609	2905270105	water	FB	05/26/09		X	X								
M-142	2905270106	water	FD	05/26/09		X	X								
EB052609	2905270107	water	EB	05/26/09		X	X								
DUPLICATE	2905270109	water	FD	05/26/09		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#: 271325	VALIDATION SAMPLE TABLE														LDC#: 21041E
Project Name: Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	**Lab ID #**	**Matrix**	**QC Type**	**Date Collected**	**CLO_4 (314.0)**	**TDS (160.1)**									
AA-01	2905290074	water		05/28/09	X	X									
AA-01DUP	2905290074DUP	water	DUP	05/28/09		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

SDG#: 271337 **VALIDATION SAMPLE TABLE** **LDC#:** 21041R

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	NO_3-N (300.0)								
TR-2	2905300001	water		05/29/09	X	X	X	X								
TR-5	2905300002	water		05/29/09	X	X	X	X								
TR-6	2905300003	water		05/29/09	X	X	X	X								
TR-7	2905300004	water		05/29/09	X	X	X	X								
FB052909	2905300005	water	FB	05/29/09		X	X									
TR-9	2905300008	water		05/29/09	X	X	X	X								
TR-8	2905300009	water		05/29/09	X	X	X	X								
TR-2MS	2905300001MS	water	MS	05/29/09				X								
TR-2MSD	2905300001MSD	water	MSD	05/29/09				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

SDG#: 271400 **VALIDATION SAMPLE TABLE** **LDC#:** 21041N

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	NO_3-N (300.0)							
TR-11	2906020040	water		06/01/09	X	X	X	X							
TR-12	2906020041	water		06/01/09	X	X	X	X							
TR-1	2906020042	water		06/01/09	X	X	X	X							
TR-10	2906020043	water		06/01/09	X	X	X	X							
FB060109	2906020044	water	FB	06/01/09	X	X	X	X							
M-103	2906020045	water	FD	06/01/09	X	X	X	X							
M-117	2906020046	water		06/01/09	X	X	X	X							
M-118	2906020047	water		06/01/09	X	X	X	X							
DUPLICATE	2906020048	water	FD	06/01/09	X	X	X	X							
TR-12MS	2906020041MS	water	MS	06/01/09				X							
TR-12MSD	2906020041MSD	water	MSD	06/01/09				X							
FB060109MS	2906020044MS	water	MS	06/01/09	X										
FB060109MSD	2906020044MSD	water	MSD	06/01/09	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

SDG#: 271465 **VALIDATION SAMPLE TABLE** **LDC#:** 21041O

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	NO_3-N (300.0)							
M-121	2906030033	water		06/02/09	X	X	X								
M-120	2906030034	water		06/02/09	X	X	X								
FB060209	2906030035	water	FB	06/02/09	X	X	X								
TR-4	2906030036	water	FD	06/02/09	X	X	X	X							
DUPLICATE	2906030037	water	FD	06/02/09	X	X	X								
DUPLICATEMS	2906030037MS	water	MS	06/02/09	X										
DUPLICATEMSD	2906030037MSD	water	MSD	06/02/09	X										
DUPLICATEDUP	2906030037DUP	water	DUP	06/02/09			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

SDG#: 271624 **VALIDATION SAMPLE TABLE** **LDC#:** 21041P

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)	NO_3-N (300.0)							
TR-3	2906060030	water		06/04/09	X	X	X	X							
H-11	2906060032	water	FD	06/04/09		X	X								
FB060409	2906060033	water	FB	06/04/09		X	X								
DUPLICATE	2906060034	water	FD	06/04/09		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#: 271687 **VALIDATION SAMPLE TABLE** **LDC#:** 21041V

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-7B	2906090099	water		06/08/09	X	X	X								
M-7BDUP	2906090099DUP	water	DUP	06/08/09			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

SDG#: 271731 **VALIDATION SAMPLE TABLE** **LDC#:** 21041S

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	CLO_4 (314.0)	TDS (160.1)									
ART-1	2906090172	water		06/08/09	X	X									
ART-2	2906090174	water		06/08/09	X	X									
ART-3	2906090175	water		06/08/09	X	X									
ART-4	2906090176	water		06/08/09	X	X									
ART-6	2906090177	water		06/08/09	X	X									
ART-7	2906090178	water		06/08/09	X	X									
ART-8	2906090179	water		06/08/09	X	X									
PC-99R2/R3	2906090180	water		06/08/09	X	X									
PC-115R	2906090181	water		06/08/09	X	X									
PC-116R	2906090182	water		06/08/09	X	X									
SF-1	2906090183	water		06/08/09	X	X									
PC-117	2906090184	water		06/08/09	X	X									
PC-118	2906090185	water		06/08/09	X	X									
PC-119	2906090186	water		06/08/09	X	X									
PC-120	2906090187	water		06/08/09	X	X									
PC-121	2906090188	water		06/08/09	X	X									
PC-133	2906090189	water		06/08/09	X	X									
ART-9	2906090190	water		06/08/09	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#: 271791 **VALIDATION SAMPLE TABLE** **LDC#:** 21041W

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
H-28A	2906100166	water		06/09/09	X	X	X								
H-28ADUP	2906100166DUP	water	DUP	06/09/09			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

SDG#: 271832 **VALIDATION SAMPLE TABLE** **LDC#:** 21041X

Project Name: 2009 Annual Remedial 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	2906110044	water		06/09/09		X	X								
PC-98R	2906110045	water		06/09/09		X	X								
PC-86	2906110046	water		06/09/09		X	X								
PC-90	2906110047	water		06/09/09		X	X								
PC-56	2906110048	water		06/09/09		X	X								
PC-58	2906110049	water		06/09/09		X	X								
PC-59	2906110050	water		06/09/09		X	X								
PC-60	2906110051	water		06/09/09		X	X								
PC-62	2906110052	water		06/09/09		X	X								
PC-68	2906110053	water		06/09/09		X	X								
PC-122	2906110054	water		06/09/09		X	X								
MW-K4	2906110055	water		06/09/09	X	X	X								
ARP-1	2906110056	water		06/09/09	X	X	X								
ARP-4A	2906110057	water		06/09/09		X	X								
ARP-5A	2906110058	water		06/09/09		X	X								
ARP-6B	2906110059	water		06/09/09		X	X								
ARP-7	2906110060	water		06/09/09		X	X								
PC-53	2906110061	water		06/09/09		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

SDG#: 271832 **VALIDATION SAMPLE TABLE** **LDC#:** 21041X

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-103	2906110062	water		06/09/09		X	X								
MW-K5	2906110063	water		06/09/09		X	X								
PC-91	2906110064	water		06/09/09		X	X								
PC-97	2906110065	water		06/09/09		X	X								
PC-18	2906110066	water		06/09/09		X	X								
PC-55	2906110067	water		06/09/09		X	X								
PC-101R	2906110068	water		06/09/09		X	X								
L-635	2906110069	water		06/09/09		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

SDG#: 271854 **VALIDATION SAMPLE TABLE** **LDC#:** 21041Y

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-6A	2906110134	water		06/10/09	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

SDG#: 271999	VALIDATION SAMPLE TABLE														LDC#: 21041Z
Project Name: 2009 Annual Remedial Performance Sampling	Parameters/Analytical Method														
Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
MC-53	2906160064	water		06/15/09	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#: 272056 **VALIDATION SAMPLE TABLE** **LDC#:** 21041AA

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
M-29	2906170090	water		06/16/09	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

SDG#: 272306 **VALIDATION SAMPLE TABLE** **LDC#:** 21041BB

Project Name: 2009 Annual Remedial Performance Sampling Parameters/Analytical Method

Client ID #	Lab ID #	Matrix	QC Type	Date Collected	Cr (6010B)	CLO_4 (314.0)	TDS (160.1)								
PC-94	2906270007	water		06/25/09	X	X	X								
PC-2	2906270008	water		06/25/09	X	X	X								
PC-1	2906270009	water		06/25/09	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

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	
258410	MD-4	11/04/08	6010B	7440-47-3	Chromium	0.46	d	mg/l	J	fd	Field Duplicate RPD	45	%
258410	PC-71	11/04/08	6010B	7440-47-3	Chromium	0.73	d	mg/l	J	fd	Field Duplicate RPD	45	%
249779	M-6A	08/05/08	160.1/SM2540C	TDS	Total Dissolved Solids	8100		mg/l	J-	h	Holding Time	13	Days
250139	MD-2	08/07/08	160.1/SM2540C	TDS	Total Dissolved Solids	958		mg/l	J-	h	Holding Time	43	Days
251027	PC-55	08/11/08	160.1/SM2540C	TDS	Total Dissolved Solids	7400		mg/l	J	l,ld	LCS %R	77.4	%
											Lab Dup RPD	13.7	%
251181	ART-6	08/18/08	160.1/SM2540C	TDS	Total Dissolved Solids	9550		mg/l	J+	l	LCS %R	125.7	%
253362	ART-7	09/08/08	160.1/SM2540C	TDS	Total Dissolved Solids	8650		mg/l	J-	h	Holding Time	11	Days
253834	ARP-1	09/09/08	160.1/SM2540C	TDS	Total Dissolved Solids	7200		mg/l	J-	h	Holding Time	13	Days
256589	ART-1	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	7500		mg/l	J+	l	LCS %R	125.7	%
256589	ART-2	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	9680		mg/l	J+	l	LCS %R	125.7	%
256589	ART-3	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	8500		mg/l	J+	l	LCS %R	125.7	%
256589	ART-6	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	8000		mg/l	J+	l	LCS %R	125.7	%
256589	ART-7	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	10400		mg/l	J+	l	LCS %R	125.7	%
256589	ART-8	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	9760		mg/l	J+	l	LCS %R	125.7	%
256589	ART-9	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	8090		mg/l	J+	l	LCS %R	125.7	%
256589	PC-115R	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	4560		mg/l	J+	l	LCS %R	125.7	%
256589	PC-116R	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	4300		mg/l	J+	l	LCS %R	125.7	%
256589	PC-117	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	3140		mg/l	J+	l	LCS %R	125.7	%
256589	PC-118	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	4170		mg/l	J+	l	LCS %R	125.7	%
256589	PC-119	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	3060		mg/l	J+	l	LCS %R	125.7	%
256589	PC-120	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	3070		mg/l	J+	l	LCS %R	125.7	%
256589	PC-121	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	2700		mg/l	J+	l	LCS %R	125.7	%
256589	PC-133	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	2620		mg/l	J+	l	LCS %R	125.7	%
256589	PC-99R2/R3	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	4810		mg/l	J+	l	LCS %R	125.7	%
256589	SF-1	10/13/08	160.1/SM2540C	TDS	Total Dissolved Solids	6680		mg/l	J+	l	LCS %R	125.7	%
257010	ARP-1	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	6300		mg/l	J-	h	Holding Time	8	Days
257010	L-635	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	7320		mg/l	J-	h	Holding Time	8	Days
257010	L-637	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	6700		mg/l	J-	h	Holding Time	8	Days
257010	PC-17	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	8180		mg/l	J-	h	Holding Time	8	Days
257010	PC-18	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	9760		mg/l	J-	h	Holding Time	8	Days
257010	PC-55	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	6980		mg/l	J-	h	Holding Time	8	Days
257010	PC-56	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	7050		mg/l	J-	h	Holding Time	8	Days
257010	PC-58	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	3180		mg/l	J-	h	Holding Time	8	Days
257010	PC-59	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	4230		mg/l	J-	h	Holding Time	11	Days
257010	PC-60	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	4280		mg/l	J-	h	Holding Time	8	Days
257010	PC-62	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	3090		mg/l	J-	h	Holding Time	8	Days
257010	PC-68	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	2050		mg/l	J-	h	Holding Time	8	Days
257010	PC-86	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	2560		mg/l	J-	h	Holding Time	8	Days
257010	PC-90	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	4490		mg/l	J-	h	Holding Time	8	Days
257010	PC-91	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	7080		mg/l	J-	h	Holding Time	8	Days
257010	PC-97	10/14/08	160.1/SM2540C	TDS	Total Dissolved Solids	2460		mg/l	J-	h	Holding Time	8	Days
257010	PC-98R	10/15/08	160.1/SM2540C	TDS	Total Dissolved Solids	6660		mg/l	J-	h	Holding Time	8	Days
259063	PC-58	11/10/08	160.1/SM2540C	TDS	Total Dissolved Solids	7510		mg/l	J-	h	Holding Time	9	Days
264727	I-T	02/03/09	160.1/SM2540C	TDS	Total Dissolved Solids	17700		mg/l	J-	h	Holding Time	16	Days
264727	I-U	02/03/09	160.1/SM2540C	TDS	Total Dissolved Solids	9680		mg/l	J-	h	Holding Time	16	Days

Table III. Overall Qualified Results (Continued)

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	
264774	M-66	02/03/09	160.1/SM2540C	TDS	Total Dissolved Solids	16100		mg/l	J-	h	Holding Time	16	Days
265658	M-23	02/17/09	160.1/SM2540C	TDS	Total Dissolved Solids	4980		mg/l	J-	h	Holding Time	36	Days
266452	PC-120	03/02/09	160.1/SM2540C	TDS	Total Dissolved Solids	2720		mg/l	J-	h	Holding Time	13	Days
266452	PC-133	03/02/09	160.1/SM2540C	TDS	Total Dissolved Solids	2550		mg/l	J-	h	Holding Time	13	Days
270339	M-96	05/04/09	160.1/SM2540C	TDS	Total Dissolved Solids	6240		mg/l	J-	h	Holding Time	18	Days
270339	PC-129	05/04/09	160.1/SM2540C	TDS	Total Dissolved Solids	7130		mg/l	J-	h	Holding Time	18	Days
270339	PC-130	05/04/09	160.1/SM2540C	TDS	Total Dissolved Solids	6610		mg/l	J-	h	Holding Time	18	Days
270376	I-F	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	10200		mg/l	J-	h	Holding Time	17	Days
270376	I-G	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	12900		mg/l	J-	h	Holding Time	17	Days
270376	I-M	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	7900		mg/l	J-	h	Holding Time	17	Days
270376	I-N	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	11600		mg/l	J-	h	Holding Time	17	Days
270376	I-Q	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	14800		mg/l	J-	h	Holding Time	17	Days
270376	I-R	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	6850		mg/l	J-	h	Holding Time	17	Days
270376	I-U	05/05/09	160.1/SM2540C	TDS	Total Dissolved Solids	17700		mg/l	J-	h	Holding Time	15	Days
270439	M-31A	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	7810		mg/l	J-	h	Holding Time	16	Days
270439	M-33	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	4020		mg/l	J-	h	Holding Time	16	Days
270439	M-34	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	9200		mg/l	J-	h	Holding Time	16	Days
270439	M-50	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	15100		mg/l	J-	h	Holding Time	16	Days
270439	MD-5	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	7350		mg/l	J-	h	Holding Time	16	Days
270442	I-I	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	11400		mg/l	J-	h	Holding Time	16	Days
270442	I-V	05/06/09	160.1/SM2540C	TDS	Total Dissolved Solids	13500		mg/l	J-	h	Holding Time	16	Days
270579	M-2A	05/08/09	160.1/SM2540C	TDS	Total Dissolved Solids	11300		mg/l	J-	h	Holding Time	14	Days
270628	ART-6	05/11/09	160.1/SM2540C	TDS	Total Dissolved Solids	7750		mg/l	J-	h	Holding Time	45	Days
270628	PC-119	05/11/09	160.1/SM2540C	TDS	Total Dissolved Solids	3410		mg/l	J-	h	Holding Time	11	Days
270708	HMW-16	05/12/09	160.1/SM2540C	TDS	Total Dissolved Solids	5990		mg/l	J-	h	Holding Time	8	Days
270708	PC-24	05/12/09	160.1/SM2540C	TDS	Total Dissolved Solids	9800		mg/l	J-	h	Holding Time	8	Days
270708	PC-50	05/12/09	160.1/SM2540C	TDS	Total Dissolved Solids	10500		mg/l	J-	h	Holding Time	8	Days
270845	H-48	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	22900		mg/l	J-	h	Holding Time	23	Days
270845	H-58A	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	11800		mg/l	J-	h	Holding Time	23	Days
270845	MC-6	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	13200		mg/l	J-	h	Holding Time	23	Days
270845	MC-65	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	10800		mg/l	J-	h	Holding Time	23	Days
270845	MC-69	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	11700		mg/l	J-	h	Holding Time	23	Days
270845	MC-7	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	5200		mg/l	J-	h	Holding Time	23	Days
270845	PC-21A	05/14/09	160.1/SM2540C	TDS	Total Dissolved Solids	14600		mg/l	J-	h	Holding Time	23	Days
270992	M-39	05/19/09	160.1/SM2540C	TDS	Total Dissolved Solids	7760		mg/l	J-	h	Holding Time	14	Days
271048	M-65	05/20/09	160.1/SM2540C	TDS	Total Dissolved Solids	16400		mg/l	J-	h	Holding Time	24	Days
271066	M-66	05/20/09	160.1/SM2540C	TDS	Total Dissolved Solids	18100		mg/l	J-	h	Holding Time	36	Days
271066	M-67	05/20/09	160.1/SM2540C	TDS	Total Dissolved Solids	7710		mg/l	J-	h	Holding Time	36	Days
270531	M-10	05/07/09	300.0	NO3	Nitrate (as N)	2.5	ud	mg/l	R	h	Holding Time	7	Days
250388	PC-120	08/11/08	314.0	14797-73-0	Perchlorate	2760	d	ug/l	J+	l	LCS %R	129.0	%
258563	M-92	11/05/08	314.0	14797-73-0	Perchlorate	884	d	ug/l	J+	be	Equipment Blank	127	ug/L
270369	M-5A	05/05/09	314.0	14797-73-0	Perchlorate	397	d	ug/l	J+	be	Equipment Blank	159	ug/L
270564	PC-112	05/07/09	314.0	14797-73-0	Perchlorate	8	ud	ug/l	UJ	h	Holding Time	32	Days
270567	M-10	05/07/09	353.2	NO3/NO2	Nitrate/Nitrite	2.4		mg/l	J-	h	Holding Time	43	Days
270567	M-36	05/07/09	353.2	NO3/NO2	Nitrate/Nitrite	52.7	d	mg/l	J-	h	Holding Time	43	Days
270567	MD-2	05/07/09	353.2	NO3/NO2	Nitrate/Nitrite	51.4	d	mg/l	J-	h	Holding Time	43	Days

Table III. Overall Qualified Results (Continued)

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	
249697	FB-1	08/04/08	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	32	Hours
249697	M-44	08/04/08	7196	18540-29-9	Chromium-hexavalent	0.81	d	mg/l	J-	h	Holding Time	32	Hours
249697	M-95	08/04/08	7196	18540-29-9	Chromium-hexavalent	1.3	d	mg/l	J-	h	Holding Time	31.5	Hours
249949	EB-1	08/05/08	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	31.75	Hours
249949	M-37	08/05/08	7196	18540-29-9	Chromium-hexavalent	0.033		mg/l	J-	h	Holding Time	31.75	Hours
250101	EB-2	08/06/08	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	35.5	Hours
250101	M-11	08/06/08	7196	18540-29-9	Chromium-hexavalent	3.16	d	mg/l	J-	h	Holding Time	33	Hours
250101	M-12A	08/06/08	7196	18540-29-9	Chromium-hexavalent	14.2	d	mg/l	J-	h	Holding Time	33.75	Hours
250101	MD-1	08/06/08	7196	18540-29-9	Chromium-hexavalent	3.22	d	mg/l	J-	h	Holding Time	53.5	Hours
250139	M-10	08/07/08	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	29.5	Hours
250139	M-100	08/07/08	7196	18540-29-9	Chromium-hexavalent	0.277		mg/l	J-	h	Holding Time	31.25	Hours
250139	M-36	08/07/08	7196	18540-29-9	Chromium-hexavalent	37.4	d	mg/l	J-	h	Holding Time	30.5	Hours
250139	M-84	08/07/08	7196	18540-29-9	Chromium-hexavalent	0.065		mg/l	J-	h	Holding Time	31	Hours
250139	MD-2	08/07/08	7196	18540-29-9	Chromium-hexavalent	0.07		mg/l	J-	h	Holding Time	31	Hours
258305	M-95	11/03/08	7196	18540-29-9	Chromium-hexavalent	1.22	d	mg/l	J-	h	Holding Time	31.25	Hours
258410	EB-1	11/04/08	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	R	h	Holding Time	80	Hours
258410	M-37	11/04/08	7196	18540-29-9	Chromium-hexavalent	0.02		mg/l	J-	h	Holding Time	75	Hours
258563	M-10	11/05/08	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	47.25	Hours
258563	EB-2	11/05/08	7196	18540-29-9	Chromium-hexavalent	0.017		mg/l	J-	h	Holding Time	52	Hours
258563	M-11	11/05/08	7196	18540-29-9	Chromium-hexavalent	3.38	d	mg/l	J-	h	Holding Time	49.75	Hours
258563	M-84	11/05/08	7196	18540-29-9	Chromium-hexavalent	0.056		mg/l	J	be,h	Equipment Blank	0.017	mg/L
											Holding Time	50.5	Hours
258563	MD-1	11/05/08	7196	18540-29-9	Chromium-hexavalent	3.58	d	mg/l	J-	h	Holding Time	49.75	Hours
258623	M-100	11/06/08	7196	18540-29-9	Chromium-hexavalent	0.259		mg/l	J-	h	Holding Time	29.75	Hours
258623	M-12A	11/06/08	7196	18540-29-9	Chromium-hexavalent	13.7	d	mg/l	J-	h	Holding Time	30	Hours
258623	M-36	11/06/08	7196	18540-29-9	Chromium-hexavalent	36.6	d	mg/l	J-	h	Holding Time	29.5	Hours
258623	MD-2	11/06/08	7196	18540-29-9	Chromium-hexavalent	14.7	d	mg/l	J-	h	Holding Time	30	Hours
264580	FB-1	02/02/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	35.75	Hours
264580	M-95	02/02/09	7196	18540-29-9	Chromium-hexavalent	1.3	d	mg/l	J-	h	Holding Time	32.75	Hours
264580	MD-1	02/02/09	7196	18540-29-9	Chromium-hexavalent	1.26	d	mg/l	J-	h	Holding Time	32.75	Hours
264774	EB-1	02/03/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	31.25	Hours
264774	M-37	02/03/09	7196	18540-29-9	Chromium-hexavalent	0.036		mg/l	J-	h	Holding Time	31.5	Hours
264820	EB-2	02/04/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	32	Hours
264820	M-10	02/04/09	7196	18540-29-9	Chromium-hexavalent	0.006		mg/l	J-	h	Holding Time	30.5	Hours
264820	M-12A	02/04/09	7196	18540-29-9	Chromium-hexavalent	12.3	d	mg/l	J-	h	Holding Time	31.5	Hours
264946	M-100	02/05/09	7196	18540-29-9	Chromium-hexavalent	0.172		mg/l	J-	h	Holding Time	30.25	Hours
264946	M-11	02/05/09	7196	18540-29-9	Chromium-hexavalent	3.92	d	mg/l	J-	h	Holding Time	30.5	Hours
264946	M-36	02/05/09	7196	18540-29-9	Chromium-hexavalent	38	d	mg/l	J-	h	Holding Time	29.5	Hours
264946	M-84	02/05/09	7196	18540-29-9	Chromium-hexavalent	0.039		mg/l	J-	h	Holding Time	29.75	Hours
264946	MD-2	02/05/09	7196	18540-29-9	Chromium-hexavalent	0.044		mg/l	J-	h	Holding Time	29.75	Hours
270339	FB-1	05/04/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	33.75	Hours
270339	M-44	05/04/09	7196	18540-29-9	Chromium-hexavalent	0.835	d	mg/l	J-	h	Holding Time	32.25	Hours
270339	M-95	05/04/09	7196	18540-29-9	Chromium-hexavalent	1.14	d	mg/l	J-	h	Holding Time	32.75	Hours
270339	MD-1	05/04/09	7196	18540-29-9	Chromium-hexavalent	1.14	d	mg/l	J-	h	Holding Time	32.75	Hours
270390	EB-1	05/05/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	31.5	Hours
270390	M-37	05/05/09	7196	18540-29-9	Chromium-hexavalent	0.006		mg/l	J-	h	Holding Time	31.5	Hours

Table III. Overall Qualified Results (Continued)

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	
270439	EB-2	05/06/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	27.5	Hours
270439	M-11	05/06/09	7196	18540-29-9	Chromium-hexavalent	3.72	d	mg/l	J-	h	Holding Time	24.5	Hours
270567	M-10	05/07/09	7196	18540-29-9	Chromium-hexavalent	0.005	u	mg/l	UJ	h	Holding Time	31.25	Hours
270567	M-100	05/07/09	7196	18540-29-9	Chromium-hexavalent	0.148		mg/l	J-	h	Holding Time	33	Hours
270567	M-36	05/07/09	7196	18540-29-9	Chromium-hexavalent	35		mg/l	J-	h	Holding Time	32.5	Hours
270567	M-84	05/07/09	7196	18540-29-9	Chromium-hexavalent	0.12		mg/l	J-	h	Holding Time	32.75	Hours
270567	MD-2	05/07/09	7196	18540-29-9	Chromium-hexavalent	35		mg/l	J-	h	Holding Time	32.5	Hours
270339	PC-124	05/04/09	9056	NO3	Nitrate (as N)	20	d	mg/l	J-	h	Holding Time	51	Hours
270339	PC-130	05/04/09	9056	NO3	Nitrate (as N)	34	d	mg/l	J-	h	Holding Time	51	Hours

ATTACHMENT A

Metals Data Validation Report

Metals by EPA SW 846 Method 6010B for Chromium

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 chromium was found in the initial, continuing and preparation blanks.

Samples EB-1 (from SDGs 249949, 258410, 264774, and 270390), EB-2 (from SDGs 250101, 258623, 264820, and 270439,), EB052009 (from SDG 271048), and EB052109 (from SDG 271121) were identified as equipment blanks. No chromium was found in these blanks.

Samples FB-1 (from SDGs 249697, 258305, 264580, and 270339), FB0151909, FB051909-2 (both from SDG 270989), FB M-39 (from SDG 270992), FB052009 (from SDG 271048), FB-CLDR-2 (from SDG 271066), FB052109 (from SDG 271121), FB060109 (from SDG 271400), and FB060209 (from SDG 271465) were identified as field blanks. No chromium was found in these blanks.

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 was met for samples on which a Stage 4 review was performed.

The 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) were within QC limits.

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.

ICP serial dilution was not performed for all other SDGs.

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-71 and MD-3 and samples M-23 and MD-4 (both pairs from SDG 249697), samples M-65 and MD-5 (from SDG 249949), samples M-11 and MD-1 (from SDG 250101), samples M-84 and MD-2 (from SDG 250139), samples PC-128 and MD-3 (from SDG 258305), samples PC-71 and MD-4 (from SDG 258410), samples M-11 and MD-1 (from SDG 258563), and samples M-12A and MD-2 (from SDG 258623) samples M-95 and MD-1 (from SDGs 264580 and 270339), samples PC-37 and MD-3 (from SDG 264580), samples M-25 and MD-4 (from SDG 264774), samples M-84 and MD-2 (from SDG 264946), samples PC-54 and MD-3 (from SDG 270339), samples M-57A and MD-4 (from SDG 270390), samples M-34 and MD-5 (from SDG 270439), samples M-36 and MD-2 (from SDG 270567), samples M-134 and DUPLICATE (from SDG 271048), samples MW-132 and DUPLICATE (from SDG 271121), samples M-103 and DUPLICATE (from SDG 271400), and samples TR-4 and DUPLICATE (from SDG 271465) were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-71	MD-3				
249697	Chromium	0.39	0.39	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-23	MD-4				
249697	Chromium	0.77	0.80	4 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-65	MD-5				
249949	Chromium	35	35	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-11	MD-1				
250101	Chromium	3.1	3.0	3 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-84	MD-2				
250139	Chromium	0.065	0.067	3 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-128	MD-3				
258305	Chromium	0.16	0.16	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-71	MD-4				
258410	Chromium	0. 73	0.46	45 (≤30)	-	J (all detects)	A

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-11	MD-1				
258563	Chromium	3.6	3.7	3 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-12A	MD-2				
258623	Chromium	13	13	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-95	MD-1				
264580	Chromium	1.2	1.2	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-37	MD-3				
264580	Chromium	0.20	0.20	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/l)		RPD (Limits)	Difference (Limits)	Flag	A or P
		MD-25	MD-4				
264774	Chromium	13	13	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		MD-84	MD-2				
264946	Chromium	0.042	0.041	-	0.001 (≤0.020)	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		MD-95	MD-1				
270339	Chromium	1.1	1.0	10 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-54**	MD-3				
270339	Chromium	1.8	1.8	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-57A	MD-4				
270390	Chromium	0.075	0.076	-	0.001 (≤0.020)	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-34	MD-5				
270439	Chromium	0.075	0.076	-	0.001 (≤0.020)	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-36	MD-2				
270567	Chromium	32	32	0 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-134	DUPLICATE				
271048	Chromium	0.10	0.12	18 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-132	DUPLICATE				
271121	Chromium	0.081	0.094	15 (≤30)	-	-	-

SDG	Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
		TR-4	DUPLICATE				
271465	Chromium	0.030	0.028	-	0.002 (≤0.010)	-	-

2008 - 2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDGs 249697, 249779, 249900, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265481, 265658, 270339, 270369, 270376, 270390, 270439, 270442, 270531, 270567, 270578, 270579, 270639, 270708, 270815, 271048, 271121, 270704, 270794, 270845, 270989, 270992, 271160, 271248, 271400, 271465, 271624, 271337, 270628, 271066, 271687, 271791, 271832, 271854, 271999

SDG	Sample	Analyte	Flag	A or P	Reason
258410	PC-71 MD-4	Chromium	J (all detects)	A	Field duplicates (RPD)

2008 - 2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDGs 249697, 249779, 249900, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265481, 265658, 270339, 270369, 270376, 270390, 270439, 270442, 270531, 270567, 270578, 270579, 270639, 270708, 270815, 271048, 271121, 270704, 270794, 270845, 270989, 270992, 271160, 271248, 271400, 271465, 271624, 271337, 270628, 271066, 271687, 271791, 271832, 271854, 271999

No Sample Data Qualified in these SDGs

2008 - 2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDGs 249697, 249779, 249900, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265481, 265658, 270339, 270369, 270376, 270390, 270439, 270442, 270531, 270567, 270578, 270579, 270639, 270708, 270815, 271048, 271121, 270704, 270794, 270845, 270989, 270992, 271160, 271248, 271400, 271465, 271624, 271337, 270628, 271066, 271687, 271791, 271832, 271854, 271999

No Sample Data Qualified in these SDGs

ATTACHMENT B

Wet Chemistry Data Validation Report

Total Dissolved Solids by EPA Method 160.1 and Standard Method 2540C
Nitrate as Nitrogen by EPA Method 300.0
Perchlorate by EPA Method 314.0
Nitrate/Nitrite as Nitrogen by EPA Method 353.2
Hexavalent Chromium by EPA SW 846 Method 7196
Chlorate and Nitrate as Nitrogen by EPA SW 846 Method 9056

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
249697 264774 264820 270390	M-37 M-12A M-95 M-37 EB-1	Hexavalent chromium	31.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
249697 264820	EB-2 M-44 FB-1 FB-1MS FB-1MSD	Hexavalent chromium	32 hours	24 hours	J- (all detects) UJ (all non-detects)	P
249779 253834 266452	PC-120 PC-133 M-6A ARP-1	Total dissolved solids	13 days	7 days	J- (all detects) UJ (all non-detects)	P
249949	M-37 EB-1	Hexavalent chromium	31.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
250101	MD-1	Hexavalent chromium	53.5 hours	24 hours	J- (all detects) R (all non-detects)	P
250101	EB-2	Hexavalent chromium	35.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
250101 270339	FB-1 M-12A	Hexavalent chromium	33.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
250101 270567	M-100 M-11	Hexavalent chromium	33 hours	24 hours	J- (all detects) UJ (all non-detects)	P
250139	MD-2	Total dissolved solids	43 days	7 days	J- (all detects) R (all non-detects)	P
250139	M-84 MD-2	Hexavalent chromium	31 hours	24 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
250139 258305 264774 270567	EB-1 M-10 M-100 M-95	Hexavalent chromium	31.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
250139 258623 264946	M-36 M-10	Hexavalent chromium	29.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
250139 264820 264946	M-10 M-11 M-36	Hexavalent chromium	30.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
253362 257010 271731	PC-119 ART-7 PC-59	Total dissolved solids	11 days	7 days	J- (all detects) UJ (all non-detects)	P
257010 270708	HMW16 PC-24 PC-50 PC-98R PC-86 PC-90 PC-56 PC-58 PC-60 PC-62 PC-68 ARP-1 PC-91 PC-97 PC-17 PC-18 PC-55 L-635 L-637	Total dissolved solids	8 days	7 days	J- (all detects) UJ (all non-detects)	P
258410	EB-1	Hexavalent chromium	80 hours	24 hours	J- (all detects) R (all non-detects)	P
258410	M-37	Hexavalent chromium	75 hours	24 hours	J- (all detects) R (all non-detects)	P
258563	M-84	Hexavalent chromium	50.5 hours	24 hours	J- (all detects) R (all non-detects)	P
258563	M-10	Hexavalent chromium	47.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
258563	EB-2	Hexavalent chromium	52 hours	24 hours	J- (all detects) R (all non-detects)	P
258563	M-11 MD-1	Hexavalent chromium	49.75 hours	24 hours	J- (all detects) R (all non-detects)	P
258623	M-12A MD-2	Hexavalent chromium	30 hours	24 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
258623 264946	M-84 MD-2 M-100	Hexavalent chromium	29.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
259063	PC-58	Total dissolved solids	9 days	7 days	J- (all detects) UJ (all non-detects)	P
264580 270339 270567	M-95 MD-1 M-95 MD-1 MD-1MS MD-1MSD M-84	Hexavalent chromium	32.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
264580	FB-1	Hexavalent chromium	35.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
264727	I-U I-T	Total dissolved solids	16 days	7 days	J- (all detects) R (all non-detects)	A
264774 270439 270442	M-66 M-33 M-31A M-50 M-34 MD-5 I-I I-V	Total dissolved solids	16 days	7 days	J- (all detects) R (all non-detects)	P
264946	M-100	Hexavalent chromium	30.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
265658 271066	M-23 M-67 M-66	Total dissolved solids	36 days	7 days	J- (all detects) R (all non-detects)	P
270339	PC-129 PC-130 M-96 PC-129DUP	Total dissolved solids	18 days	7 days	J- (all detects) R (all non-detects)	A
270339	M-44	Hexavalent chromium	32.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
270339	PC-124 PC-130	Nitrate as N	51 hours	48 hours	J- (all detects) UJ (all non-detects)	P
270376	I-U	Total dissolved solids	15 days	7 days	J- (all detects) R (all non-detects)	P
270376	I-G I-Q I-F I-N I-M I-R	Total dissolved solids	17 days	7 days	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
270439	M-11	Hexavalent chromium	24.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
270439	EB-2	Hexavalent chromium	27.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
270442	M-2A	Total dissolved solids	14 days	7 days	J- (all detects) UJ (all non-detects)	A
270531	M-10	Nitrate as N	7 days	48 hours	J- (all detects) R (all non-detects)	P
270564	PC-112	Perchlorate	32 days	28 days	J- (all detects) UJ (all non-detects)	P
270567	M-36 MD-2	Hexavalent chromium	32.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
270567	M-36 M-10 MD-2	Nitrate/Nitrite as N	43 days	28 days	J- (all detects) UJ (all non-detects)	P
270845	H-58A H-48 MC-65 PC-21A MC-6 MC-7 MC-69	Total dissolved solids	23 days	7 days	J- (all detects) R (all non-detects)	P
270992	M-39	Total dissolved solids	14 days	7 days	J- (all detects) UJ (all non-detects)	P
271048	M-65	Total dissolved solids	24 days	7 days	J- (all detects) R (all non-detects)	P
271731	ART-6	Total dissolved solids	45 days	7 days	J- (all detects) R (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.

The balance check was not performed for Total Dissolved Solids in SDG 264727.

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.

The balance check was not performed for Total Dissolved Solids in SDG 264727.

III. Blanks

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

SDG	Method Blank ID	Analyte	Concentration	Associated Samples
256589 261275	PB (prep blank)	Total dissolved solids	6.0 mg/L	ART-4 ARP-1 PC-18 PC-55

SDG	Method Blank ID	Analyte	Concentration	Associated Samples
258563 259063 265481	PB (prep blank)	Total dissolved solids	14 mg/L	PC-103 PC-98R PC-86 PC-90 PC-56 PC-58 PC-59 PC-60 PC-62 PC-68 PC-91 PC-97 PC-18 PC-55 L-635 M-92 M-97 I-K I-J I-Z I-I I-V MD-1 MW-K4 ARP-1 ARP-4A ARP-5A ARP-6B PC-53 PC-103 MW-K5 PC-55 L-635
261012	PB (prep blank)	Total dissolved solids	36 mg/L	ART-1 ART-2 ART-3 ART-4 ART-6 ART-7 ART-8 PC-99R2/R3 PC-115R PC-116R PC-117 PC-118 PC-119 PC-120 PC-121 PC-133 ART-9
264727	MB (prep blank)	Total dissolved solids	12 mg/L	I-P I-H I-G I-Q I-F I-N I-E I-M I-D I-C I-S I-R I-L I-B I-AR
265658	PB (prep blank)	Total dissolved solids	10 mg/L	M-23

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

Samples EB-1 (from SDGs 249949, 258410, 264774, 270390), EB-2 (from SDGs 250101, 258563, 264820, 270439), EB051909 (from SDG 270989), EB052009 (from SDG 271048), EB052109 (from SDG 271121), and EB052609 (from SDG 271248) 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
249900 249949	EB-1	8/5/09	Perchlorate Total dissolved solids	255 ug/L 18 mg/L	I-O I-P I-H 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-AR I-FDUP I-AA M-131 M-64 M-65 M-66 M-79 M-69 M-135 M-99 M-25 M-57A M-37 MD-5
250101 250123	EB-2	8/6/08	Perchlorate	9.8 ug/L	I-Z I-I I-V M-67 M-74 M-73 M-88 M-12A M-11 MD-1 M-92 M-97 M-31A M-50 M-34 M-35 M-19 M-39 M-68 M-61 I-K I-J

SDG	Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
258563	EB-2	11/5/08	Perchlorate Hexavalent chromium	127 ug/L 0.017 mg/L	M-92 M-97 M-31A M-52 M-50 M-34 M-35 M-19 M-39 M-68 M-61 I-K I-J I-Z I-I I-V M-84 M-10 M-11 MD-1
264774	EB-1	2/3/09	Perchlorate	162 ug/L	I-AA M-64 M-65 M-66 M-79 M-69 M-135 M-131 M-57A M-99 M-25 M-37 MD-4
264820	EB-2	2/4/09	Perchlorate	12 ug/L	M-92 M-97 M-31A M-52 M-50 M-34 M-35 M-19 M-39 M-68 M-61 M-67 M-74 M-73 M-88 I-V I-K I-J I-Z I-I M-12A M-10

SDG	Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
270369 270376 270390	EB-1	5/5/09	Perchlorate	159 ug/L	M-5A I-O I-P I-H 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-AR I-AA M-131 M-57A M-79 M-69 M-135 M-25 M-99 M-37 MD-4
270439 270442 270507	EB-2	5/6/09	Perchlorate	70 ug/L	M-92 M-97 M-33 M-31A M-52 M-50 M-21 M-34 M-35 M-19 M-39 M-68 M-74 M-73 M-88 M-11 M-12A M-13 MD-5 I-K I-J I-I I-Z I-V PC-77 PC-74

Samples FB-1 (from SDGs 249697, 258305 264580, 270339), FB0151909 and FB051909-2 (from SDG 270989), FB M-39 (from SDG 270992), FB052009 (from SDG 271048), FB-CLDR-2 (from SDG 271066), FB052109 (from SDG 271121), FB052209 (from SDG 271160), FB052609 (from SDG 271248), FB052909 (from SDG 271337), FB060109 (from SDG 271400), FB060209 (from SDG 271465), and FB060409 (from SDG 271624) were identified as field blanks. No contaminant concentrations were found in these blanks with the following exceptions:

Field Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
FB052009	5/20/09	Perchlorate	4.1 ug/L	PC-64 M-65 M-134 DUPLICATE

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
258563	M-92	Perchlorate	884 ug/L	884J+ ug/L
258563	M-84	Hexavalent chromium	0.056 mg/L	0.056J+ mg/L
270369	M-5A	Perchlorate	397 ug/L	397J+ ug/L

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 with the following exceptions:

SDG	DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
251027	PC-55DUP (PC-55)	Total dissolved solids	13.7 (≤10)	-	J (all detects) UJ (all non-detects)	A

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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
250388	LCS3 (PC-120)	Perchlorate	129.0 (75-125)	-	-	J+ (all detects)	P
251027	LCS (PC-55)	Total dissolved solids	77.4 (80-114)	-	-	J- (all detects) UJ (all non-detects)	P
251181 256589	LCS1 (ART-6 ART-1 ART-2 ART-3 ART-6 ART-7 ART-8 PC-99R2/R3 PC-115R PC-116R SF-1 PC-117 PC-118 PC-119 PC-120 PC-121 PC-133 ART-9)	Total dissolved solids	125.7 (80-114)	-	-	J+ (all detects)	P

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.

Although Total Dissolved Solids (TDS) were detected in sample FB-1 in SDG 264580, the laboratory reported the results as NA due to possible error in sample analysis. The field blank sample should not have high levels of TDS and the Specific Conductance test confirmed that the results did not match.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples PC-71 and MD-3 and samples M-23 and MD-4 (from SDG 249697), samples M-65 and MD-5 (from SDG 249949), samples M-11 and MD-1 (from SDG 250101), samples M-84 and MD-2 (from SDG 250139), samples PC-128 and MD-3 (from SDG 258305), samples PC-71 and MD-4 (from SDG 258410), samples M-11 and MD-1 (from SDG 258563), samples M-12A and MD-2 (from SDG 258623), samples M-95 and MD-1 and PC-37 and MD-3 (from SDG 264580), samples M-25 and MD-4 (from SDG 264774), samples M-84 and MD-2 (from SDG 264946), samples M-95 and MD-1 and samples PC-54 and MD-3 (from SDG 270339), samples M-57A and MD-4 (from SDG 270390), samples M-34 and MD-5 (from SDG 270439), samples M-36 and MD-2 (from SDG 270567), samples M-134 and DUPLICATE (from SDG 271048), samples MW-132 and

DUPLICATE (from SDG 271121), samples M-125 and DUPLICATE (from SDG 271160), samples M-142 and DUPLICATE (from SDG 271248), samples M-103 and DUPLICATE (from SDG 271400), samples TR-4 and DUPLICATE (from SDG 271465), and samples H-11 and DUPLICATE (from SDG 271624) 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)	Flag	A or P
		PC-71**	MD-3				
249697	Total dissolved solids	8270 mg/L	8050 mg/L	3 (≤30)	-	-	-
249697	Perchlorate	468000 ug/L	451000 ug/L	4 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-23**	MD-4				
249697	Total dissolved solids	5260 mg/L	4720 mg/L	11 (≤30)	-	-	-
249697	Perchlorate	493000 ug/L	514000 ug/L	4 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-65	MD-5				
249949	Total dissolved solids	17500 mg/L	18300 mg/L	4 (≤30)	-	-	-
249949	Perchlorate	1410000 ug/L	1400000 ug/L	1 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-11	MD-1				
250101	Total dissolved solids	3260 mg/L	3200 mg/L	2 (≤30)	-	-	-
250101	Perchlorate	43100 ug/L	43400 ug/L	1 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-84	MD-2				
250139	Hexavalent chromium	0.065 mg/L	0.070 mg/L	7 (≤30)	-	-	-
250139	Total dissolved solids	1210 mg/L	958 mg/L	23 (≤30)	-	-	-
250139	Perchlorate	9360 ug/L	9260 ug/L	0 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-128	MD-3				
258305	Total dissolved solids	5620 mg/L	5400 mg/L	4 (≤30)	-	-	-
258305	Perchlorate	187000 ug/L	231000 ug/L	21 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-71	MD-4				
258410	Total dissolved solids	8650 mg/L	7960 mg/L	8 (≤30)	-	-	-
258410	Perchlorate	577000 ug/L	457000 ug/L	19 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-11	MD-1				
258563	Hexavalent chromium	3.38 mg/L	3.58 mg/L	6 (≤30)	-	-	-
258563	Total dissolved solids	3520 mg/L	3620 mg/L	3 (≤30)	-	-	-
258563	Perchlorate	50400 ug/L	48900 ug/L	3 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-12A	MD-2				
258623	Hexavalent chromium	13.7 mg/L	14.7 mg/L	7 (≤30)	-	-	-
258623	Total dissolved solids	8100 mg/L	7950 mg/L	2 (≤30)	-	-	-
258623	Perchlorate	289000 ug/L	288000 ug/L	0 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-95	MD-1				
264580	Hexavalent chromium	1.30 mg/L	1.26 mg/L	3 (≤30)	-	-	-
264580	Total dissolved solids	7510 mg/L	7560 mg/L	1 (≤30)	-	-	-
264580	Perchlorate	478000 ug/L	462000 ug/L	3 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-37	MD-3				
264580	Total dissolved solids	7370 mg/L	6750 mg/L	9 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-37	MD-3				
264580	Perchlorate	324000 ug/L	326000 ug/L	1 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		MD-25	MD-4				
264774	Total dissolved solids	9080 mg/L	9480 mg/L	4 (≤30)	-	-	-
264774	Perchlorate	441000 ug/L	442000 ug/L	0 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-84	MD-2				
264946	Hexavalent chromium	0.039 mg/L	0.044 mg/L	12 (≤30)	-	-	-
264946	Total dissolved solids	980 mg/L	972 mg/L	1 (≤30)	-	-	-
264946	Perchlorate	6970 ug/L	7030 ug/L	1 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-95**	MD-1**				
270339	Total dissolved solids	6950 mg/L	7240 mg/L	4 (≤30)	-	-	-
270339	Hexavalent chromium	1.14 mg/L	1.14 mg/L	0 (≤30)	-	-	-
270339	Perchlorate	445000 ug/L	464000 ug/L	4 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		PC-54**	MD-3				
270339	Total dissolved solids	6050 mg/L	6280 mg/L	4 (≤30)	-	-	-
270339	Perchlorate	226000 ug/L	237000 ug/L	5 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-57A	MD-4				
270390	Total dissolved solids	3260 mg/L	3200 mg/L	2 (≤30)	-	-	-
270390	Perchlorate	26200 ug/L	25200 ug/L	4 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-34	MD-5				
270439	Total dissolved solids	9200 mg/L	7350 mg/L	22 (≤30)	-	-	-
270439	Perchlorate	1500000 ug/L	1580000 ug/L	5 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-36	MD-2				
270567	Chlorate	7040000 ug/L	7420000 ug/L	5 (≤30)	-	-	-
270567	Perchlorate	1560000 ug/L	1450000 ug/L	7 (≤30)	-	-	-
270567	Hexavalent chromium	35.0 mg/L	35.0 mg/L	0 (≤30)	-	-	-
270567	Nitrate/Nitrite as N	52.7 mg/L	51.4 mg/L	2 (≤30)	-	-	-
270567	Total dissolved solids	11700 mg/L	11900 mg/L	2 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-134	DUPLICATE				
271048	Total dissolved solids	3000 mg/L	2850 mg/L	5 (≤30)	-	-	-
271048	Perchlorate	123000 ug/L	125000 ug/L	2 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-13	DUPLICATE				
271121	Total dissolved solids	1482 mg/L	1584 mg/L	7 (≤30)	-	-	-
271121	Perchlorate	7410 ug/L	9670 ug/L	26 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-125	DUPLICATE				
271160	Total dissolved solids	14700 mg/L	15400 mg/L	5 (≤30)	-	-	-
271160	Perchlorate	842 ug/L	812 ug/L	4 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-142	DUPLICATE				
271248	Total dissolved solids	2938 mg/L	2814 mg/L	5 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-142	DUPLICATE				
271248	Perchlorate	24700 ug/L	24800 ug/L	0 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		M-103	DUPLICATE				
271400	Total dissolved solids	1970 mg/L	2000 mg/L	2 (≤30)	-	-	-
271400	Perchlorate	264 ug/L	260 ug/L	2 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		TR-4	DUPLICATE				
271465	Total dissolved solids	874	888	2 (≤30)	-	-	-

SDG	Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
		H-11	DUPLICATE				
271624	Total dissolved solids	634	520	20 (≤30)	-	-	-

2008 - 2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 248147, 249697, 249779, 249900, 249949, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 253362, 253834, 256589, 257010, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 261012, 261275, 263577, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265658, 266452, 267194, 268707, 269377, 270339, 270369, 270376, 270390, 270439, 270442, 270507, 270531, 270564, 270567, 270578, 270579, 270628, 270639, 270704, 270708, 270794, 270815, 270845, 270857, 270989, 270992, 271048, 271066, 271121, 271160, 271248, 271325, 271337, 271400, 271465, 271624, 271687, 271731, 271791, 271832, 271854, 271999

SDG	Sample	Analyte	Flag	A or P	Reason
249697	M-95	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
249949	MD-1				
250101	FB-1				
250139	M-37				
258305	EB-1				
258563	M-12A				
258623	EB-2				
264580	M-10				
264774	M-100				
264820	M-84				
270339	M-36				
270390	M-11				
270439	MD-2				
270567	M-95				
	MD-1				
	M-44				
	FB-1				
	M-37				
	EB-1				
	M-11				
	EB-2				
	M-36				
	M-84				
	M-100				
	M-10				
	MD-2				
	M-95				
	M-44				
	FB-1				
	M-37				
	EB-1				
	M-12A				
	M-11				
	EB-2				
	M-36				
	M-84				
	M-10				
	MD-2				
	M-100				
	M-95				
	M-10				
	M-36				
	M-12A				
	M-100				
	MD-2				

SDG	Sample	Analyte	Flag	A or P	Reason
249779 253362 253834 257010 259063 266452 270708 270992 270628	PC-120 PC-133 HMW16 PC-24 PC-50 M-39 PC-119 M-6A ART-7 ARP-1 PC-98R PC-86 PC-90 PC-56 PC-58 PC-59 PC-60 PC-62 PC-68 ARP-1 PC-91 PC-97 PC-17 PC-18 PC-55 L-635 L-637 PC-58	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times
250101 258410 258563	MD-1 EB-1 M-37 M-84 EB-2 M-11 MD-1	Hexavalent chromium	J- (all detects) R (all non-detects)	P	Technical holding times
250139 264774 265658 270376 270439 270442 271048 270628 271066	M-66 M-23 I-U I-G I-Q I-F I-N I-M I-R M-33 M-31A M-50 M-34 MD-5 I-I I-V M-65 ART-6 M-67 M-66 MD-2	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times
264727 270339	I-U I-T PC-129 PC-130 M-96	Total dissolved solids	J- (all detects) R (all non-detects)	A	Technical holding times
270339	PC-124 PC-130	Nitrate as N	J- (all detects) UJ (all non-detects)	P	Technical holding times

SDG	Sample	Analyte	Flag	A or P	Reason
270531	M-10	Nitrate as N	J- (all detects) R (all non-detects)	P	Technical holding times
270564	PC-112	Perchlorate	J- (all detects) UJ (all non-detects)	P	Technical holding times
270567	M-36 M-10 MD-2	Nitrate/Nitrite as N	J- (all detects) UJ (all non-detects)	P	Technical holding times
270579	M-2A	Total dissolved solids	J- (all detects) UJ (all non-detects)	A	Technical holding times
251027	PC-55	Total dissolved solids	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (RPD)
250388	PC-120	Perchlorate	J+ (all detects)	P	Laboratory control samples (%R)
251027	PC-55	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)
251181 256589	ART-6 ART-1 ART-2 ART-3 ART-6 ART-7 ART-8 PC-99R2/R3 PC-115R PC-116R SF-1 PC-117 PC-118 PC-119 PC-120 PC-121 PC-133 ART-9	Total dissolved solids	J+ (all detects)	P	Laboratory control samples (%R)

2008 - 2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 248147, 249697, 249779, 249900, 249949, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 253362, 253834, 256589, 257010, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 261012, 261275, 263577, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265658, 266452, 267194, 268707, 269377, 270339, 270369, 270376, 270390, 270439, 270442, 270507, 270531, 270564, 270567, 270578, 270579, 270628, 270639, 270704, 270708, 270794, 270815, 270845, 270857, 270989, 270992, 271048, 271066, 271121, 271160, 271248, 271325, 271337, 271400, 271465, 271624, 271687, 271731, 271791, 271832, 271854, 271999

No Sample Data Qualified in these SDGs

2008 - 2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 248147, 249697, 249779, 249900, 249949, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 253362, 253834, 256589, 257010, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 261012, 261275, 263577, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265658, 266452, 267194, 268707, 269377, 270339, 270369, 270376, 270390, 270439, 270442, 270507, 270531, 270564, 270567, 270578, 270579, 270628, 270639, 270704, 270708, 270794, 270815, 270845, 270857, 270989, 270992, 271048, 271066, 271121, 271160, 271248, 271325, 271337, 271400, 271465, 271624, 271687, 271731, 271791, 271832, 271854, 271999

SDG	Sample	Analyte	Modified Final Concentration	A or P
258563	M-92	Perchlorate	884J+ ug/L	A
258563	M-84	Hexavalent chromium	0.056J+ mg/L	A
270369	M-5A	Perchlorate	397J+ ug/L	A

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

August 5, 2009

SUBJECT: 2009 Annual Remedial Performance Sampling, Data Validation

Dear Ms. Crowley,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 19, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 21040:

SDG #	Fraction
263577, 264580, 264598, 264727, 264774, 264820, 264946, 264958, 265481, 265658, 266452, 267194, 268707, 269377, 270339, 270369, 270376, 270390, 270439, 270442, 270507, 270564, 270578, 270579, 270639, 270708	Chromium, Wet Chemistry

The data validation was performed under Stage 2A guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- Region 9 Superfund Data Evaluation/Validation Guidance, NDEP Guidance, May 2006
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

626 pages-DL

Attachment 1

Level 2A/4

LDC #21040 (Tronox LLC, Henderson NV / 2009 Annual Remedial Performance Sampling)

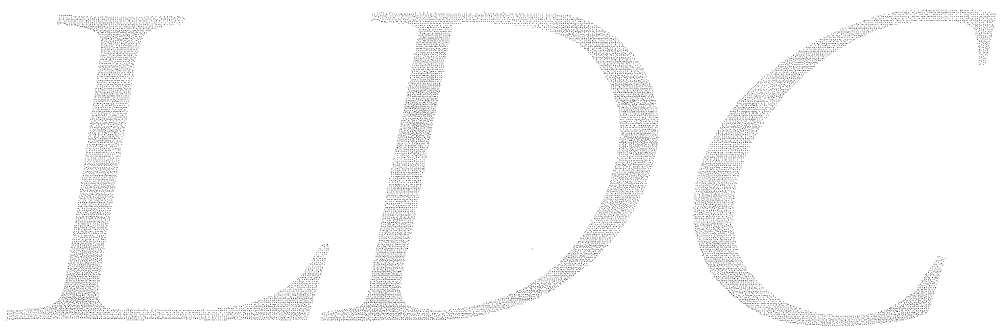
LDC	SDG#	DATE REC'D	DATE DUE	Cr (6010B)		Cr(VI) (7196)		CLO_4 (314.0)		TDS (160.1)		Chlorate (9056)		NO_3-N (9056)																							
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	263577	06/19/09	07/31/09	-	-	-	-	27	0	27	0	-	-	-	-																					
B	264580	06/19/09	07/31/09	22	0	3	0	22	0	21	0	-	-	-	-																					
C	264598	06/19/09	07/31/09	18	0	-	-	18	0	18	0	-	-	-	-																					
D	264727	06/19/09	07/31/09	18	0	-	-	18	0	18	0	-	-	-	-																					
E	264774	06/19/09	07/31/09	14	0	2	0	14	0	14	0	-	-	-	-																					
F	264820	06/19/09	07/31/09	23	0	3	0	23	0	23	0	-	-	-	-																					
G	264946	06/19/09	07/31/09	12	0	5	0	12	0	12	0	-	-	-	-																					
H	264958	06/19/09	07/31/09	5	0	-	-	5	0	5	0	-	-	-	-																					
I	265481	06/19/09	07/31/09	24	0	-	-	24	0	24	0	-	-	-	-																					
J	265658	06/19/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-																					
K	266452	06/19/09	07/31/09	-	-	-	-	16	0	16	0	-	-	-	-																					
L	267194	06/19/09	07/31/09	-	-	-	-	23	0	23	0	-	-	-	-																					
M	268707	06/19/09	07/31/09	-	-	-	-	16	0	16	0	-	-	-	-																					
N	269377	06/19/09	07/31/09	-	-	-	-	23	0	23	0	-	-	-	-																					
O	270339	06/19/09	07/31/09	5	0	1	0	2	0	2	0	3	0	3	0																					
O	270339	06/19/09	07/31/09	17	0	3	0	20	0	20	0	3	0	3	0																					
P	270369	06/19/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-																					
Q	270376	06/19/09	07/31/09	18	0	-	-	18	0	18	0	-	-	-	-																					
R	270390	06/19/09	07/31/09	11	0	2	0	11	0	11	0	2	0	2	0																					
S	270439	06/19/09	07/31/09	20	0	3	0	20	0	20	0	4	0	4	0																					
T	270442	06/19/09	07/31/09	5	0	-	-	5	0	5	0	-	-	-	-																					
U	270507	06/19/09	07/31/09	-	-	-	-	2	0	2	0	-	-	-	-																					
V	270564	06/19/09	07/31/09	-	-	-	-	5	0	5	0	-	-	-	-																					
W	270578	06/19/09	07/31/09	3	0	-	-	7	0	7	0	2	0	2	0																					
X	270579	06/19/09	07/31/09	6	0	-	-	6	0	6	0	-	-	-	-																					
Y	270639	06/19/09	07/31/09	1	0	-	-	4	0	4	0	-	-	-	-																					
Z	270708	06/19/09	07/31/09	2	0	-	-	3	0	3	0	-	-	-	-																					
Total	T/LR			226	0	22	0	346	0	345	0	14	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	967

Shaded cells indicate Level 4 validation (all other cells are Level 2A validation). These sample counts do not include MS/MSD, and DUPs

21040ST.wpd

2009 Annual Remedial Performance Sampling
Data Validation Reports
LDC# 21040

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 2, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264580

Sample Identification

PC-123
PC-124
PC-125
PC-126
PC-127
PC-128
PC-129
PC-130
PC-131
PC-132
M-96
PC-54
M-48
M-44
PC-71
PC-72
PC-73
PC-37
M-95
MD-1
MD-3
FB-1
M-48MS
M-48MSD
FB-1MS
FB-1MSD

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB-1 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-95 and MD-1 and samples PC-37 and MD-3 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-95	MD-1				
Chromium	1.2	1.2	0 (≤30)	-	-	-

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-37	MD-3				
Chromium	0.20	0.20	0 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264580

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264580

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264580

No Sample Data Qualified in this SDG

LDC #: 21040B4
SDG #: 264580
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/2/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	/ /
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D_1: 19 + 20 D_2: 18 + 21
XIV.	Field Blanks	ND	FB: 22

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

Validated Samples: All wet

1	PC-123	11	M-96	21	MD-3 D_2	31	
2	PC-124	12	PC-54	22	FB-1	32	
3	PC-125	13	M-48	23	M-48MS	33	
4	PC-126	14	M-44	24	M-48MSD	34	
5	PC-127	15	PC-71	25	FB-1MS	35	
6	PC-128	16	PC-72	26	FB-1MSD	36	
7	PC-129	17	PC-73	27	MB	37	
8	PC-130	18	PC-37 D_2	28		38	
9	PC-131	19	M-95 D_1	29		39	
10	PC-132	20	MD-1 D_1	30		40	

Notes: _____

LDC#: 21040B4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	19	20		
Chromium	1.2	1.2	0	

Compound	Concentration (mg/L)		(≤ 30) RPD	
	18	21		
Chromium	0.20	0.20	0	

V:\FIELD DUPLICATES\FD_inorganic\21040B4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 2, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264598

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB-1 (from SDG 264580) was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264598

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264598

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264598

No Sample Data Qualified in this SDG

LDC #: 21040C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/09
SDG #: 264598 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/2/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	} from 264580
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	FB = FB-1 (from 264580)

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

Validated Samples: All water

1	ART-1	11	SF-1	21		31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133Z	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	MB	29		39	
10	PC-116R	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 3, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264727

Sample Identification

I-O
I-P
I-H
I-U
I-T
I-G
I-Q
I-F
I-N
I-E
I-M
I-D
I-C
I-S
I-R
I-L
I-B
I-AR
I-BMS
I-BMSD

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

IV. Blanks

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

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

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.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XII. Sample Result Verification

All sample result verifications were acceptable.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264727

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264727

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264727

No Sample Data Qualified in this SDG

LDC #: 21040D4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/27/09

SDG #: 264727 ~~Level~~ Stage 4 Page: 1 of 1

Laboratory: MWH Laboratories Reviewer: ~~

2nd Reviewer: /

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/3/09
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	3 MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS/LCSD
VIII.	Internal Standard (ICP-MS)	N	3 Not Utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	A	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples: All

1	I-O	11	I-M	21	MB	31	
2	I-P	12	I-D	22		32	
3	I-H	13	I-C	23		33	
4	I-U	14	I-S	24		34	
5	I-T	15	I-R	25		35	
6	I-G	16	I-L	26		36	
7	I-Q	17	I-B	27		37	
8	I-F	18	I-AR	28		38	
9	I-N	19	I-BMS	29		39	
10	I-E	20	I-BMSD	30		40	

Notes: _____

LDC #: 31404B4
SDG #: 46497M

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: VV
2nd Reviewer: A

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
Were all isotopes in the tuning solution mass resolution within 0.1 amu?			✓	
Were %RSD of isotopes in the tuning solution ≤5%?			✓	
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

LDC #: 30409A
SDG #: 36497

VALIDATION FINDINGS CHECKLIST

Reviewer: WW
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
[illegible]				
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
[illegible]				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
[illegible]				
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
[illegible]				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
[illegible]				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
[illegible]				
Overall assessment of data was found to be acceptable.	✓			
[illegible]				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
[illegible]				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 21404V4
SDG #: 46727

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer: MH
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Cr	10.0	10	100	100	Y
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	Cr	5.07	5.10	101	101	Y
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
	ICP/MS (Initial calibration)						
	ICP/MS (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 41404
SDG #: M47M

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: LW
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	LW	0.256	0.250	102	102	Y
LCS	Laboratory control sample	↓	1.00	1.00	100	100	↓
19	Matrix spike	↓	(SSR-SR) 0.997	1.00	99.7	99.4	↓
19/20	Duplicate	↓	1.26	1.26	0	NR	↓
4	ICP serial dilution	↓	↓	↓	↓	↓	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 10409Y
SDG #: V6479

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: W
2nd reviewer: R

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 1, 11 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

W = 1.53 mg/L x 20 = 30.6 mg/L

Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	W	31	31	Y
11	W	11	11	Y

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 3, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264774

Sample Identification

I-AA
M-64
M-65
M-66
M-79
M-69
M-135
M-131
M-57A
M-99
M-25
M-37
MD-4
EB-1
M-135MS
M-135MSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-1 was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-25 and MD-4 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-25	MD-4				
Chromium	13	13	0 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264774

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264774

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264774

No Sample Data Qualified in this SDG

LDC #: 21040E4
SDG #: 264774
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: VA

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/3/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 11 + 13
XIV.	Field Blanks	ND	EB = 14

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

Validated Samples:

Aqueous

1	I-AA	11	M-25 D	21		31	
2	M-64	12	M-37	22		32	
3	M-65	13	MD-4 D	23		33	
4	M-66	14	EB-1	24		34	
5	M-79	15	M-135MS	25		35	
6	M-69	16	M-135MSD	26		36	
7	M-135	17	MB	27		37	
8	M-131	18		28		38	
9	M-57A	19		29		39	
10	M-99	20		30		40	

Notes: _____

LDC#: 21040D4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	11	13		
Chromium	13	13	0	

V:\FIELD DUPLICATES\FD_inorganic\21040D4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 4, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264820

Sample Identification

M-92
M-97
M-31A
M-52
M-50
M-34
M-35
M-19
M-39
M-68
M-61
M-67
M-74
M-73
M-88
I-V
I-K
I-J
I-Z
I-I
M-12A
EB-2
M-10
EB-2MS
EB-2MSD

Introduction

This data review covers 25 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-2 was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264820

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264820

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264820

No Sample Data Qualified in this SDG

LDC #: 21040F4
SDG #: 264820
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/4/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	EB = 22

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

Validated Samples:

Aq water

1	M-92	11	M-61	21	M-12A	31	
2	M-97	12	M-67	22	EB-2	32	
3	M-31A	13	M-74	23	M-10	33	
4	M-52	14	M-73	24	EB-2MS	34	
5	M-50	15	M-88	25	EB-2MSD	35	
6	M-34	16	I-V	26	MB	36	
7	M-35	17	I-K	27		37	
8	M-19	18	I-J	28		38	
9	M-39	19	I-Z	29		39	
10	M-68	20	I-I	30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264946

Sample Identification

M-87
M-70
M-71
M-72
M-22A
M-38
M-89
M-100
M-84
M-36
M-11
MD-2

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-84 and MD-2 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-84	MD-2				
Chromium	0.042	0.041	-	0.001 (≤0.020)	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264946

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264946

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264946

No Sample Data Qualified in this SDG

LDC #: 21040G4
SDG #: 264946
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/5/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	} from 264820 + 265481
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 9 + 12
XIV.	Field Blanks	N	

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

Validated Samples:

All soil

1	M-87	11	M-11	21		31	
2	M-70	12	MD-2 D	22		32	
3	M-71	13	MB	23		33	
4	M-72	14		24		34	
5	M-22A	15		25		35	
6	M-38	16		26		36	
7	M-89	17		27		37	
8	M-100	18		28		38	
9	M-84 D	19		29		39	
10	M-36	20		30		40	

Notes: _____

LDC#: 21040G4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: Metals (EPA Method 6010B)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

0.020

Compound	Concentration (mg/L)		Diff (≤ ~~(≤20) RPD~~	~~(≤1.2)~~
	9	12		
Chromium	0.042	0.041	2 0.001	

V:\FIELD DUPLICATES\FD_inorganic\21040G4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264958

Sample Identification

M-17A
M-76
M-75
M-115
M-14A

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 264958

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 264958

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 264958

No Sample Data Qualified in this SDG

LDC #: 21040H4
SDG #: 264958
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/6/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	from 265481
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	M-17A	11		21		31	
2	M-76	12		22		32	
3	M-75	13		23		33	
4	M-115	14		24		34	
5	M-14A	15		25		35	
6	MB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 9 through February 12, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 265481

Sample Identification

MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-5K
M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-91
PC-97
PC-18
PC-55
L-635
L-637
MW-K4MS
MW-K4MSD
PC-98RMS
PC-98RMSD

Introduction

This data review covers 28 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 265481

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 265481

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 265481

No Sample Data Qualified in this SDG

LDC #: 21040I4
SDG #: 265481
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/9 - 2/12/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All wat

1	MW-K4	11	PC-86	21	PC-18	31	
2	ARP-1	12	PC-90	22	PC-55	32	
3	ARP-4A	13	PC-56	23	L-635	33	
4	ARP-5A	14	PC-58	24	L-637	34	
5	ARP-6B	15	PC-59	25	MW-K4MS	35	
6	PC-53	16	PC-60	26	MW-K4MSD	36	
7	PC-103	17	PC-62	27	PC-98RMS	37	
8	MW-5K	18	PC-68	28	PC-98RMSD	38	
9	M-87	19	PC-91	29	MB	39	
10	PC-98R	20	PC-97	30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 17, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 265658

Sample Identification

M-23

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 265658

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 265658

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 265658

No Sample Data Qualified in this SDG

LDC #: 21040J4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/09
SDG #: 265658 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: A1
2nd Reviewer: L

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/17/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	/ /
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All wat

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

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 4, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A & 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270339

Sample Identification

PC-123**	MD-1
PC-124**	MD-3
PC-125**	PC-126MS
PC-126**	PC-126MSD
PC-127**	M-23MS
PC-128**	M-23MSD
PC-129**	
PC-130**	
PC-131**	
PC-132**	
M-96**	
PC-54**	
PC-37**	
PC-71**	
PC-72**	
PC-73**	
M-23**	
M-95	
M-44	
FB-1	

**Indicates sample underwent Stage 4 review

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Samples indicated by a double asterisk on the front cover underwent a Stage 4 review. A Stage 2A review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Stage 2A criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

Calibration data were not reviewed for Stage 2A.

IV. Blanks

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

Sample FB-1 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

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

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.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

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

XIV. Field Duplicates

Samples M-95 and MD-1 and samples PC-54** and MD-3 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-95	MD-1				
Chromium	1.1	1.0	10 (≤30)	-	-	-

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-54**	MD-3				
Chromium	1.8	1.8	0 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270339

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270339

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270339

No Sample Data Qualified in this SDG

LDC #: 21040O4 **VALIDATION COMPLETENESS WORKSHEET** Date: 9/29/09
SDG #: 270339 Level 2A/4 Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: MJ
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/4/09
II.	Calibration	A	Not reviewed for Level 2A validation.
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	NA	Not required for level 2A
V.	Matrix Spike Analysis	A	3 MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS/LCSD
VIII.	Internal Standard (ICP-MS)	N	Not required
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not reviewed for Level 2A validation. Not performed
XI.	Sample Result Verification	A	Not reviewed for Level 2A validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	(18, 21), (12, 22)
XIV.	Field Blanks	ND	FB=20

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

Validated Samples: ** Indicates sample underwent Level IV validation

All

1	PC-123**	11	M-96**	21	MD-1	31	MB
2	PC-124**	12	PC-54**	22	MD-3	32	
3	PC-125**	13	PC-37**	23	PC-126MS	33	
4	PC-126**	14	PC-71**	24	PC-126MSD	34	
5	PC-127**	15	PC-72**	25	M-23MS	35	
6	PC-128**	16	PC-73**	26	M-23MSD	36	
7	PC-129**	17	M-23**	27		37	
8	PC-130**	18	M-95	28		38	
9	PC-131**	19	M-44	29		39	
10	PC-132**	20	FB-1	30		40	

Notes:

LDC #: 21040O4
SDG #: M0339

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer:
2nd Reviewer:

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
Were all isotopes in the tuning solution mass resolution within 0.1 amu?			✓	
Were %RSD of isotopes in the tuning solution ≤5%?			✓	
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

LDC #: 21040Q4
SDG #: 21039

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer:
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC#: 21040O4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	(≤ 0.010) Difference
	18	21		
Chromium	1.1	1.0	10	

Compound	Concentration (mg/L)		(≤ 30) RPD	(≤ 0.010) Difference
	12	22		
Chromium	1.8	1.8	0	

V:\FIELD DUPLICATES\FD_inorganic\21040O4.wpd

V:\FIELD DUPLICATES\FD_inorganic\21040O4.wpd

LDC #: 21040O4
SDG #: DM0339

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Cr	10.0	10	100	100	Y
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	Cr	5.11	5.0	102	102	Y
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
	ICP/MS (Initial calibration)						
	ICP/MS (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 10604
SDG #: 29839

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$ Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Cr	0.255	0.250	102	102	Y
LCS	Laboratory control sample		0.92	1.00	92	92		
MB	Matrix spike		(SSR-SR) 0.96	1.00	96	96		
MB Dup	Duplicate		1.01	1.05	4	NR	
PB	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 21400A
SDG #: Y7033

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer: [signature]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 1, 11 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

#11 Cr = 0.478 mg/L x 2
= 0.956 mg/L

Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	Cr	1.7	1.7	Y
11	Cr	0.96	0.96	Y

RECALC.4S2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270369

Sample Identification

M-5A
M-5AMS
M-5AMSD

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270369

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270369

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270369

No Sample Data Qualified in this SDG

LDC #: 21040P4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/09
SDG #: 270369 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AJ
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/5/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All wtr

1	M-5A	11		21		31	
2	M-5AMS	12		22		32	
3	M-5AMSD	13		23		33	
4	MB	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270376

Sample Identification

I-O
I-P
I-H
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-AR

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270376

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270376

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270376

No Sample Data Qualified in this SDG

LDC #: 21040Q4
SDG #: 270376
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/5/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All water

1	I-O	11	I-M	21		31	
2	I-P	12	I-D	22		32	
3	I-H	13	I-C	23		33	
4	I-U	14	I-S	24		34	
5	I-T	15	I-L	25		35	
6	I-G	16	I-R	26		36	
7	I-Q	17	I-B	27		37	
8	I-F	18	I-AR	28		38	
9	I-N	19	MB	29		39	
10	I-E	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270390

Sample Identification

I-AA
M-131
M-57A
M-79
M-69
M-135
M-25
M-99
M-37
MD-4
EB-1

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-1 was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-57A and MD-4 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-57A	MD-4				
Chromium	0.075	0.076	-	0.001 (≤0.020)	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270390

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270390

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270390

No Sample Data Qualified in this SDG

LDC #: 21040R4
SDG #: 270390
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/5/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	} from 270369
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 3+10
XIV.	Field Blanks	ND	EB: 11

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

Validated Samples:

All wat

1	I-AA	11	EB-1	21		31	
2	M-131	12	MB	22		32	
3	M-57A D	13		23		33	
4	M-79	14		24		34	
5	M-69	15		25		35	
6	M-135	16		26		36	
7	M-25	17		27		37	
8	M-99	18		28		38	
9	M-37	19		29		39	
10	MD-4 D	20		30		40	

Notes:

LDC#: 21040R4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: Metals (EPA Method 6010B)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		Difference (≤30 ~~RPD~~ limits)	mg/L
	3	10		
Chromium	0.075	0.076	0.001	(≤0.020)

V:\FIELD DUPLICATES\FD_inorganic\21040R4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270439

Sample Identification

M-92
M-97
M-33
M-31A
M-52
M-50
M-21
M-34
M-35
M-19
M-39
M-68
M-74
M-73
M-88
M-11
M-12A
M-13
MD-5
EB-2

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-2 was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-34 and MD-5 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-34	MD-5				
Chromium	14	15	7 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270439

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270439

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270439

No Sample Data Qualified in this SDG

LDC #: 21040S4

SDG #: 270439

Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET

Level 2A

Date: 7/1/09

Page: 1 of 1

Reviewer: AL

2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/6/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	1 1
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 8 + 19
XIV.	Field Blanks	ND	EB: 20

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

Validated Samples:

All wat

1	M-92	11	M-39	21	MB	31	
2	M-97	12	M-68	22		32	
3	M-33	13	M-74	23		33	
4	M-31A	14	M-73	24		34	
5	M-52	15	M-88	25		35	
6	M-50	16	M-11	26		36	
7	M-21	17	M-12A	27		37	
8	M-34D	18	M-13	28		38	
9	M-35	19	MD-5D	29		39	
10	M-19	20	EB-2	30		40	

Notes:

LDC#: 21040S4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: W

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	8	19		
Chromium	14	15	7	

V:\FIELD DUPLICATES\FD_inorganic\21040S4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270442

Sample Identification

I-K
I-J
I-I
I-Z
I-V

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-2 (from SDG 270439) was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270442

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270442

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270442

No Sample Data Qualified in this SDG

LDC #: 21040T4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/2/09
SDG #: 270442 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: ✓

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/6/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	fm 270339
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	EB: EB-2 (fm 270439)

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

Validated Samples:

All wet

1	I-K	11		21		31	
2	I-J	12		22		32	
3	I-I	13		23		33	
4	I-Z	14		24		34	
5	I-V	15		25		35	
6	MB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 8, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270578

Sample Identification

PC-93
PC-2
PC-104

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270578

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270578

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270578

No Sample Data Qualified in this SDG

LDC #: 21040W4
SDG #: 270578
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: V

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/8/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Aqueous

1	PC-93	11		21		31	
2	PC-2	12		22		32	
3	PC-104	13		23		33	
4	MB	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 8, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270579

Sample Identification

M-17A
M-2A
M-76
M-75
M-115
M-14A

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270579

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270579

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270579

No Sample Data Qualified in this SDG

LDC #: 21040X4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/2/09
SDG #: 270579 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AJ
2nd Reviewer: V

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/8/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All w/t

1	M-17A	11		21		31	
2	M-2A	12		22		32	
3	M-76	13		23		33	
4	M-75	14		24		34	
5	M-115	15		25		35	
6	M-14A	16		26		36	
7	MB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 11, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270639

Sample Identification

PC-79

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270639

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270639

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270639

No Sample Data Qualified in this SDG

LDC #: 21040Y4
SDG #: 270639
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/11/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All wat

1	PC-79	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 12, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270708

Sample Identification

PC-24
PC-50

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270708

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270708

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270708

No Sample Data Qualified in this SDG

LDC #: 21040Z4
SDG #: 270708
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/21/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/12/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All wat

1	PC-24	11		21		31	
2	PC-50	12		22		32	
3	MB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

2009 Annual Remedial Performance Sampling
Data Validation Reports
LDC# 21040

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: January 12 through January 15, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 263577

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-122
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
ARP-7
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-17
PC-18
PC-55
L-635
L-637
M-87DUP

Introduction

This data review covers 28 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 263577

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 263577

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 263577

No Sample Data Qualified in this SDG

LDC #: 21040A6
SDG #: 263577
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET

~~Level~~ 2A
STAGE 2

Date: 7/1/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1/12 - 1/15/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

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

Validated Samples:

Aqueous water

1	M-87	11	PC-122	21	PC-91	31	
2	PC-98R	12	MW-K4	22	PC-97	32	
3	PC-86	13	ARP-1	23	PC-17	33	
4	PC-90	14	ARP-4A	24	PC-18	34	
5	PC-56	15	ARP-5A	25	PC-55	35	
6	PC-58	16	ARP-6B	26	L-635	36	
7	PC-59	17	ARP-7	27	L-637	37	
8	PC-60	18	PC-53	28	M-87DUP	38	
9	PC-62	19	PC-103	29	PB	39	
10	PC-68	20	MW-K5	30		40	

Notes:

LDC #: 21040A6
SDG #: 263577

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-27	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
28	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 2, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264580

Sample Identification

PC-123
PC-124
PC-125
PC-126
PC-127
PC-128
PC-129
PC-130
PC-131
PC-132
M-96
PC-54
M-48
M-44
PC-71
PC-72
PC-73
PC-37
M-95
MD-1
MD-3
FB-1
PC-123DUP
FB-1MS
FB-1MSD

Introduction

This data review covers 25 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-95 MD-1	Hexavalent chromium	32.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
FB-1	Hexavalent chromium	35.75 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample FB-1 was identified as a field blank. No contaminant concentrations were found in this blank with the following exceptions:

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-95 MD-1	Hexavalent chromium	32.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
FB-1	Hexavalent chromium	35.75 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample FB-1 was identified as a field blank. No contaminant concentrations were found in this blank.

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.

VII. Sample Result Verification

Although Total Dissolved Solids (TDS) were detected in sample FB-1, the laboratory reported the results as NA due to possible error in sample analysis. The field blank sample should not have high levels of TDS and the Specific Conductance test confirmed that the results did not match.

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples M-95 and MD-1 and samples PC-37 and MD-3 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-95	MD-1				
Hexavalent chromium	1.30 mg/L	1.26 mg/L	3 (≤30)	-	-	-
Total dissolved solids	7510 mg/L	7560 mg/L	1 (≤30)	-	-	-
Perchlorate	478000 ug/L	462000 ug/L	3 (≤30)	-	-	-

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-37	MD-3				
Total dissolved solids	7370 mg/L	6750 mg/L	9 (≤30)	-	-	-
Perchlorate	324000 ug/L	326000 ug/L	1 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264580

SDG	Sample	Analyte	Flag	A or P	Reason
264580	M-95 MD-1 FB-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264580

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264580

No Sample Data Qualified in this SDG

LDC #: 21040B6
SDG #: 264580
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/2/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	SW	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D1: 19+20 D2: 18+21
X	Field blanks ND	~~SW~~ A	FB: 22

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

Validated Samples: All wet

1	PC-123	11	M-96	21	MD-3 D2	31	
2	PC-124	12	PC-54	22	FB-1	32	
3	PC-125	13	M-48	23	PC-123DUP	33	
4	PC-126	14	M-44	24	FB-1MS	34	
5	PC-127	15	PC-71	25	FB-1MSD	35	
6	PC-128	16	PC-72	26	PB	36	
7	PC-129	17	PC-73	27		37	
8	PC-130	18	PC-37 D2	28		38	
9	PC-131	19	M-95 D1	29		39	
10	PC-132	20	MD-1 D1	30		40	

Notes:

LDC #: 2104086

SDG #: 264580

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Reviewer: AL

2nd reviewer: W

All circled methods are applicable to each sample.

	Sample ID	Matrix	Parameter
	1-18, 21	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	19-20,	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
	[illegible]		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
26	23	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
↓	24-25	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}**
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	22	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 26408B6
SDG #: 26458

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: AL
2nd reviewer: W

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		7196					
Parameters:		Cr^{6+}					
Technical holding time:		24 hrs					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
19	2/2/09	2/3/09		(32.75 hrs)			J-/UJ/P (H)
	0925	1714					
20	2/2/09	2/3/09		(32.75 hrs)			↓ ↓
	0925	1714					
22	2/2/09	2/3/09		(35.75 hrs)			↓ ↓
	0533	1714					

LDC #: 21042B6
SDG #: 264580

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

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

METHOD: Inorganics, Method Sp Cond

#	Sample ID	Analyte	~~Lab Reporting Limit (units)~~	~~RDL (units)~~	Finding	Qualifications
	22	TDS	Lab reported TDS as NA.			~~none~~ | P
			- Upon confirmation by the lab by running			Text
			another analysis of specific conductance.			
			The results did not match and indicate			
			the possible use of the incorrect			
			sample during analysis. This sample is			
			a Field Blank and high TDS values			
			are not expected.			

Comments:

ABVCRDL6

LDC# 21040B6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: JW

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	19	20		
Hexavalent Chromium	1.30	1.26	3	
TDS	7510	7560	1	
Perchlorate (ug/L)	478000	462000	3	

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	18	21		
TDS	7370	6750	9	
Perchlorate (ug/L)	324000	326000	1	

V:\FIELD DUPLICATES\FD_inorganic\21040B6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 2, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264598

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
SF-1DUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample FB-1 (from SDG 264580) was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

Although Total Dissolved Solids (TDS) were detected in sample FB-1, the laboratory reported the results as NA due to possible error in sample analysis. The field blank sample should not have high levels of TDS and the Specific Conductance test confirmed that the results did not match.

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264598

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264598

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264598

No Sample Data Qualified in this SDG

LDC #: 21040C6
SDG #: 264598
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: LC

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/2/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	SW N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks ND	SW	FB = FB-1 (from 264580)

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

Validated Samples:

all water

1	ART-1	11	SF-1	21		31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133Z	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	SF-1DUP	29		39	
10	PC-116R	20	PB	30		40	

Notes:

LDC #: 21040C6
SDG #: 264598

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: L

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
DC 19	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 21040C60
SDG #: 264598

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

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

METHOD: Inorganics, Method Sp Cond

#	Sample ID	Analyte	~~Lab Reporting Limit (units)~~	~~RDL (units)~~	Finding	Qualifications
	~~FB~~	TDS	Lab reported TDS as NA.			~~none~~ / J Text
	FB-1		- Upon confirmation by the lab by running another analysis of specific conductance. The results did not match and indicate the possible mix of the incorrect sample during analysis. This sample is a Field Blank and high TDS values are not expected.			

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 3, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264727

Sample Identification

I-O
I-P
I-H
I-U
I-T
I-G
I-Q
I-F
I-N
I-E
I-M
I-D
I-C
I-S
I-R
I-L
I-B
I-AR
I-PDUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
I-U I-T	Total dissolved solids	16 days	7 days	J- (all detects) R (all non-detects)	A

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.

The balance check was not performed for Total Dissolved Solids.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

The balance check was not performed for Total Dissolved Solids.

III. Blanks

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

Method Blank ID	Analyte	Concentration	Associated Samples
MB (prep blank)	Total dissolved solids	12 mg/L	I-P I-H I-G I-Q I-F I-N I-E I-M I-D I-C I-S I-R I-L I-B I-AR

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

All sample result verifications were acceptable.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264727

SDG	Sample	Analyte	Flag	A or P	Reason
264727	I-U I-T	Total dissolved solids	J- (all detects) R (all non-detects)	A	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264727

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264727

No Sample Data Qualified in this SDG

LDC #: 21040D6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/27/09

SDG #: 264727 ~~Level~~ 4 Page: 1 of 1

Laboratory: MWH Laboratories Stage Reviewer: W

2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW ~~A~~	Sampling dates: 2/3/09
IIa.	Initial calibration	A	No Balanced checks for TDS, Test
IIb.	Calibration verification	A	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	N	client specified
V	Duplicates	A	Dup for TDS
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples: All

1	I-O	11	I-M	21	MK	31	
2	I-P	12	I-D	22		32	
3	I-H	13	I-C	23		33	
4	I-U	14	I-S	24		34	
5	I-T	15	I-R	25		35	
6	I-G	16	I-L	26		36	
7	I-Q	17	I-B	27		37	
8	I-F	18	I-AR	28		38	
9	I-N	19	I-PDUP	29		39	
10	I-E	20		30		40	

Notes:

LDC #: 104006
SDG #: 164727

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: MM
2nd Reviewer: JF

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
Cooler temperature criteria was met.	✓			
II. ICP/MS				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)		✓		
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. Matrix Spike/Matrix Spike Duplicate and Duplicate Sample Analysis				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.		✓		No MS/Dup for soil.
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory Control Samples				
Was an LCS anaytzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 41040b
SDG #: 26477

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
[illegible]				
Overall assessment of data was found to be acceptable.	✓			
[illegible]				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
[illegible]				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: v104006
SDG #: r64727

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MH
2nd reviewer: J

All circled methods are applicable to each sample.

Sample ID	Parameter
1-18	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} aq ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
n19	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____

Comments:

LDC #: 21040D6
SDG #: 264726

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: [illegible]
2nd reviewer: [illegible]

All circled dates have exceeded the technical holding time.

Y N (N/A) Were all samples preserved as applicable to each method ?

(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1/2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
4, 5	2/3/09	2/19/09	(16 days)				J-/R/A (w) (various)

LDC #: 21040D6
SDG #: 26479

VALIDATION FINDINGS WORKSHEET
Blanks

Page: 1 of 1
Reviewer: VR
2nd Reviewer: R

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L

Associated Samples: 2, 3, 6-18 (710X)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	MB											
Tin	12		120									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the methoc blank concentration were qualified as not detected, "U".

LDC #: 21476b
SDG #: 36497

VALIDATION FINDINGS WORKSHEET
Blanks

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

METHOD: Inorganics, Method See Comment

#	Date	Blank ID	Analyte	Finding	Associated Samples	Qualifications
1	2/9/09	MB	Tl	-18 ug/L, (RL = 10 ug/L)	1	No qual (>10x RL)

Comments:

LDC #: 21040D6
SDG #: 26477

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: W
2nd Reviewer: R

Method: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of ClO4 was recalculated. Calibration date: 2/20/19

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found X 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	ClO4	s1	2	0.005	*0.999452*	0.999431	Y
		s2	4	0.012			
		s3	10	0.03			
		s4	25	0.069			
		s5	50	0.143			
		s6	100	0.303			
CCV Calibration verification	ClO4	25u	23.1		92.4	92	Y
Calibration verification							
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 14406b
SDG #: See cover

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cu	23.26	25.0	93.0	93.2	Y
MS	Matrix spike sample	~~Clay~~ W	(SSR-SR)				
19	Duplicate sample	Tbs	13200	14200	7.3	7.3	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.6

LDC #: 31040D6
SDG #: M6J77

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Inorganics, Method See cover

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1, 11 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

#1 $Cl_4 = \frac{Area}{0.002987} \times DF$

$Cl_4 = \frac{0.764}{0.002987} \times 20.000 = 176760$ mg/L

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	1	Cl4 (mg/L)	177000	177000	Y
		TDS (mg/L)	14000	14000	Y
2	11	Cl4 (mg/L)	75200	75000	Y
		TDS (mg/L)	9020	9020	Y

Note:

RECALC.6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 3, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264774

Sample Identification

I-AA
M-64
M-65
M-66
M-79
M-69
M-135
M-131
M-57A
M-99
M-25
M-37
MD-4
EB-1
I-AADUP
EB-1MS
EB-1MSD

Introduction

This data review covers 17 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-66	Total dissolved solids	16 days	7 days	J- (all detects) R (all non-detects)	P
M-37	Hexavalent chromium	31.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
EB-1	Hexavalent chromium	31.25 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-1 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-1	2/3/09	Perchlorate	162 ug/L	I-AA M-64 M-65 M-66 M-79 M-69 M-135 M-131 M-57A M-99 M-25 M-37 MD-4

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

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples M-25 and MD-4 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-25	MD-4				
Total dissolved solids	9080 mg/L	9480 mg/L	4 (≤30)	-	-	-
Perchlorate	441000 ug/L	442000 ug/L	0 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264774

SDG	Sample	Analyte	Flag	A or P	Reason
264774	M-66	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times
264774	M-37 EB-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264774

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264774

No Sample Data Qualified in this SDG

LDC #: 21040E6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/09
SDG #: 264774 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/3/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 11 + 13
X	Field blanks	SW	EB: 14

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

Validated Samples:

1	I-AA	11	M-25 D	21		31	
2	M-64	12	M-37	22		32	
3	M-65	13	MD-4 D	23		33	
4	M-66	14	EB-1	24		34	
5	M-79	15	I-AADUP	25		35	
6	M-69	16	EB-1MS	26		36	
7	M-135	17	EB-1MSD	27		37	
8	M-131	18		28		38	
9	M-57A	19		29		39	
10	M-99	20		30		40	

Notes:

LDC #: 21040E6
SDG #: 264774

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-11, 13	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
12, 14	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
15	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
16-17	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 26405EC
SDG #: 264774

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AA
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y)N N/A Were all samples preserved as applicable to each method ?
(Y)N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 | SM2540C		7196			
Parameters:	TDS		Cr6+			
Technical holding time:	7 days		24 hrs			

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
4	2|3|09	2|19|09			(16 days)		J-|R|P	(h)
12	2|3|09			2|4|09	(31.5 hrs)		J-|UJ|P	L
	1018			1748				
14	2|3|09			2|4|09	(31.25 hrs)		L	L
	1025			1748				

LDC #: 21045E6
SDG #: 264774

VALIDATION FINDINGS WORKSHEET
Field Blanks

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

METHOD: Inorganics, EPA Method Sw Com

(Y)N N/A Were field blanks identified in this SDG?
(Y)N N/A Were target analytes detected in the field blanks?

(code: b2)

Blank units: mg/L **Associated sample units:** mg/L
Sampling date: 2/3/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other) FB Associated Samples: All except #14 (>10x)

Analyte	Blank ID	Sample Identification								
	14									
ClO_4	162									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21040D6 (E)
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	11	13		
TDS	9080	9480	4	
Perchlorate (ug/L)	441000	442000	0	

V:\FIELD DUPLICATES\FD_inorganic\21040D6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 4, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264820

Sample Identification

M-92
M-97
M-31A
M-52
M-50
M-34
M-35
M-19
M-39
M-68
M-61
M-67
M-74
M-73
M-88
I-V
I-K
I-J
I-Z
I-I
M-12A
EB-2
M-10
M-92DUP
M-97MS
M-97MSD
EB-2MS
EB-2MSD

Introduction

This data review covers 28 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-12A	Hexavalent chromium	31.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
EB-2	Hexavalent chromium	32 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-10	Hexavalent chromium	30.5 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-2 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	2/4/09	Perchlorate	12 ug/L	M-92 M-97 M-31A M-52 M-50 M-34 M-35 M-19 M-39 M-68 M-61 M-67 M-74 M-73 M-88 I-V I-K I-J I-Z I-I M-12A M-10

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

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264820

SDG	Sample	Analyte	Flag	A or P	Reason
264820	M-12A EB-2 M-10	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264820

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264820

No Sample Data Qualified in this SDG

LDC #: 21040F6
SDG #: 264820
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/4/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB: 22

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

Validated Samples:

All wet

1	M-92	11	M-61	21	M-12A	31	
2	M-97	12	M-67	22	EB-2	32	
3	M-31A	13	M-74	23	M-10	33	
4	M-52	14	M-73	24	M-92DUP	34	
5	M-50	15	M-88	25	M-97MS	35	
6	M-34	16	I-V	26	M-97MSD	36	
7	M-35	17	I-K	27	EB-2MS	37	
8	M-19	18	I-J	28	EB-2MSD	38	
9	M-39	19	I-Z	29	PB	39	
10	M-68	20	I-I	30		40	

Notes:

LDC #: 21040F6
SDG #: 264820

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-20	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
21-23	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
24	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
25-26	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
27-28	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21040F6
SDG #: 26482O

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y)N N/A Were all samples preserved as applicable to each method ?
(Y)N N/A Were all cooler temperatures within validation criteria?

Method:		7196					
Parameters:		Cr6+					
Technical holding time:		24 hrs					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
21	2/4/09	2/5/09		(31.5 hrs)			J-/UJ/P (H)
	1013	1743					
22	2/4/09	2/5/09		(32 hrs)			↓ ↓
	0940	1743					
23	2/4/09	2/5/09		(30.5 hrs)			↓ ↓
	1112	1743					

LDC #: 21040F6
SDG #: 264820

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AP
2nd Reviewer: L

METHOD: Inorganics, EPA Method Sm Cond

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks? (conductivity)

Blank units: mL **Associated sample units:** mL
Sampling date: 2/4/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All except #22 (>10x)

Analyte	Blank ID	Sample Identification								
	22									
Cl04	12									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264946

Sample Identification

M-87
M-70
M-71
M-72
M-22A
M-38
M-89
M-100
M-84
M-36
M-11
MD-2
M-87DUP

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-100	Hexavalent chromium	30.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-84 MD-2	Hexavalent chromium	29.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-36	Hexavalent chromium	29.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-11	Hexavalent chromium	30.5 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples M-84 and MD-2 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-84	MD-2				
Hexavalent chromium	0.039 mg/L	0.044 mg/L	12 (≤30)	-	-	-
Total dissolved solids	980 mg/L	972 mg/L	1 (≤30)	-	-	-
Perchlorate	6970 ug/L	7030 ug/L	1 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264946

SDG	Sample	Analyte	Flag	A or P	Reason
264946	M-100 M-84 M-36 M-11 MD-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264946

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264946

No Sample Data Qualified in this SDG

LDC #: 21040G6
SDG #: 264946
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) (SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/5/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	Dup (MS/MSD from 264774)
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 9 + 12
X	Field blanks	N	

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

Validated Samples:

All wet

1	M-87	11	M-11	21		31	
2	M-70	12	MD-2 D	22		32	
3	M-71	13	M-87DUP	23		33	
4	M-72	14	PB	24		34	
5	M-22A	15		25		35	
6	M-38	16		26		36	
7	M-89	17		27		37	
8	M-100	18		28		38	
9	M-84 D	19		29		39	
10	M-36	20		30		40	

Notes:

LDC #: 2104096
SDG #: 204946

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-7	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
8-12	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC (CR^{6+}) (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
13	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21049G
SDG #: 24946

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	7196					
Parameters:	Cr6+					
Technical holding time:	24 hrs					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
8	2/5/09	2/6/09		(30.25 hrs)			J-/UJ/P (h)
	0918	1533					
9	2/5/09	2/6/09		(29.75 hrs)			↓ ↓
	0940	1533					
10	2/5/09	2/6/09		(29.5 hrs)			↓ ↓
	1002	1533					
11	2/5/09	2/6/09		(30.5 hrs)			↓ ↓
	0905	1533					
12	2/5/09	2/6/09		(29.75 hrs)			↓ ↓
	0940	1533					

LDC# 21040G6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: V

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	9	12		
Hexavalent Chromium	0.039	0.044	12	
TDS	980	972	1	
Perchlorate (ug/L)	6970	7030	1	

V:\FIELD DUPLICATES\FD_inorganic\21040G6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 264958

Sample Identification

M-17A
M-76
M-75
M-115
M-14A
M-115MS
M-115MSD

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 264958

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 264958

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 264958

No Sample Data Qualified in this SDG

LDC #: 21040H6
SDG #: 264958
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/6/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples: All work

1	M-17A	11		21		31	
2	M-76	12		22		32	
3	M-75	13		23		33	
4	M-115	14		24		34	
5	M-14A	15		25		35	
6	M-115MS	16		26		36	
7	M-115MSD	17		27		37	
8	PB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21042HC
SDG #: 264958

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 5	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2c 6 - 7	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 9 through February 12, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 265481

Sample Identification

MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-5K
M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-91
PC-97
PC-18
PC-55
L-635
L-637
ARP-5ADUP
PC-103DUP

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	14 mg/L	PC-103 PC-98R PC-86 PC-90 PC-56 PC-58 PC-59 PC-60 PC-62 PC-68 PC-91 PC-97 PC-18 PC-55 L-635

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

No field blanks were identified in this SDG.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 265481

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 265481

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 265481

No Sample Data Qualified in this SDG

LDC #: 21040I6
SDG #: 265481
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2/9 - 2/12/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	Dup (MS/MSD from 264958)
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:

All wells

1	MW-K4	11	PC-86	21	PC-18	31	
2	ARP-1	12	PC-90	22	PC-55	32	
3	ARP-4A	13	PC-56	23	L-635	33	
4	ARP-5A	14	PC-58	24	L-637	34	
5	ARP-6B	15	PC-59	25	ARP-5ADUP	35	
6	PC-53	16	PC-60	26	PC-103DUP	36	
7	PC-103	17	PC-62	27	PB	37	
8	MW-5K	18	PC-68	28		38	
9	M-87	19	PC-91	29		39	
10	PC-98R	20	PC-97	30		40	

Notes:

LDC #: 21040IC
SDG #: 265481

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AJ
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-24	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
25-26	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ___

LDC #: 21545I6
SDG #: 26548l

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AL
2nd Reviewer:

METHOD: Inorganics, Method Ion Com (Wet: 61)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L **Associated Samples:** 7, 10-23 (>10x)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	14		140									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: February 17, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 265658

Sample Identification

M-23

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-23	Total dissolved solids	36 days	7 days	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	10 mg/L	All samples in SDG 265658

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 265658

SDG	Sample	Analyte	Flag	A or P	Reason
265658	M-23	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 265658

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 265658

No Sample Data Qualified in this SDG

LDC #: 21040J6
SDG #: 265658
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 2/17/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples: All wet

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

Notes:

LDC #: 21040J6

SDG #: 265658

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: AL

2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____________________

LDC #: 21640J6
SDG #: 26568

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 | SM2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	2|17|09	3|25|09		(36 days)			J-|R|P (4)

LDC #: 21040J6
SDG #: 265658

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AR
2nd Reviewer: [illegible]

METHOD: Inorganics, Method Sw Conv

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L **Associated Samples:** All (>10x)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	10		100									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: March 2, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 266452

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-7
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PC-120 PC-133	Total dissolved solids	13 days	7 days	J- (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 266452

SDG	Sample	Analyte	Flag	A or P	Reason
266452	PC-120 PC-133	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 266452

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 266452

No Sample Data Qualified in this SDG

LDC #: 21040K6
SDG #: 266452
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 3/11/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 3/2/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

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

Validated Samples:

All wells

1	ART-1	11	PC-118	21		31	
2	ART-2	12	PC-119	22		32	
3	ART-3	13	PC-120	23		33	
4	ART-4	14	PC-121	24		34	
5	ART-7	15	PC-133	25		35	
6	PC-99R2/R3	16	ART-9	26		36	
7	PC-115R	17	PB	27		37	
8	PC-116R	18		28		38	
9	SF-1	19		29		39	
10	PC-117	20		30		40	

Notes:

LDC #: 21040K6
SDG #: 266452

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-16	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____

LDC #: 26452G
SDG #: 26452

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1/SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
13, 15	3/2/09	3/15/09		(13 days)			J-/UJ/P (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: March 9 through March 11, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 267194

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-91
PC-97
PC-18
PC-55
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-K5
ART-8

Introduction

This data review covers 23 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 267194

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 267194

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 267194

No Sample Data Qualified in this SDG

LDC #: 21040L6
SDG #: 267194
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 3/9 → 3/11/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:

All wet

1	M-87	11	PC-91	21	PC-103	31	
2	PC-98R	12	PC-97	22	MW-K5	32	
3	PC-86	13	PC-18	23	ART-8	33	
4	PC-90	14	PC-55	24	PB	34	
5	PC-56	15	MW-K4	25		35	
6	PC-58	16	ARP-1	26		36	
7	PC-59	17	ARP-4A	27		37	
8	PC-60	18	ARP-5A	28		38	
9	PC-62	19	ARP-6B	29		39	
10	PC-68	20	PC-53	30		40	

Notes:

LDC #: 2104026
SDG #: 267194

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: K

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-23	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: April 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 268707

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-120
PC-121
PC-133
ART-9

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 268707

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 268707

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 268707

No Sample Data Qualified in this SDG

LDC #: 21040M6
SDG #: 268707
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: LA

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4/6/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:

All wat

1	ART-1	11	PC-117	21		31	
2	ART-2	12	PC-118	22		32	
3	ART-3	13	PC-120	23		33	
4	ART-4	14	PC-121	24		34	
5	ART-7	15	PC-133	25		35	
6	ART-8	16	ART-9	26		36	
7	PC-99R2/R3	17	PB	27		37	
8	PC-115R	18		28		38	
9	PC-116R	19		29		39	
10	SF-1	20		30		40	

Notes:

LDC #: 21040M6
SDG #: 268707

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-16	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: April 14 through April 15, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 269377

Sample Identification

MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-K5
M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-91
PC-97
PC-18
PC-55
PC-101R

Introduction

This data review covers 23 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 269377

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 269377

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 269377

No Sample Data Qualified in this SDG

LDC #: 21040N6
SDG #: 269377
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 4/14 → 4/15/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:

All wat

1	MW-K4	11	PC-86	21	PC-18	31	
2	ARP-1	12	PC-90	22	PC-55	32	
3	ARP-4A	13	PC-56	23	PC-101R	33	
4	ARP-5A	14	PC-58	24	PB	34	
5	ARP-6B	15	PC-59	25		35	
6	PC-53	16	PC-60	26		36	
7	PC-103	17	PC-62	27		37	
8	MW-K5	18	PC-68	28		38	
9	M-87	19	PC-91	29		39	
10	PC-98R	20	PC-97	30		40	

Notes:

LDC #: 21040N6
SDG #: 269377

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: W

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 23	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
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		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
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		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 4, 2009

LDC Report Date: July 30, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A & 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270339

Sample Identification

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-37**
PC-71**
PC-72**
PC-73**
M-23***
M-95**
M-44**
FB-1
MD-1**
MD-3
PC-129DUP
MD-1MS
MD-1MSD
PC-126DUP

**Indicates sample underwent Stage 4 review
***Indicates sample underwent Stage 4 review for Total Dissolved Solids and Perchlorate only

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen, EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a Stage 4 review. A Stage 2A review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Stage 2A criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PC-129** PC-130*** M-96** PC-129DUP	Total dissolved solids	18 days	7 days	J- (all detects) R (all non-detects)	A
M-95** MD-1** MD-1MS MD-1MSD	Hexavalent chromium	32.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-44**	Hexavalent chromium	32.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
FB-1	Hexavalent chromium	33.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
PC-124** PC-130***	Nitrate as N	51 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.

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample FB-1 was identified as a field blank. No contaminant concentrations were found in this blank.

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.

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

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

IX. Field Duplicates

Samples M-95** and MD-1** and samples PC-54** and MD-3 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-95**	MD-1**				
Total dissolved solids	6950 mg/L	7240 mg/L	4 (≤30)	-	-	-
Hexavalent chromium	1.14 mg/L	1.14 mg/L	0 (≤30)	-	-	-
Perchlorate	445000 ug/L	464000 ug/L	4 (≤30)	-	-	-

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-54**	MD-3				
Total dissolved solids	6050 mg/L	6280 mg/L	4 (≤30)	-	-	-
Perchlorate	226000 ug/L	237000 ug/L	5 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270339

SDG	Sample	Analyte	Flag	A or P	Reason
270339	PC-129** PC-130*** M-96**	Total dissolved solids	J- (all detects) R (all non-detects)	A	Technical holding times
270339	M-95** MD-1** M-44** FB-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
270339	PC-124** PC-130***	Nitrate as N	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270339

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270339

No Sample Data Qualified in this SDG

LDC #: 21040O6
SDG #: 270339
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A/4

Date: 7/27/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056)
KM-314.0

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/4/09
IIa.	Initial calibration	A	Not reviewed for Level 2A validation.
IIb.	Calibration verification	A	Not reviewed for Level 2A validation.
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	Not reviewed for Level 2A validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(18,21), (12,22)
X.	Field blanks	ND	FB = 20

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

Validated Samples: 42 ** Indicates sample underwent Level 4 validation, *** Indicates sample underwent Level 4 validation for CLO4 & TDS only

1	PC-123**	11	M-96**	21	MD-1**	31	MB
2	PC-124**	12	PC-54**	22	MD-3	32	
3	PC-125**	13	PC-37**	23	PC-129DUP	33	
4	PC-126**	14	PC-71**	24	MD-1MS	34	
5	PC-127**	15	PC-72**	25	MD-1MSD	35	
6	PC-128**	16	PC-73**	26	PC-126 Dup	36	
7	PC-129**	17	M-23***	27		37	
8	PC-130***	18	M-95**	28		38	
9	PC-131**	19	M-44**	29		39	
10	PC-132***	20	FB-1	30		40	

Notes:

LDC #: 21406
SDG #: 21339

VALIDATION FINDINGS CHECKLIST

Reviewer: MH
2nd Reviewer:

Method: Inorganics (EPA Method See Cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix Spike/Matrix Spike Duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory Control Samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Performance Evaluation and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 21040B6
SDG #: M0339

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
[illegible]				
Overall assessment of data was found to be acceptable.	✓			
[illegible]				
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
[illegible]				
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 2104006
SDG #: 2103399

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MH
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Parameter
1-22	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
2, 4, 6, 8, 10, 17	pH TDS Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **Chlorite**
18-21	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}**
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
23, 26	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
24, 25	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}**
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21040O6
SDG #: 240339

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

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

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 / SM 2540C		7196			
Parameters:		TDS		CrVI			
Technical holding time:		7 days		24hr			
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
7, 8, 11, 23	5/4/09	5/22/09	(18 days)				J-/R/A (hs)
							(warm)
18, 21	5/4/09 1015		5/5/09 1853	(32.75 hr)			J-/UJ/A (hs)
24, 25	↓		↓	↓			
19	5/4/09 1033		5/5/09 1853	(32.25 hr)			
20	5/4/09 906		5/5/09 1853	(33.75 hr)			

HT.6

LDC #: 21 04006
SDG #: M0339

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

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

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		9056					
Parameters:		NO3-N					
Technical holding time:		48hrs					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
2	5/4/09 550	5/6/09 852	(≠ 51 hrs)				J-/UJ/P (h)
8	5/4/09 536	5/6/09 838	(51 hrs)				J-/UJ/P (h)

LDC# 21040O6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	18	21		
TDS	6950	7240	4	
Hexavalent Chromium	1.14	1.14	0	
Perchlorate (ug/L)	445000	464000	4	

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	12	22		
TDS	6050	6280	4	
Perchlorate (ug/L)	226000	237000	5	

LDC #: 21404006
SDG #: M0339

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: W
2nd Reviewer: R

Method: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of ClO3 was recalculated. Calibration date: 4/30/09

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	ClO3	s1	10	0.007	0.999967	0.999972	Y
		s2	20	0.015			
		s3	100	0.076			
		s4	200	0.149			
		s5	400	0.302			
		s6	800	0.612			
CCV Calibration verification	NO3-N	20	1.99		99.5	NR	Y
CCV Calibration verification	ClO4	25	24.1		96.4	96.6	Y
CCV Calibration verification	Cr6+	0.02	0.02		100	105	Y

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 26006
SDG #: 26339

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: R

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	NO3-N	2.45	2.5	98	98.0	Y
MS	Matrix spike sample	NO3-N	(SSR-SR) 0.055	0.05	110	110	Y
DUP	Duplicate sample	TDS	7130	7390	3.6	3.6	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.6

LDC #: 2104006
SDG #: 2M0339

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: Inorganics, Method See Cover

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

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 2, 18 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

Recalculation:

$$\#18 \quad Cr^{6+} = \frac{0.104}{1.938} \times \frac{10}{0.5} = 1.07 \text{ mg/L}$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	2	chlorate (ug/L)	114000	114000	Y
		ClO4 ↓	5310	5310	↓
		NO3-N (mg/L)	20.0	20.0	
		TDS ↓	13350	13350	↓
2	18	ClO4 (ug/L)	445000	445000	Y
		Cr6+ (mg/L)	1.14	1.07	
		TDS ↓	6950	6950	↓

Note:

RECALC.6

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270369

Sample Identification

M-5A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-1 (from SDG 270390) was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-1	5/5/09	Perchlorate	159 ug/L	All samples in SDG 270369

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:

Sample	Analyte	Reported Concentration	Modified Final Concentration
M-5A	Perchlorate	397 ug/L	397J+ ug/L

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270369

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270369

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270369

SDG	Sample	Analyte	Modified Final Concentration	A or P
270369	M-5A	Perchlorate	397J+ ug/L	A

LDC #: 21040P6
SDG #: 270369
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/5/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	} Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB: EB-1 (from 270390)

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

Validated Samples:

All wat

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

Notes:

LDC #: 21040B6
SDG #: 270369

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ___

LDC #: 21040PC
SDG #: 270369

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: [illegible]

METHOD: Inorganics, EPA Method Iron Cobalt

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 5/5/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other:) EB Associated Samples: All

Analyte	Blank ID	Sample Identification								
	EB-1	1								
Co	159	397J+								

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270376

Sample Identification

I-O
I-P
I-H
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-AR

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
I-U	Total dissolved solids	15 days	7 days	J- (all detects) R (all non-detects)	P
I-G I-Q I-F I-N I-M I-R	Total dissolved solids	17 days	7 days	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-1 (from SDG 270390) was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-1	5/5/09	Perchlorate	159 ug/L	All samples in SDG 270376

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

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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

VI. Laboratory Control Samples

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

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270376

SDG	Sample	Analyte	Flag	A or P	Reason
270376	I-U I-G I-Q I-F I-N I-M I-R	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270376

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270376

No Sample Data Qualified in this SDG

LDC #: 21040Q6
SDG #: 270376
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/1/09
Page: 1 of 1
Reviewer: AI
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM 2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/5/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specific
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB: EB-1 (from 270390)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wet

1	I-O	11	I-M	21		31	
2	I-P	12	I-D	22		32	
3	I-H	13	I-C	23		33	
4	I-U	14	I-S	24		34	
5	I-T	15	I-L	25		35	
6	I-G	16	I-R	26		36	
7	I-Q	17	I-B	27		37	
8	I-F	18	I-AR	28		38	
9	I-N	19	PB	29		39	
10	I-E	20		30		40	

Notes:

LDC #: 2104006

SDG #: 220376

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Reviewer: AL

2nd reviewer: W

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21540J1
SDG #: 270376

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

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

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 | SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
4	5|5|09	5|20|09		(15 days)			J-|R|P (h)
6-9, 11, 16	5|5|09	5|22|09		(17 days)			↓ ↓

HT.6

LDC #: 21040Q6
SDG #: 270376

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: LA

METHOD: Inorganics, EPA Method Sm Cu

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 5/5/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All (>10x)

Analyte	Blank ID	Sample Identification								
	EB-1									
ClO4	159									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 5, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270390

Sample Identification

I-AA
M-131
M-57A
M-79
M-69
M-135
M-25
M-99
M-37
MD-4
EB-1
M-135DUP
EB-1MS
EB-1MSD

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, EPA SW 846 Method 7196 for Hexavalent Chromium, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-37 EB-1	Hexavalent chromium	31.5 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-1 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-1	5/5/09	Perchlorate	159 ug/L	I-AA M-131 M-57A M-79 M-69 M-135 M-25 M-99 M-37 MD-4

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

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples M-57A and MD-4 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-57A	MD-4				
Total dissolved solids	3260 mg/L	3200 mg/L	2 (≤30)	-	-	-
Perchlorate	26200 ug/L	25200 ug/L	4 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270390

SDG	Sample	Analyte	Flag	A or P	Reason
270390	M-37 EB-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270390

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270390

No Sample Data Qualified in this SDG

LDC #: 21040R6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/09
SDG #: 270390 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056)
/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/5/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 3+10
X	Field blanks	SW	EB: 11

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

Validated Samples:

Acetate

1	I-AA	11	EB-1	21		31	
2	M-131	12	M-135DUP	22		32	
3	M-57A D	13	EB-1MS	23		33	
4	M-79	14	EB-1MSD	24		34	
5	M-69	15	PB	25		35	
6	M-135	16		26		36	
7	M-25	17		27		37	
8	M-99	18		28		38	
9	M-37	19		29		39	
10	MD-4 D	20		30		40	

Notes:

LDC #: 21040RC
SDG #: 270390

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-6, 8,	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
10		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
7	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
9	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
11	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
12	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
13-14	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 24942R6
SDG #: 270390

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer: LV

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	7196					
Parameters:	Cr6+					
Technical holding time:	24 hrs					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
9	5/5/09	5/6/09		(31.5 hrs)			J-/UJ/R (h)
	1042	1819					
11	5/5/09	5/6/09		(31.5 hrs)			↓ ↓
	1045	1819					

LDC #: 21040RC
SDG #: 270390

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AR
2nd Reviewer: LC

METHOD: Inorganics, EPA Method Sw Conv

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: g/L **Associated sample units:** g/L
Sampling date: 5/5/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other): EB Associated Samples: All except #11 (>10x)

Analyte	Blank ID	Sample Identification								
	11									
C104	159									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21040R6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: VA

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	3	10		
TDS	3260	3200	2	
Perchlorate (ug/L)	26200	25200	4	

V:\FIELD DUPLICATES\FD_inorganic\21040R6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270439

Sample Identification

M-92
M-97
M-33
M-31A
M-52
M-50
M-21
M-34
M-35
M-19
M-39
M-68
M-74
M-73
M-88
M-11
M-12A
M-13
MD-5
EB-2
M-74DUP
M-12AMS
M-12AMSD

Introduction

This data review covers 23 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, EPA SW 846 Method 7196 for Hexavalent Chromium, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-33 M-31A M-50 M-34 MD-5	Total dissolved solids	16 days	7 days	J- (all detects) R (all non-detects)	P
M-11	Hexavalent chromium	24.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
EB-2	Hexavalent chromium	27.5 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-2 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	5/6/09	Perchlorate	70 ug/L	M-92 M-97 M-33 M-31A M-52 M-50 M-21 M-34 M-35 M-19 M-39 M-68 M-74 M-73 M-88 M-11 M-12A M-13 MD-5

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

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

Samples M-34 and MD-5 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-34	MD-5				
Total dissolved solids	9200 mg/L	7350 mg/L	22 (≤30)	-	-	-
Perchlorate	1500000 ug/L	1580000 ug/L	5 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270439

SDG	Sample	Analyte	Flag	A or P	Reason
270439	M-33 M-31A M-50 M-34 MD-5	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times
270439	M-11 EB-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270439

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270439

No Sample Data Qualified in this SDG

LDC #: 21040S6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/1/09
SDG #: 270439 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: [signature]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056)
(SM2540C)
The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/6/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 8+19
X	Field blanks	SW	EB: 20

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

Validated Samples:
All wells

1	M-92	11	M-39	21	M-74DUP	31	
2	M-97	12	M-68	22	M-12AMS	32	
3	M-33	13	M-74	23	M-12AMSD	33	
4	M-31A	14	M-73	24	DB	34	
5	M-52	15	M-88	25		35	
6	M-50	16	M-11	26		36	
7	M-21	17	M-12A	27		37	
8	M-34D	18	M-13	28		38	
9	M-35	19	MD-5D	29		39	
10	M-19	20	EB-2	30		40	

Notes:

LDC #: 21040S6
SDG #: 270439

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-10,	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___
12-15,		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
19		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
11, 18	W	pH **TDS** Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** **ClO_3**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
16-17	W	pH **TDS** Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4** **ClO_3**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
20	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4** ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
21	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
22-23	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 210405c
SDG #: 270439

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: AP
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1/SM2540c		7196				
Parameters:	TDS		Cr 6+				
Technical holding time:	7 days		24 hrs				

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
3-4, 6, 8, 19	5/6/09	5/22/09		(16 days)			J-/R/P	(h)
16	5/6/09			5/7/09	(24.5 hrs)		J-/UJ/P	↓
	1134			1204				
20	5/6/09			5/7/09	(27.5 hrs)		↓	↓
	0935			1204				

LDC #: 2104056
SDG #: 270439

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: [signature]

METHOD: Inorganics, EPA Method Iron Comp

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 5/6/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other): EB Associated Samples: All except #20 (>10x)

Analyte	Blank ID	Sample Identification								
	20									
ClO4	70									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21040S6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AA
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	8	19		
TDS	9200	7350	22	
Perchlorate (ug/L)	1500000	1580000	5	

V:\FIELD DUPLICATES\FD_inorganic\21040S6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270442

Sample Identification

I-K
I-J
I-I
I-Z
I-V

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
I-I I-V	Total dissolved solids	16 days	7 days	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-2 (from SDG 270439) was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	5/6/09	Perchlorate	70 ug/L	All samples in SDG 270442

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

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270442

SDG	Sample	Analyte	Flag	A or P	Reason
270442	I-I I-V	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270442

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270442

No Sample Data Qualified in this SDG

LDC #: 21040T6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/2/09
SDG #: 270442 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/6/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	from 270339
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB: EB-2 (from 270439)

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

Validated Samples:

All wat

1	I-K	11		21		31	
2	I-J	12		22		32	
3	I-I	13		23		33	
4	I-Z	14		24		34	
5	I-V	15		25		35	
6	PB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21045J6
SDG #: 270442

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-5	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______

LDC #: 21045T6
SDG #: 270442

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 | SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
3, 5	5/6/09	5/22/09		(16 days)			J- | R | P (h)

LDC #: 21045T6
SDG #: 270442

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: [illegible]

METHOD: Inorganics, EPA Method Sw Conv

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 5/6/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All (>10x)

Analyte	Blank ID	Sample Identification								
	EB-2									
C104	70									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 6, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270507

Sample Identification

PC-77
PC-74

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

Sample EB-2 (from SDG 270439) was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	5/6/09	Perchlorate	70 ug/L	All samples in SDG 270507

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

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270507

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270507

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270507

No Sample Data Qualified in this SDG

LDC #: 21040U6
SDG #: 270507
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/21/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/6/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	} fm 270439
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB: EB-2 (fm 270439)

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

Validated Samples:

All wtr

1	PC-77	11		21		31	
2	PC-74	12		22		32	
3	PB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104046

SDG #: 270507

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Reviewer: AJ

2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 2	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 21049U6
SDG #: 270507

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: W

METHOD: Inorganics, EPA Method Sr Conv

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 5/6/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other) EB Associated Samples: All (>10x)

Analyte	Blank ID	Sample Identification								
	EB-2									
Cl04	70									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 7, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270564

Sample Identification

HMW9
PC-96
PC-112
PC-110
PC-107
PC-112DUP

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PC-112	Perchlorate	32 days	28 days	J- (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270564

SDG	Sample	Analyte	Flag	A or P	Reason
270564	PC-112	Perchlorate	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270564

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270564

No Sample Data Qualified in this SDG

LDC #: 21040V6
SDG #: 270564
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) (SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/7/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:

All with

1	HMW9	11		21		31	
2	PC-96	12		22		32	
3	PC-112	13		23		33	
4	PC-110	14		24		34	
5	PC-107	15		25		35	
6	PC-112DUP	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21040V6
SDG #: 270564

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: V

All circled methods are applicable to each sample.

	Sample ID	Matrix	Parameter
	1 - 5	W	pH **(TDS)** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **(ClO_4)** ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
2C	6	W	pH **(TDS)** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 21040V6
SDG #: 27056 4

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	314.0					
Parameters:	ClO_4					
Technical holding time:	28 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
3	5/7/09	6/8/09		(32 days)			J-/UJ/P (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 8, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270578

Sample Identification

PC-94
PC-93
PC-2
HSW-1
HM-2
PC-104
HMW14
PC-2MS
PC-2MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270578

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270578

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270578

No Sample Data Qualified in this SDG

LDC #: 21040W6
SDG #: 270578
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056)
SM2540C

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/8/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:
All wells

1	PC-94	11		21		31	
2	PC-93	12		22		32	
3	PC-2	13		23		33	
4	HSW-1	14		24		34	
5	HM-2	15		25		35	
6	PC-104	16		26		36	
7	HMW14	17		27		37	
8	PC-2MS	18		28		38	
9	PC-2MSD	19		29		39	
10	PB	20		30		40	

Notes:

LDC #: 26040W6
SDG #: 270578

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1, 4-7	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2-3	W	pH (TDS) Cl F (NO_3) NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) (ClO_3)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
QC 8-9	W	pH TDS Cl F (NO_3) NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 8, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270579

Sample Identification

M-17A
M-2A
M-76
M-75
M-115
M-14A
M-14ADUP

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-2A	Total dissolved solids	14 days	7 days	J- (all detects) UJ (all non-detects)	A

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270579

SDG	Sample	Analyte	Flag	A or P	Reason
270579	M-2A	Total dissolved solids	J- (all detects) UJ (all non-detects)	A	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270579

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270579

No Sample Data Qualified in this SDG

LDC #: 21040X6
SDG #: 270579
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: V

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/8/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples: All with

1	M-17A	11		21		31	
2	M-2A	12		22		32	
3	M-76	13		23		33	
4	M-75	14		24		34	
5	M-115	15		25		35	
6	M-14A	16		26		36	
7	M-14ADUP	17		27		37	
8	PB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21040X6
SDG #: 270579

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-6	W	pH **(TDS)** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **(ClO_4)** ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
2C 7	W	pH **(TDS)** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____________________

METHODS.6

LDC #: 21049x6
SDG #: 270579

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 / SM2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
2	5/8/09	5/22/09		(14 days)			J- / UJ / A (h) (Verified)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 11, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270639

Sample Identification

PC-108
HMW-15
HMW-13
PC-79
PC-79MS
PC-79MSD

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270639

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270639

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270639

No Sample Data Qualified in this SDG

LDC #: 21040Y6
SDG #: 270639
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/11/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

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

Validated Samples:

All water

1	PC-108	11		21		31	
2	HMW-15	12		22		32	
3	HMW-13	13		23		33	
4	PC-79	14		24		34	
5	PC-79MS	15		25		35	
6	PC-79MSD	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104046
SDG #: 270639

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-4	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___
5-6	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 12, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270708

Sample Identification

HMW16
PC-24
PC-50

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

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

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
HMW16 PC-24 PC-50	Total dissolved solids	8 days	7 days	J- (all detects) UJ (all non-detects)	P

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

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

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

No field blanks were identified in this SDG.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

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

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270708

SDG	Sample	Analyte	Flag	A or P	Reason
270708	HMW16 PC-24 PC-50	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270708

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270708

No Sample Data Qualified in this SDG

LDC #: 21040Z6
SDG #: 270708
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/2/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: V

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

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

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/12/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	from 270639
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

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

Validated Samples:

All wells

1	HMW16	11		21		31	
2	PC-24	12		22		32	
3	PC-50	13		23		33	
4	PB	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104076
SDG #: 270708

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AJ
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-3	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 2104026
SDG #: 270708

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer: h

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 | SM2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
1-3	5/12/09	5/20/09		(8 days)			J- | UJ | P (h)

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

August 5, 2009

SUBJECT: 2009 Annual Remedial Performance Sampling, Data Validation

Dear Ms. Crowley,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 19, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 21041:

SDG #	Fraction
270815, 270857, 271048, 271121, 271325, 270531, 270704, 270794, 270845, 270989, 270992, 271160, 271248, 271400, 271465, 271624, 270567, 271337, 271731, 270628, 271066, 271687, 271791, 271832, 271854, 271999, 272056, 272306	Chromium, Wet Chemistry

The data validation was performed under Stage 2A & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- Region 9 Superfund Data Evaluation/Validation Guidance, NDEP Guidance, May 2006
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

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

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

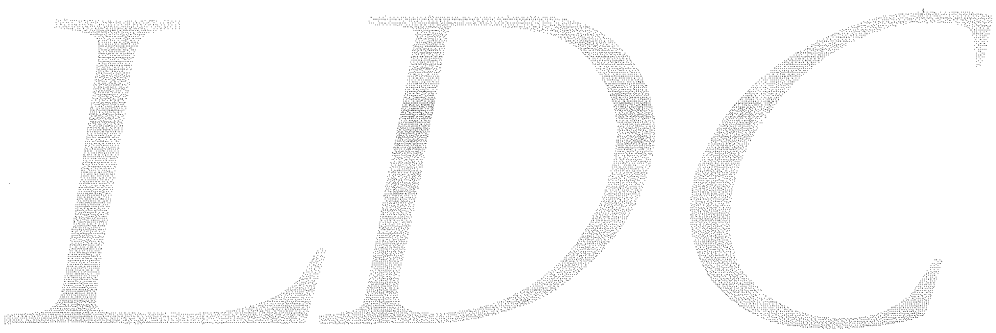
Level 2A/4 **LDC #21041 (Tronox LLC, Henderson NV / 2009 Annual Remedial Performance Sampling)**

LDC	SDG#	DATE REC'D	DATE DUE	Cr (6010B)		Cr(VI) (7196)		CLO_4 (314.0)		TDS (160.1)		Chlorate (9056)		NO_3-N (9056)		NO_3-N (300.0)		NO_3/NO_2-N (353.2)																			
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	270815	06/19/09	07/31/09	6	0	-	-	6	0	6	0	-	-	-	-	-	-	-	-																
B	270857	06/19/09	07/31/09	-	-	-	-	7	0	7	0	-	-	-	-	-	-	-	-																
C	271048	06/19/09	07/31/09	6	0	-	-	6	0	6	0	-	-	-	-	-	-	-	-																
D	271121	06/19/09	07/31/09	10	0	-	-	10	0	10	0	-	-	-	-	-	-	-	-																
E	271325	06/19/09	07/31/09	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-																
F	270531	06/30/09	07/31/09	1	0	-	-	-	-	1	0	-	-	-	-	1	0	-	-																
G	270704	06/30/09	07/31/09	20	0	-	-	20	0	20	0	5	0	3	0	-	-	2	0																
H	270794	06/30/09	07/31/09	7	0	-	-	7	0	7	0	-	-	-	-	-	-	-	-																
I	270845	06/30/09	07/31/09	4	0	-	-	7	0	7	0	1	0	1	0	-	-	-	-																
J	270989	06/30/09	07/31/09	2	0	-	-	5	0	3	0	1	0	1	0	-	-	-	-																
K	270992	06/30/09	07/31/09	2	0	-	-	2	0	2	0	2	0	1	0	-	-	1	0																
L	271160	06/30/09	07/31/09	1	0	-	-	6	0	6	0	-	-	-	-	-	-	-	-																
M	271248	06/30/09	07/31/09	1	0	-	-	6	0	6	0	-	-	-	-	-	-	-	-																
N	271400	06/30/09	07/31/09	9	0	-	-	9	0	9	0	-	-	-	-	9	0	-	-																
O	271465	06/30/09	07/31/09	5	0	-	-	5	0	5	0	-	-	-	-	1	0	-	-																
P	271624	06/30/09	07/31/09	1	0	-	-	4	0	4	0	-	-	-	-	1	0	-	-																
Q	270567	07/02/09	07/31/09	12	0	5	0	12	0	12	0	3	0	-	-	-	-	3	0																
R	271337	07/02/09	07/31/09	6	0	-	-	7	0	7	0	-	-	-	-	6	0	-	-																
S	271731	07/02/09	07/31/09	-	-	-	-	18	0	18	0	-	-	-	-	-	-	-	-																
T	270628	07/07/09	07/31/09	18	0	-	-	18	0	18	0	-	-	-	-	-	-	-	-																
U	271066	07/07/09	07/31/09	6	0	-	-	6	0	6	0	-	-	-	-	-	-	-	-																
V	271687	07/07/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-	-	-	-	-																
W	271791	07/07/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-	-	-	-	-																
X	271832	07/07/09	07/31/09	2	0	-	-	26	0	26	0	-	-	-	-	-	-	-	-																
Y	271854	07/07/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-	-	-	-	-																
Z	271999	07/07/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-	-	-	-	-																
AA	272056	07/07/09	07/31/09	1	0	-	-	1	0	1	0	-	-	-	-	-	-	-	-																
BB	272306	07/07/09	07/31/09	3	0	-	-	3	0	3	0	-	-	-	-	-	-	-	-																
Total	T/LR			127	0	5	0	196	0	195	0	12	0	6	0	18	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	565

Shaded cells indicate Level 4 validation (all other cells are Level 2A validation). These sample counts do not include MS/MSD, and DUPs

2009 Annual Remedial Performance Sampling
Data Validation Reports
LDC# 21041

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 13, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270815

Sample Identification

PC-65
PC-66
PC-67
PC-28
PC-31
PC-40

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270815

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270815

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270815

No Sample Data Qualified in this SDG

LDC #: 21041A4
SDG #: 270815
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AJ
2nd Reviewer: MC

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/13/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specific
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples: All wet

1	PC-65	11		21		31	
2	PC-66	12		22		32	
3	PC-67	13		23		33	
4	PC-28	14		24		34	
5	PC-31	15		25		35	
6	PC-40	16		26		36	
7	MB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 20, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271048

Sample Identification

PC-64
FB052009
EB052009
M-65
M-134
DUPLICATE
FB052009MS
FB052009MSD

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB052009 was identified as an equipment blank. No chromium was found in this blank.

Sample FB052009 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-134 and DUPLICATE were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-134	DUPLICATE				
Chromium	0.10	0.12	18 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271048

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271048

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271048

No Sample Data Qualified in this SDG

LDC #: 21041C4
SDG #: 271048
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AS
2nd Reviewer: ✓

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/20/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 5+6
XIV.	Field Blanks	ND	FB: 2 EB: 3

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

Validated Samples: All wat

1	PC-64	11		21		31	
2	FB052009	12		22		32	
3	EB052009	13		23		33	
4	M-65	14		24		34	
5	M-134D	15		25		35	
6	DUPLICATE D	16		26		36	
7	FB052009MS	17		27		37	
8	FB052009MSD	18		28		38	
9	MB	19		29		39	
10		20		30		40	

Notes: _____

LDC#: 21041C4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: [signature]
2nd Reviewer: [signature]

METHOD: Metals (EPA Method 6010B)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	5	6		
Chromium	0.10	0.12	18	

V:\FIELD DUPLICATES\FD_inorganic\21041C4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 21, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271121

Sample Identification

M-64
M-136
MW-16
FB052109
EB052109
MW-132
MW-133
M-126
M-127
DUPLICATE

Introduction

This data review covers 10 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB052109 was identified as an equipment blank. No chromium was found in this blank.

Sample FB052109 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples MW-132 and DUPLICATE were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	MW-132	DUPLICATE				
Chromium	0.081	0.094	15 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271121

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271121

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271121

No Sample Data Qualified in this SDG

LDC #: 21041D4
SDG #: 271121
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/21/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	from 271048
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 6+10
XIV.	Field Blanks	ND	FB: 4 EB: 5

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

Validated Samples:

All wtr

1	M-64	11	MB	21		31	
2	M-136	12		22		32	
3	MW-16	13		23		33	
4	FB052109	14		24		34	
5	EB052109	15		25		35	
6	MW-132 D	16		26		36	
7	MW-133	17		27		37	
8	M-126	18		28		38	
9	M-127	19		29		39	
10	DUPLICATE D	20		30		40	

Notes:

LDC#: 21041D4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: A
2nd Reviewer: 1

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	6	10		
Chromium	0.081	0.094	15	

V:\FIELD DUPLICATES\FD_inorganic\21041D4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 7, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270531

Sample Identification

M-10

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270531

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270531

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270531

No Sample Data Qualified in this SDG

LDC #: 21041F4
SDG #: 270531
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/7/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All soil

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

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 12, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270704

Sample Identification

PC-91
PC-86
PC-90
PC-103
MW-K5
PC-56
PC-68
PC-60
PC-58
PC-62
PC-59
PC-98R
MW-K4
ARP-7
M-87
PC-97
ARP-6B
ARP-5A
ARP-4A
PC-53

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270704

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270704

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270704

No Sample Data Qualified in this SDG

LDC #: 21041G4
SDG #: 270704
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/12/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All wells

1	PC-91	11	PC-59	21	MB	31	
2	PC-86	12	PC-98R	22		32	
3	PC-90	13	~~MW-5K~~ MW-K4	23		33	
4	PC-103	14	ARP-7	24		34	
5	MW-K5	15	M-87	25		35	
6	PC-56	16	PC-97	26		36	
7	PC-68	17	ARP-6B	27		37	
8	PC-60	18	ARP-5A	28		38	
9	PC-58	19	ARP-4A	29		39	
10	PC-62	20	PC-53	30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 13, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270794

Sample Identification

PC-101R
PC-18
PC-55
ARP-1
L-635
PC-92
PC-122

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270794

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270794

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270794

No Sample Data Qualified in this SDG

LDC #: 21041H4
SDG #: 270794
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/13/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	PC-101R	11		21		31	
2	PC-18	12		22		32	
3	PC-55	13		23		33	
4	ARP-1	14		24		34	
5	L-635	15		25		35	
6	PC-92	16		26		36	
7	PC-122	17		27		37	
8	MB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 14, 2009

LDC Report Date: July 24, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270845

Sample Identification

H-58A
H-48
MC-65
PC-21A

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270845

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270845

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270845

No Sample Data Qualified in this SDG

LDC #: 21041I4
SDG #: 270845
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/14/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wtr

1	H-58A	11		21		31	
2	H-48	12		22		32	
3	MC-65	13		23		33	
4	PC-21A	14		24		34	
5	MB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 19, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270989

Sample Identification

FB0151909
FB051909-2
FB051909-2MS
FB051909-2MSD

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Samples FB0151909 and FB051909-2 and sample FB M-39 (from SDG 270992) were identified as field blanks. No chromium was found in these blanks.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270989

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270989

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270989

No Sample Data Qualified in this SDG

LDC #: 21041J4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270989 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AJ
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/19/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	/ /
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	FB: 1, 2, FB M-39 (from 270992)

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

Validated Samples: All wtr

1	FB0151909	11		21		31	
2	FB051909-2	12		22		32	
3	FB051909-2MS	13		23		33	
4	FB051909-2MSD	14		24		34	
5	MB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 19, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270992

Sample Identification

M-39
FB M-39

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Samples FB0151909 and FB051909-2 (both from SDG 270989) and sample FB M-39 were identified as field blanks. No chromium was found in these blanks.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270992

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270992

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270992

No Sample Data Qualified in this SDG

LDC #: 21041K4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270992 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/19/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	FB: 2, *FB015190 9, *FB051909-2 (from 270987)

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

Validated Samples: all wat

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

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 22, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271160

Sample Identification

M-124

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271160

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271160

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271160

No Sample Data Qualified in this SDG

LDC #: 21041L4
SDG #: 271160
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/22/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All water

1	M-124	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 26, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271248

Sample Identification

M-111A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271248

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271248

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271248

No Sample Data Qualified in this SDG

LDC #: 21041M4
SDG #: 271248
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: A1
2nd Reviewer: L

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/26/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All with

1	M-111A	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 1, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271400

Sample Identification

TR-11
TR-12
TR-1
TR-10
FB060109
M-103
M-117
M-118
DUPLICATE
FB060109MS
FB060109MSD

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB060109 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples M-103 and DUPLICATE were identified as field duplicates. No chromium was detected in any of the samples.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271400

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271400

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271400

No Sample Data Qualified in this SDG

LDC #: 21041N4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271400 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: LA

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/1/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	ND	D: 6+9
XIV.	Field Blanks	ND	FB: 5

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

Validated Samples:

all wet

1	TR-11	11	FB060109MSD	21		31	
2	TR-12	12	MB	22		32	
3	TR-1	13		23		33	
4	TR-10	14		24		34	
5	FB060109	15		25		35	
6	M-103 D	16		26		36	
7	M-117	17		27		37	
8	M-118	18		28		38	
9	DUPLICATE D	19		29		39	
10	FB060109MS	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 2, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271465

Sample Identification

M-121
M-120
FB060209
TR-4
DUPLICATE
DUPLICATEMS
DUPLICATEMSD

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB060209 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

Samples TR-4 and DUPLICATE were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	TR-4	DUPLICATE				
Chromium	0.030	0.028	-	0.002 (≤0.010)	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271465

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271465

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271465

No Sample Data Qualified in this SDG

LDC #: 21041O4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271465 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 4+5
XIV.	Field Blanks	ND	FB: 3

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

Validated Samples:

All wtr

1	M-121	11		21		31	
2	M-120	12		22		32	
3	FB060209	13		23		33	
4	TR-4	14		24		34	
5	DUPLICATE	15		25		35	
6	DUPLICATEMS	16		26		36	
7	DUPLICATEMSD	17		27		37	
8	MB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC#: 21041O4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AS
2nd Reviewer: LC

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	(≤ 0.010) Difference
	4	5		
Chromium	0.030	0.028		0.002

V:\FIELD DUPLICATES\FD_inorganic\21041O4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 4, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271624

Sample Identification

TR-3

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

VI. Matrix Spike Analysis

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

VII. Duplicate Sample Analysis

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

VIII. Laboratory Control Samples (LCS)

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

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

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

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271624

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271624

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271624

No Sample Data Qualified in this SDG

LDC #: 21041P4
SDG #: 271624
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

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

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/4/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

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

Validated Samples:

All water

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

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 7, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270567

Sample Identification

M-87
M-70
M-71
M-72
M-38
M-36
M-84
M-100
M-10
MD-2
M-22A
M-89
M-84MS
M-84MSD

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

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

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

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

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

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

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

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

A Indicates the finding is based upon technical validation criteria.

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

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

I. Technical Holding Times

All technical holding time requirements were met.

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

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

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

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

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

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples M-36 and MD-2 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-36	MD-2				
Chromium	32	32	0 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270567

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270567

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270567

No Sample Data Qualified in this SDG

LDC #: 21041Q4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270567 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/7/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	1 1
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 6 + 10
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wet

1	M-87	11	M-22A	21		31	
2	M-70	12	M-89	22		32	
3	M-71	13	M-84MS	23		33	
4	M-72	14	M-84MSD	24		34	
5	M-38	15	MB	25		35	
6	M-36D	16		26		36	
7	M-84	17		27		37	
8	M-100	18		28		38	
9	M-10	19		29		39	
10	~~M-2~~ MD-2D	20		30		40	

Notes:

LDC#: 21041Q4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AA
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	6	10		
Chromium	32	32	0	

V:\FIELD DUPLICATES\FD_inorganic\21041Q4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 29, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271337

Sample Identification

TR-2
TR-5
TR-6
TR-7
TR-9
TR-8

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271337

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271337

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271337

No Sample Data Qualified in this SDG

LDC #: 21041R4
SDG #: 271337
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: A1
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/29/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	TR-2	11		21		31	
2	TR-5	12		22		32	
3	TR-6	13		23		33	
4	TR-7	14		24		34	
5	TR-9	15		25		35	
6	TR-8	16		26		36	
7	MB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 11, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270628

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
PC-121MS
PC-121MSD
PC-133MS
PC-133MSD

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 270628

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 270628

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 270628

No Sample Data Qualified in this SDG

LDC #: 21041T4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270628 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/11/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	ART-1	11	SF-1	21	PC-133MS	31	
2	ART-2	12	PC-117	22	PC-133MSD	32	
3	ART-3	13	PC-118	23	MB	33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	PC-121MS	29		39	
10	PC-116R	20	PC-121MSD	30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 20, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271066

Sample Identification

CLDR-2
M-130
M-129
M-67
M-66
FB-CLDR-2

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB-CLDR-2 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271066

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271066

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271066

No Sample Data Qualified in this SDG

LDC #: 21041U4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271066 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/20/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	} Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N		
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	FB: 6

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	CLDR-2	11		21		31	
2	M-130	12		22		32	
3	M-129	13		23		33	
4	M-67	14		24		34	
5	M-66	15		25		35	
6	FB-~~CLDR2~~ CLDR-2	16		26		36	
7	MB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 8, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271687

Sample Identification

M-7B

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271687

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271687

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271687

No Sample Data Qualified in this SDG

LDC #: 21041V4
SDG #: 271687
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/8/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wtr

1	M-7B	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 9, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271791

Sample Identification

H-28A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271791

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271791

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271791

No Sample Data Qualified in this SDG

LDC #: 21041W4
SDG #: 271791
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/9/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wat

1	H-28A	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 9 through June 10, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271832

Sample Identification

MW-K4
ARP-1

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271832

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271832

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271832

No Sample Data Qualified in this SDG

LDC #: 21041X4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271832 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/9 - 6/10/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All with

1	MW-K4	11		21		31	
2	ARP-1	12		22		32	
3	MB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 10, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271854

Sample Identification

M-6A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271854

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271854

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271854

No Sample Data Qualified in this SDG

LDC #: 21041Y4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271854 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/10/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	M-6A	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 15, 2009

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271999

Sample Identification

MC-53

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 271999

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 271999

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 271999

No Sample Data Qualified in this SDG

LDC #: 21041Z4
SDG #: 271999
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: V

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/15-21/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wet

1	MC-53	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 16, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 272056

Sample Identification

M-29

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 272056

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 272056

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 272056

No Sample Data Qualified in this SDG

LDC #: 21041AA4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 272056 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: V

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specific
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	M-29	11		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 25, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 272306

Sample Identification

PC-94
PC-2
PC-1

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 272306

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 272306

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 272306

No Sample Data Qualified in this SDG

LDC #: 21041BB4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 272306 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/25/09
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	} Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All with

1	PC-94	11		21		31	
2	PC-2	12		22		32	
3	PC-1	13		23		33	
4	MB	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

2009 Annual Remedial Performance Sampling
Data Validation Reports
LDC# 21041

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 13, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270815

Sample Identification

PC-65
PC-66
PC-67
PC-28
PC-31
PC-40

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270815

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270815

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270815

No Sample Data Qualified in this SDG

LDC #: 21041A6
SDG #: 270815
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/13/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	} f.n. 270704
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	PC-65	11		21		31	
2	PC-66	12		22		32	
3	PC-67	13		23		33	
4	PC-28	14		24		34	
5	PC-31	15		25		35	
6	PC-40	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041A6
SDG #: 270815

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-6	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 15, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270857

Sample Identification

MC-3
MC-29
MC-51
MC-50
MC-45
MC-97
MC-93
MC-3DUP

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270857

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270857

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270857

No Sample Data Qualified in this SDG

LDC #: 21041B6
SDG #: 270857
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/15/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wtr

1	~~MC3~~ MC-3	11		21		31	
2	~~MC29~~ MC-29	12		22		32	
3	~~MC51~~ MC-51	13		23		33	
4	~~MC50~~ MC-50	14		24		34	
5	~~MC45~~ MC-45	15		25		35	
6	~~MC97~~ MC-97	16		26		36	
7	~~MC93~~ MC-93	17		27		37	
8 dl	MC3DUP MC-3DUP	18		28		38	
9	PB	19		29		39	
10		20		30		40	

Notes:

LDC #: 2104186
SDG #: 270857

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-7	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
8	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 20, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271048

Sample Identification

PC-64
FB052009
EB052009
M-65
M-134
DUPLICATE
PC-64DUP

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-65	Total dissolved solids	24 days	7 days	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB052009 was identified as an equipment blank. No contaminant concentrations were found in this blank.

Sample FB052009 was identified as a field blank. No contaminant concentrations were found in this blank with the following exceptions:

Field Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
FB052009	5/20/09	Perchlorate	4.1 ug/L	PC-64 M-65 M-134 DUPLICATE

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-134 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-134	DUPLICATE				
Total dissolved solids	3000 mg/L	2850 mg/L	5 (≤30)	-	-	-
Perchlorate	123000 ug/L	125000 ug/L	2 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271048

SDG	Sample	Analyte	Flag	A or P	Reason
271048	M-65	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271048

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271048

No Sample Data Qualified in this SDG

LDC #: 21041C6
SDG #: 271048
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/20/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 5 + 6
X	Field blanks	SW	FB: 2 *EB: 3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

*ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all wet

1	PC-64	11		21		31	
2	FB052009	12		22		32	
3	EB052009	13		23		33	
4	M-65	14		24		34	
5	M-134	15		25		35	
6	DUPLICATE	16		26		36	
7	PC-64DUP	17		27		37	
8	PB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041C6
SDG #: 27104S

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: V

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-6	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
DC 7	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21041C6
SDG #: 271048

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y)N N/A Were all samples preserved as applicable to each method ?
Y(N) N/A Were all cooler temperatures within validation criteria?

Method:	160.1 | SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
4	5/20/09	6/13/09		(24 days)			J-/R/P (h)

LDC #: 21041C6
SDG #: 271048

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: [signature]

METHOD: Inorganics, EPA Method Sw Cw

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: ug/L **Associated sample units:** ug/L
Sampling date: 5/20/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: 1, 4-6 (>10x)

Analyte	Blank ID	Sample Identification								
	2									
ClO_4	4.1									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21041C6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AP
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	5	6		
TDS	3000	2850	5	
Perchlorate (ug/L)	123000	125000	2	

V:\FIELD DUPLICATES\FD_inorganic\21041C6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 21, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271121

Sample Identification

M-64
M-136
MW-16
FB052109
EB052109
MW-132
MW-133
M-126
M-127
DUPLICATE

Introduction

This data review covers 10 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB052109 was identified as an equipment blank. No contaminant concentrations were found in this blank.

Sample FB052109 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples MW-132 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	MW-132	DUPLICATE				
Total dissolved solids	1482 mg/L	1584 mg/L	7 (≤30)	-	-	-
Perchlorate	7410 ug/L	9670 ug/L	26 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271121

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271121

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271121

No Sample Data Qualified in this SDG

LDC #: 21041D6
SDG #: 271121
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/21/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Cl: A Spiked
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 6+10
X	Field blanks	ND	FB: 4 EB: 5

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wells

1	M-64	11	PB	21		31	
2	M-136	12		22		32	
3	MW-16	13		23		33	
4	FB052109	14		24		34	
5	EB052109	15		25		35	
6	MW-132D	16		26		36	
7	MW-133	17		27		37	
8	M-126	18		28		38	
9	M-127	19		29		39	
10	DUPLICATE D	20		30		40	

Notes:

LDC #: 21041D6

SDG #: 271121

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: AJ

2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-10	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC# 21041D6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	6	10		
TDS	1482	1584	7	
Perchlorate (ug/L)	7410	9670	26	

V:\FIELD DUPLICATES\FD_inorganic\21041D6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 28, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271325

Sample Identification

AA-01
AA-01DUP

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271325

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271325

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271325

No Sample Data Qualified in this SDG

LDC #: 21041E6
SDG #: 271325
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/28/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wtr

1	AA-01	11		21		31	
2	AA-01DUP	12		22		32	
3	PB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041E6
SDG #: 271325

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AP
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
2c 2	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___

Comments: ______________________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 7, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270531

Sample Identification

M-10

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 300.0 for Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-10	Nitrate as N	7 days	48 hours	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270531

SDG	Sample	Analyte	Flag	A or P	Reason
270531	M-10	Nitrate as N	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270531

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270531

No Sample Data Qualified in this SDG

LDC #: 21041F6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270531 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer: W

METHOD: (Analyte) TDS (EPA Method 160.1), Nitrate-N (EPA Method 300.0)
SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/7/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	} Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:
All wts

1	M-10	11		21		31	
2	PB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041F6
SDG #: 270531

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: A
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____

Comments:

LDC #: 21041F6
SDG #: 270531

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer: V

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		300.0					
Parameters:		NO_3-N					
Technical holding time:		48 hrs					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
1	5/7/09	5/14/09		(7 days)			J-/R/P (4)
	1005	1757					

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 12, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270704

Sample Identification

PC-91	PC-91MS
PC-86	PC-91MSD
PC-90	
PC-103	
MW-K5	
PC-56	
PC-68	
PC-60	
PC-58	
PC-62	
PC-59	
PC-98R	
MW-K4	
ARP-7	
M-87	
PC-97	
ARP-6B	
ARP-5A	
ARP-4A	
PC-53	

Introduction

This data review covers 22 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate/Nitrite as Nitrogen, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270704

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270704

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270704

No Sample Data Qualified in this SDG

LDC #: 21041G6
SDG #: 270704
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056), Nitrate/Nitrite as N (EPA Method 353.2) SM4500Cl

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/12/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All with

1	PC-91	11	PC-59	21	PC-91MS	31	
2	PC-86	12	PC-98R	22	PC-91MSD	32	
3	PC-90	13	MW-5K K4	23	PB	33	
4	PC-103	14	ARP-7	24		34	
5	MW-K5	15	M-87	25		35	
6	PC-56	16	PC-97	26		36	
7	PC-68	17	ARP-6B	27		37	
8	PC-60	18	ARP-5A	28		38	
9	PC-58	19	ARP-4A	29		39	
10	PC-62	20	PC-53	30		40	

Notes: _____

LDC #: 21041G6
SDG #: 270704

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
6-20	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH ~~TDS~~ A Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
1,4	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) (NO_3(NO_2-N)) (ClO_3)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2-3,5	W	pH (TDS) Cl F (NO_3) NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) (ClO_3)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2(21-22	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 13, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270794

Sample Identification

PC-101R
PC-18
PC-55
ARP-1
L-635
PC-92
PC-122
PC-92DUP

Introduction

This data review covers 8 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270794

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270794

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270794

No Sample Data Qualified in this SDG

LDC #: 21041H6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270794 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/13/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wat

1	PC-101R	11		21		31	
2	PC-18	12		22		32	
3	PC-55	13		23		33	
4	ARP-1	14		24		34	
5	L-635	15		25		35	
6	PC-92	16		26		36	
7	PC-122	17		27		37	
8	PC-92DUP	18		28		38	
9	PB	19		29		39	
10		20		30		40	

Notes:

LDC #: 26041H6

SDG #: 270794

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: [initials]

2nd reviewer: [initials]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 7	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
8	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 14, 2009

LDC Report Date: July 24, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270845

Sample Identification

H-58A
H-48
MC-65
PC-21A
MC-6
MC-7
MC-69

Introduction

This data review covers 7 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
H-58A H-48 MC-65 PC-21A MC-6 MC-7 MC-69	Total dissolved solids	23 days	7 days	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270845

SDG	Sample	Analyte	Flag	A or P	Reason
270845	H-58A H-48 MC-65 PC-21A MC-6 MC-7 MC-69	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270845

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270845

No Sample Data Qualified in this SDG

LDC #: 21041I6
SDG #: 270845
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/14/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All with

1	H-58A	11		21		31	
2	H-48	12		22		32	
3	MC-65	13		23		33	
4	PC-21A	14		24		34	
5	MC-6	15		25		35	
6	MC-7	16		26		36	
7	MC-69	17		27		37	
8	PB	18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041I6
SDG #: 270845

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-3,	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
5-7		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
4	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21041I6
SDG #: 220845

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer: W

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 | SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1 - 7	5|14|09	6|6|09		(23 days)			J- | e | p (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 19, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270989

Sample Identification

FB0151909
HSS
EB051909
FB051909-2
PC-82

Introduction

This data review covers 5 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB051909 was identified as an equipment blank. No contaminant concentrations were found in this blank.

Samples FB0151909 and FB051909-2 and sample FB M-39 (from SDG 270992) were identified as field blanks. No contaminant concentrations were found in these blanks.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270989

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270989

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270989

No Sample Data Qualified in this SDG

LDC #: 21041J6
SDG #: 270989
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/19/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	ND	EB: 3 FB: 1, 4, FBM-39 (from 270992)

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wtr

1	FB0151909	11		21		31	
2	HSS	12		22		32	
3	EB051909	13		23		33	
4	FB051909-2	14		24		34	
5	PC-82	15		25		35	
6	PB	16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041J6
SDG #: 270989

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
2-3	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
1, 4	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
5	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 19, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270992

Sample Identification

M-39
FB M-39

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate/Nitrite as Nitrogen, and EPA SW 846 Method 9056 for Chlorate and Nitrate as Nitrogen.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-39	Total dissolved solids	14 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Samples FB0151909 and FB051909-2 (both from SDG 270989) and FB M-39 were identified as field blanks. No contaminant concentrations were found in these blanks.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270992

SDG	Sample	Analyte	Flag	A or P	Reason
270992	M-39	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270992

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270992

No Sample Data Qualified in this SDG

LDC #: 21041K6
SDG #: 270992
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, Nitrate-N (EPA SW846 Method 9056), Nitrate/Nitrite as N (EPA Method 353.2) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/19/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	ND	FB-2, *FB051909, *FB051909-2 (from 270989)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
*ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wells

1	M-39	11		21		31	
2	FB M-39	12		22		32	
3	PB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

LDC #: 21041K6
SDG #: 270992

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3 NO_3/NO_2-N
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21041K6
SDG #: 270992

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AD
2nd reviewer: W

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 / SM 2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
1	5/19/09	6/2/09		(14 days)			J-/UJ/P (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 22, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271160

Sample Identification

M-125
M-128
M-124
FB052209
M-123
DUPLICATE

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample FB052209 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-125 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-125	DUPLICATE				
Total dissolved solids	14700 mg/L	15400 mg/L	5 (≤30)	-	-	-
Perchlorate	842 ug/L	812 ug/L	4 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271160

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271160

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271160

No Sample Data Qualified in this SDG

LDC #: 21041L6
SDG #: 271160
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/22/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 1+6
X	Field blanks	ND	FB: 4

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All with

1	M-125D	11		21		31	
2	M-128	12		22		32	
3	M-124	13		23		33	
4	FB052209	14		24		34	
5	M-123	15		25		35	
6	DUPLICATED	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2204166
SDG #: 271160

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 6	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____

LDC# 21041L6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: W

Inorganics, Method See Cover

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	1	6		
TDS	14700	15400	5	
Perchlorate (ug/L)	842	812	4	

V:\FIELD DUPLICATES\FD_inorganic\21041L6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 26, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271248

Sample Identification

HM-2
M-111A
FB052609
M-142
EB052609
DUPLICATE

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB052609 was identified as an equipment blank. No contaminant concentrations were found in this blank.

Sample FB052609 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-142 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-142	DUPLICATE				
Total dissolved solids	2938 mg/L	2814 mg/L	5 (≤30)	-	-	-
Perchlorate	24700 ug/L	24800 ug/L	0 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271248

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271248

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271248

No Sample Data Qualified in this SDG

LDC #: 21041M6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271248 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: LA

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/26/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	} Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 4+6
X	Field blanks	ND	FB: 3 EB: 5

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	HM-2	11		21		31	
2	M-111A	12		22		32	
3	FB052609	13		23		33	
4	M-142 D	14		24		34	
5	EB052609	15		25		35	
6	DUPLICATE D	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041MC
SDG #: 271248

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-6	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC# 21041M6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AJ
2nd Reviewer:

Inorganics, Method See Cover

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	4	6		
TDS	2938	2814	4	
Perchlorate (ug/L)	24700	24800	0	

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 1, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271400

Sample Identification

TR-11
TR-12
TR-1
TR-10
FB060109
M-103
M-117
M-118
DUPLICATE
TR-12MS
TR-12MSD

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 300.0 for Nitrate as Nitrogen, and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample FB060109 was identified as a field blank. No contaminant concentrations were found in this blank.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-103 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-103	DUPLICATE				
Total dissolved solids	1970 mg/L	2000 mg/L	2 (≤30)	-	-	-
Perchlorate	264 ug/L	260 ug/L	2 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271400

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271400

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271400

No Sample Data Qualified in this SDG

LDC #: 21041N6
SDG #: 271400
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Nitrate-N (EPA Method 300.0) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/1/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 6+9
X	Field blanks	ND	FR: 5

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wet

1	TR-11	11	TR-12MSD	21		31	
2	TR-12	12	PB	22		32	
3	TR-1	13		23		33	
4	TR-10	14		24		34	
5	FB060109	15		25		35	
6	M-103 D	16		26		36	
7	M-117	17		27		37	
8	M-118	18		28		38	
9	DUPLICATE D	19		29		39	
10	TR-12MS	20		30		40	

Notes:

LDC #: 21041N6
SDG #: 271400

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: L

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-9	W	pH **TDS** Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
10-11	W	pH TDS Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC# 21041N6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: [illegible]

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	6	9		
TDS	1970	2000	2	
Perchlorate (ug/L)	264	260	2	

V:\FIELD DUPLICATES\FD_inorganic\21041N6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 2, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271465

Sample Identification

M-121
M-120
FB060209
TR-4
DUPLICATE
DUPLICATEDUP

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 300.0 for Nitrate as Nitrogen, and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample FB060209 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples TR-4 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	TR-4	DUPLICATE				
Total dissolved solids	874	888	2 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271465

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271465

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271465

No Sample Data Qualified in this SDG

LDC #: 21041O6
SDG #: 271465
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Nitrate-N (EPA Method 300.0) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/2/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	} Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 4+5
X	Field blanks	ND	FB = 3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wet

1	M-121	11		21		31	
2	M-120	12		22		32	
3	FB060209	13		23		33	
4	TR-4	14		24		34	
5	DUPLICATE	15		25		35	
6	DUPLICATEDUP	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104106
SDG #: 271465

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-3, 5	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
4	W	pH **TDS** Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
6	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC# 21041O6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AA
2nd Reviewer: LW

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	4	5		
TDS	874	888	2	

V:\FIELD DUPLICATES\FD_inorganic\21041O6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 4, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271624

Sample Identification

TR-3
H-11
FB060409
DUPLICATE

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 300.0 for Nitrate as Nitrogen, and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample FB060409 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples H-11 and DUPLICATE were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	H-11	DUPLICATE				
Total dissolved solids	634	520	20 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271624

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271624

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271624

No Sample Data Qualified in this SDG

LDC #: 21041P6
SDG #: 271624
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Nitrate-N (EPA Method 300.0) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/4/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 2+4
X	Field blanks	ND	FB = 3

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wells

1	TR-3	11		21		31	
2	~~M-11~~ D1 H-11	12		22		32	
3	FB060409	13		23		33	
4	DUPLICATE D	14		24		34	
5	PB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041P6
SDG #: 271624

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 (circled: TDS, NO_3, ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2-4	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 (circled: TDS, ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC# 21041P6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: A
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	2	4		
TDS	634	520	20	

V:\FIELD DUPLICATES\FD_inorganic\21041P6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 7, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270567

Sample Identification

M-87
M-70
M-71
M-72
M-38
M-36
M-84
M-100
M-10
MD-2
M-22A
M-89

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, EPA Method 353.2 for Nitrate/Nitrite as Nitrogen, EPA SW 846 Method 7196 for Hexavalent Chromium, and EPA SW 846 Method 9056 for Chlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-36 MD-2	Hexavalent chromium	32.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-84	Hexavalent chromium	32.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-100	Hexavalent chromium	33 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-10	Hexavalent chromium	31.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-36 M-10 MD-2	Nitrate/Nitrite as N	43 days	28 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-36 and MD-2 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-36	MD-2				
Chlorate	7040000 ug/L	7420000 ug/L	5 (≤30)	-	-	-
Perchlorate	1560000 ug/L	1450000 ug/L	7 (≤30)	-	-	-
Hexavalent chromium	35.0 mg/L	35.0 mg/L	0 (≤30)	-	-	-
Nitrate/Nitrite as N	52.7 mg/L	51.4 mg/L	2 (≤30)	-	-	-
Total dissolved solids	11700 mg/L	11900 mg/L	2 (≤30)	-	-	-

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270567

SDG	Sample	Analyte	Flag	A or P	Reason
270567	M-36 M-84 M-100 M-10 MD-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
270567	M-36 M-10 MD-2	Nitrate/Nitrite as N	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270567

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270567

No Sample Data Qualified in this SDG

LDC #: 21041Q6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 270567 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Chlorate, (EPA SW846 Method 9056) Nitrate/Nitrite-N (EPA Method 353.2) (RVS SW7196 SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/7/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 6+10
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wells

1	M-87	11	M-22A	21		31	
2	M-70	12	M-89	22		32	
3	M-71	13	PB	23		33	
4	M-72	14		24		34	
5	M-38	15		25		35	
6	M-36D	16		26		36	
7	M-84	17		27		37	
8	M-100	18		28		38	
9	M-10	19		29		39	
10	~~M2~~ MD-2D	20		30		40	

Notes:

LDC #: 2104126
SDG #: 270567

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-5, 11,	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
12		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
6, 9-10	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ClO_3 NO_3/NO_2-N
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
7-8	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21041J4
SDG #: 27056 7

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AR
2nd reviewer: W

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		7196		353.2			
Parameters:		Cr^{6+}		NO_3/NO_2-N			
Technical holding time:		24 hrs		28 days			
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
6	5/7/09	5/8/09		(32.5 hrs)			J-/UJ/P (H)
	0846	1718					
7	5/7/09	5/8/09		(32.75 hrs)			↓ ↓
	0835	1718					
8	5/7/09	5/8/09		(33 hrs)			↓ ↓
	0815	1718					
9	5/7/09	5/8/09		(31.25 hrs)			↓ ↓
	1005	1718					
10	5/7/09	5/8/09		(32.5 hrs)			↓ ↓
	0846	1718					
6, 9, 10	5/7/09			6/19/09	(43 days)		J-/UJ/P (H)

LDC# 21041Q6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: A
2nd Reviewer: V

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	6	10		
Chlorate (ug/L)	7040000	7420000	5	
Perchlorate (ug/L)	1560000	1450000	7	
Hexavalent Chromium	35.0	35.0	0	
Nitrate/Nitrite as N	52.7	51.4	2	
TDS	11700	11900	2	

V:\FIELD DUPLICATES\FD_inorganic\21041Q6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 29, 2009

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271337

Sample Identification

TR-2
TR-5
TR-6
TR-7
FB052909
TR-9
TR-8
TR-2MS
TR-2MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 300.0 for Nitrate as Nitrogen, and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample FB052909 was identified as a field blank. No contaminant concentrations were found in this blank.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271337

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271337

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271337

No Sample Data Qualified in this SDG

LDC #: 21041R6
SDG #: 271337
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), Nitrate-N (EPA Method 300.0) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 5/29/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	ND	FB: 5

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	TR-2	11		21		31	
2	TR-5	12		22		32	
3	TR-6	13		23		33	
4	TR-7	14		24		34	
5	FB052909	15		25		35	
6	TR-9	16		26		36	
7	TR-8	17		27		37	
8	TR-2MS	18		28		38	
9	TR-2MSD	19		29		39	
10	PB	20		30		40	

Notes:

LDC #: 21041R6
SDG #: 271337

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-4, 6-7	W	pH **TDS** Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
5	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
2C 8-9	W	pH TDS Cl F **NO_3** NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
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		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____________________

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 8, 2009

LDC Report Date: July 28, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271731

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

All sample result verifications were acceptable.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271731

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271731

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271731

No Sample Data Qualified in this SDG

LDC #: 21041S6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/21/09
SDG #: 271731 Level 4 Page: 1 of 1
Laboratory: MWH Laboratories stage Reviewer: W
2nd Reviewer: g

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1)/SM 2540 C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/8/09
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	W
IV	Matrix Spike/Matrix Spike Duplicates	N	~~LCS/LCSD~~ client specified
V	Duplicates	A	Dup from SDG 271685
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All

1	ART-1	11	SF-1	21	MB	31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19		29		39	
10	PC-116R	20		30		40	

Notes:

LDC #: 21456
SDG #: 21137

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: MM
2nd Reviewer:

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. ICP/MS				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the ~~90-110%~~ 85-115% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix Spike/Matrix Spike Duplicate and Duplicate Sample Analysis				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.		✓		No MS/Dup for clay (one sample)
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.			✓	
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory Control Samples				
Was an LCS anaytzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Performance Evaluation and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 70456

SDG #: 70193

VALIDATION FINDINGS CHECKLIST

Reviewer: MM

2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 10456
SDG #: 271731

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MM
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Parameter
1-18	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (cedy) ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21041S6
SDG #: 21137

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [signature]

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where,

Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).

True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where,

S = Original sample concentration

D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Co	23.1	25.0	92.4	92.4	Y
MS	Matrix spike sample		(SSR-SR)				
M-9B	Duplicate sample	Tl	8850	8950	1.1	1.1	Y

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.6

LDC #: 21041 5B
SDG #: 271731

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Method: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of ClO4 was recalculated.Calibration date: 6/12/09

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{Found \times 100}{True}$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	ClO4	s1	2	0.005	0.999659	0.999660	Y
		s2	4	0.01			
		s3	10	0.03			
		s4	25	0.076			
		s5	50	0.156			
		s6	100	0.33			
CCV 6/19/09 Calibration verification	ClO4	25.0	23.2		92.8	92.8	Y
CCV 6/15/09 Calibration verification	ClO4	25.0	24.8		99.2	99.1	Y
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 2104156
SDG #: 271731

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1, 17 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

TDS = Residue / Sample Volume

Recalculation:

#1 TDS = (95.7929 − 95.7748) g / 0.002 L = 9.4 g/L = 9400 mg/L

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	1	ClO4 (ug/L)	205	205	Y
		TDS (mg/L)	9150	9400	
2	17	ClO4 (ug/L)	1890	1910	Y
		TDS (mg/L)	2890	2900	

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 11, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 270628

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
ART-6DUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ART-6	Total dissolved solids	45 days	7 days	J- (all detects) R (all non-detects)	P
PC-119	Total dissolved solids	11 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 270628

SDG	Sample	Analyte	Flag	A or P	Reason
270628	ART-6	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times
270628	PC-119	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 270628

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 270628

No Sample Data Qualified in this SDG

LDC #: 21041T6
SDG #: 270628
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: A

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/11/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wells

1	ART-1	11	SF-1	21		31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	ART-6DUP	29		39	
10	PC-116R	20	PB	30		40	

Notes:

LDC #: 21041T6
SDG #: 270628

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
19	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21041T6
SDG #: 270628

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AJ
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1/5M2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
5	5/11/09	6/25/09		(45 days)			J-/R/P	(4)
14	5/11/09	5/22/09		(11 days)			J-/UJ/P	↓

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: May 20, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271066

Sample Identification

CLDR-2
M-130
M-129
M-67
M-66
FB-CLDR-2

Introduction

This data review covers 6 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-67 M-66	Total dissolved solids	36 days	7 days	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Sample FB-CLDR-2 was identified as a field blank. No contaminant concentrations were found in this blank.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271066

SDG	Sample	Analyte	Flag	A or P	Reason
271066	M-67 M-66	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271066

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271066

No Sample Data Qualified in this SDG

LDC #: 21041U6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271066 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 5/20/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	ND	FB: 6

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

all soil

1	CLDR-2	11		21		31	
2	M-130	12		22		32	
3	M-129	13		23		33	
4	M-67	14		24		34	
5	M-66	15		25		35	
6	~~FB-CLDR2~~ FB-CLDR-2	16		26		36	
7	PB	17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104146
SDG #: 271066

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: [initials]
2nd reviewer: [initials]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-6	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____________________

LDC #: 21041U6
SDG #: 21066

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 | SM2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
4-5	5/20/09	6/25/09		(5C days)			J-|R|P (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 8, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271687

Sample Identification

M-7B
M-7BDUP

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271687

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271687

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271687

No Sample Data Qualified in this SDG

LDC #: 21041V6
SDG #: 271687
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/8/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	1 Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wat

1	M-7B	11		21		31	
2	M-7BDUP	12		22		32	
3	[illegible] PB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041V6
SDG #: 271687

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 9, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271791

Sample Identification

H-28A
H28ADUP

Introduction

This data review covers 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271791

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271791

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271791

No Sample Data Qualified in this SDG

LDC #: 21041W6
SDG #: 271791
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: VN

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/9/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	H-28A	11		21		31	
2	H-28ADUP	12		22		32	
3	PB	13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041W6

SDG #: 271791

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: [signature]

2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
2C 2	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 9 through June 10, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271832

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-122
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
ARP-7
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-18
PC-55
PC-101R
L-635

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271832

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271832

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271832

No Sample Data Qualified in this SDG

LDC #: 21041X6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271832 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/9/09 - 6/10/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wet

1	M-87	11	PC-122	21	PC-91	31	
2	PC-98R	12	MW-K4	22	PC-97	32	
3	PC-86	13	ARP-1	23	PC-18	33	
4	PC-90	14	ARP-4A	24	PC-55	34	
5	PC-56	15	ARP-5A	25	PC-101R	35	
6	PC-58	16	ARP-6B	26	L-635	36	
7	PC-59	17	ARP-7	27	PB	37	
8	PC-60	18	PC-53	28		38	
9	PC-62	19	PC-103	29		39	
10	PC-68	20	MW-K5	30		40	

Notes:

LDC #: 21041x6
SDG #: 271832

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-26	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 10, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271854

Sample Identification

M-6A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271854

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271854

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271854

No Sample Data Qualified in this SDG

LDC #: 21041Y6
SDG #: 271854
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: V

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/10/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS / LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all wt

1	M-6A	11		21		31	
2	PB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104146
SDG #: 271854

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 15, 2009

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 271999

Sample Identification

MC-53

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 271999

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 271999

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 271999

No Sample Data Qualified in this SDG

LDC #: 21041Z6 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/9/09
SDG #: 271999 Level 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: dl
2nd Reviewer: V

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM 2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/15-21/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specific
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: all wat

1	MC-53	11		21		31	
2	PB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2104126
SDG #: 271999

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 16, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 272056

Sample Identification

M-29

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 272056

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 272056

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 272056

No Sample Data Qualified in this SDG

LDC #: 21041AA6
SDG #: 272056
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/16/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:
All Water

1	M-29	11		21		31	
2	PB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041AA6
SDG #: 272056

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2009 Annual Remedial Performance Sampling

Collection Date: June 25, 2009

LDC Report Date: July 27, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 272306

Sample Identification

PC-94
PC-2
PC-1

Introduction

This data review covers 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2009 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 272306

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 272306

No Sample Data Qualified in this SDG

2009 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 272306

No Sample Data Qualified in this SDG

LDC #: 21041BB6
SDG #: 272306
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Level 2A

Date: 7/9/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: LC

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C, ~~Chloride (EPA SW 846 Method 9056)~~

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 6/25/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all wat

1	PC-94	11		21		31	
2	PC-2	12		22		32	
3	PC-1	13		23		33	
4	PR	14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21041BB6
SDG #: 272306

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 2	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
3	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ~~(ClO_3)~~ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

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

August 5, 2009

SUBJECT: 2008 Annual Remedial Performance Sampling, Data Validation

Dear Ms. Crowley,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on June 30, 2009. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 21107:

SDG #	Fraction
248147, 249697, 249779, 249900, 249949, 250101, 250123, 250139, 250388, 250906, 251027, 251181, 253362, 253834, 256589, 257010, 258290, 258305, 258410, 258563, 258623, 258639, 258779, 259063, 261012, 261275	Chromium, Wet Chemistry

The data validation was performed under Stage 2A & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
- Region 9 Superfund Data Evaluation/Validation Guidance, NDEP Guidance, May 2006
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

ETRauto

Erlinda T. Rauto
Operations Manager/Senior Chemist

Attachment 1

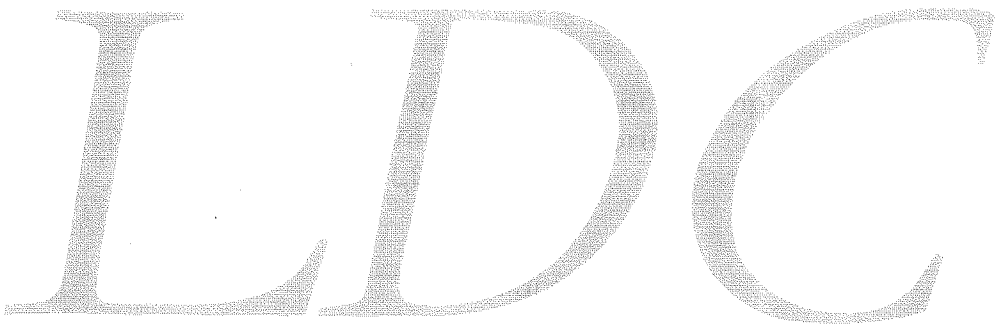
Level 2A/4 **LDC #21107 (Tronox LLC, Henderson NV / 2008 Annual Remedial Performance Sampling)**

LDC	SDG#	DATE REC'D	DATE DUE	Cr (6010B)		Cr(VI) (7196)		CLO_4 (314.0)		TDS (160.1)																									
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	248147	06/30/09	07/31/09	-	-	-	-	26	0	26	0																								
B	249697	06/30/09	07/31/09	23	0	1	0	7	0	7	0																								
B	249697	06/30/09	07/31/09	0	0	2	0	16	0	16	0																								
C	249779	06/30/09	07/31/09	1	0	-	-	1	0	3	0																								
D	249900	06/30/09	07/31/09	18	0	-	-	18	0	18	0																								
E	249949	06/30/09	07/31/09	14	0	2	0	14	0	14	0																								
F	250101	06/30/09	07/31/09	11	0	4	0	11	0	11	0																								
G	250123	06/30/09	07/31/09	12	0	-	-	12	0	12	0																								
H	250139	06/30/09	07/31/09	15	0	5	0	15	0	15	0																								
I	250388	06/30/09	07/31/09	17	0	-	-	17	0	17	0																								
J	250906	06/30/09	07/31/09	1	0	-	-	1	0	1	0																								
K	251027	06/30/09	07/31/09	28	0	-	-	28	0	28	0																								
L	251181	06/30/09	07/31/09	1	0	-	-	1	0	1	0																								
M	253362	06/30/09	07/31/09	-	-	-	-	18	0	18	0																								
N	253834	06/30/09	07/31/09	-	-	-	-	25	0	25	0																								
O	256589	06/30/09	07/31/09	-	-	-	-	18	0	18	0																								
P	257010	06/30/09	07/31/09	-	-	-	-	25	0	25	0																								
Q	258290	06/30/09	07/31/09	18	0	-	-	18	0	18	0																								
R	258305	06/30/09	07/31/09	17	0	1	0	17	0	17	0																								
S	258410	06/30/09	07/31/09	18	0	2	0	18	0	18	0																								
T	258563	06/30/09	07/31/09	21	0	5	0	21	0	21	0																								
U	258623	06/30/09	07/31/09	17	0	4	0	17	0	17	0																								
V	258639	06/30/09	07/31/09	4	0	-	-	4	0	4	0																								
W	258779	06/30/09	07/31/09	18	0	-	-	18	0	18	0																								
X	259063	06/30/09	07/31/09	25	0	-	-	25	0	25	0																								
Y	261012	06/30/09	07/31/09	-	-	-	-	18	0	18	0																								
Z	261275	06/30/09	07/31/09	-	-	-	-	27	0	27	0																								
Total	T/LR			279	0	26	0	436	0	438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1179

Shaded cells indicate Level 4 validation (all other cells are Level 2A validation). These sample counts do not include MS/MSD, and DUPs

2008 Annual Remedial Performance Sampling
Data Validation Reports
LDC# 21107

Chromium



Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 4, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249697

Sample Identification

PC-123
PC-124
PC-125
PC-126
PC-127
PC-128
PC-129
PC-130
PC-131
PC-132
M-96
PC-54
M-48
PC-71
PC-72
PC-73
PC-37
M-23
M-95
M-44
FB-1
MD-3
MD-4
PC-73MS
PC-73MSD
FB-1MS
FB-1MSD

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB-1 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples PC-71 and MD-3 and samples M-23 and MD-4 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-71	MD-3				
Chromium	0.39	0.39	0 (≤30)	-	-	-

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-23	MD-4				
Chromium	0.77	0.80	4 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 249697

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 249697

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 249697

No Sample Data Qualified in this SDG

LDC #: 21107B4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/6/09
SDG #: 249697 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/4/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D_1: 14 + 22 D_2: 18 + 23
XIV.	Field Blanks	ND	FB: 21

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wat

1	PC-123	11	M-96	21	FB-1	31	
2	PC-124	12	PC-54	22	MD-3 D_1	32	
3	PC-125	13	M-48	23	MD-4 D_2	33	
4	PC-126	14	PC-71 D_1	24	PC-73MS	34	
5	PC-127	15	PC-72	25	PC-73MSD	35	
6	PC-128	16	PC-73	26	FB-1MS	36	
7	PC-129	17	PC-37	27	FB-1MSD	37	
8	PC-130	18	M-23 D_2	28	MB	38	
9	PC-131	19	M-95	29		39	
10	PC-132	20	M-44	30		40	

Notes:

LDC#: 21107B4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	14	22		
Chromium	0.39	0.39	0	

Compound	Concentration (mg/L)		(≤ 30) RPD	
	18	23		
Chromium	0.77	0.80	4	

V:\FIELD DUPLICATES\FD_inorganic\21107B4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 5, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249779

Sample Identification

MW-5A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

Matrix spike (MS) samples were reviewed for each matrix as applicable. Percent recoveries (%R) 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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 249779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 249779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 249779

No Sample Data Qualified in this SDG

LDC #: 21107C4
SDG #: 249779
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/5/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	for 249697
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

Aqueous only

1	M-5A	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 5, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249900

Sample Identification

I-O
I-P
I-H
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-AR

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-1 (from SDG 249949) was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 249900

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 249900

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 249900

No Sample Data Qualified in this SDG

LDC #: 21107D4
SDG #: 249900
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/5/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	} for 249697 1 249949
VI.	Duplicate Sample Analysis	N	}
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	EB: EB-1 (from 249949)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wat

1	I-O	11	I-M	21		31	
2	I-P	12	I-D	22		32	
3	I-H	13	I-C	23		33	
4	I-U	14	I-S	24		34	
5	I-T	15	I-L	25		35	
6	I-G	16	I-R	26		36	
7	I-Q	17	I-B	27		37	
8	I-F	18	I-AR	28		38	
9	I-N	19	MR	29		39	
10	I-E	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 5, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249949

Sample Identification

I-AA
M-131
M-64
M-65
M-66
M-79
M-69
M-135
M-99
M-25
M-57A
M-37
EB-1
MD-5
I-AAMS
I-AAMSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-1 was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples M-65 and MD-5 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-65	MD-5				
Chromium	35	35	0 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 249949

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 249949

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 249949

No Sample Data Qualified in this SDG

LDC #: 21107E4
SDG #: 249949
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/5/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 4 + 14
XIV.	Field Blanks	ND	EB: 13

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wet

1	I-AA	11	M-57A	21		31	
2	M-131	12	M-37	22		32	
3	M-64	13	EB-1	23		33	
4	M-65 D	14	MD-5 D	24		34	
5	M-66	15	I-AAMS	25		35	
6	M-79	16	I-AAMSD	26		36	
7	M-69	17	MB	27		37	
8	M-135	18		28		38	
9	M-99	19		29		39	
10	M-25	20		30		40	

Notes:

LDC#: 21107E4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AA
2nd Reviewer: [signature]

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	4	14		
Chromium	35	35	0	

V:\FIELD DUPLICATES\FD_inorganic\21107E4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 6, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250101

Sample Identification

I-Z
I-I
I-V
M-67
M-74
M-73
M-88
M-12A
M-11
MD-1
EB-2

Introduction

This data review covers 11 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-2 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples M-11 and MD-1 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-11	MD-1				
Chromium	3.1	3.0	3 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 250101

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 250101

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 250101

No Sample Data Qualified in this SDG

LDC #: 21107F4
SDG #: 250101
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/6/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	} for 249948
VI.	Duplicate Sample Analysis	N	}
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 9+10
XIV.	Field Blanks	ND	EB: 11

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	I-Z	11	EB-2	21		31	
2	I-I	12	MB	22		32	
3	I-V	13		23		33	
4	M-67	14		24		34	
5	M-74	15		25		35	
6	M-73	16		26		36	
7	M-88	17		27		37	
8	~~M12A~~ M-12A	18		28		38	
9	~~M11~~ M-11	19		29		39	
10	MD-1	20		30		40	

Notes: _____

LDC#: 21107F4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AJ
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	9	10		
Chromium	3.1	3.0	3	

V:\FIELD DUPLICATES\FD_inorganic\21107F4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 6, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250123

Sample Identification

M-92
M-97
M-31A
M-50
M-34
M-35
M-19
M-39
M-68
M-61
I-K
I-J
M-19MS
M-19MSD

Introduction

This data review covers 14 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-2 (from SDG 250101) was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 250123

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 250123

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 250123

No Sample Data Qualified in this SDG

LDC #: 21107G4
SDG #: 250123
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/6/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	EB: EB-2 (from 250101)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	M-92	11	I-K	21		31	
2	M-97	12	I-J	22		32	
3	M-31A	13	M-19MS	23		33	
4	M-50	14	M-19MSD	24		34	
5	M-34	15	MB	25		35	
6	M-35	16		26		36	
7	M-19	17		27		37	
8	M-39	18		28		38	
9	M-68	19		29		39	
10	M-61	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 7, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250139

Sample Identification

M-87
M-70
M-71
M-72
M-38
M-22A
M-89
M-17A
M-115
M-14A
M-36
M-84
M-10
MD-2
M-100
M-84MS
M-84MSD

Introduction

This data review covers 17 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples M-84 and MD-2 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-84	MD-2				
Chromium	0.065	0.067	3 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 250139

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 250139

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 250139

No Sample Data Qualified in this SDG

LDC #: 21107H4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/6/09
SDG #: 250139 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/7/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 12 + 14
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All water

1	M-87	11	M-36	21		31	
2	M-70	12	M-84D	22		32	
3	M-71	13	M-10	23		33	
4	M-72	14	MD-2D	24		34	
5	M-38	15	M-100	25		35	
6	M-22A	16	M-84MS	26		36	
7	M-89	17	M-84MSD	27		37	
8	M-17A	18	MB	28		38	
9	M-115	19		29		39	
10	M-14A	20		30		40	

Notes:

LDC#: 21107H4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤30) ~~(≤30)~~ RPD	
	12	14		
Chromium	0.065	0.067	3	

V:\FIELD DUPLICATES\FD_inorganic\21107H4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 11, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250388

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
PC-117MS
PC-117MSD

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 250388

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 250388

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 250388

No Sample Data Qualified in this SDG

LDC #: 21107I4
SDG #: 250388
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: VA

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/11/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	ART-1	11	PC-117	21		31	
2	ART-2	12	PC-118	22		32	
3	ART-3	13	PC-119	23		33	
4	ART-4	14	PC-120	24		34	
5	ART-7	15	PC-121	25		35	
6	ART-8	16	PC-133	26		36	
7	PC-99R2/R3	17	ART-9	27		37	
8	PC-115R	18	PC-117MS	28		38	
9	PC-116R	19	PC-117MSD	29		39	
10	SF-1	20	MB	30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 13, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250906

Sample Identification

H-28A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 250906

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 250906

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 250906

No Sample Data Qualified in this SDG

LDC #: 21107J4
SDG #: 250906
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	for 250388
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	H-28A	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 11 through August 14, 2008

LDC Report Date: July 28, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 251027

Sample Identification

PC-55
PC-58
PC-56
PC-60
PC-59
PC-62
PC-68
PC-97
PC-86
PC-90
PC-91
PC-17
PC-18
ARP-1
PC-134
PC-135
PC-122
ARP-6B
ARP-5A
ARP-4A
MW-K4
MW-K5
PC-53
PC-103
PC-98R
M-87
L-635
L-637
PC-86MS
PC-86MSD
MW-K4MS
MW-K4MSD

Introduction

This data review covers 32 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

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.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution was not performed for this SDG.

XII. Sample Result Verification

All sample result verifications were acceptable.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 251027

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 251027

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 251027

No Sample Data Qualified in this SDG

LDC #: 21107K4
SDG #: 251027
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 4

Date: 7/28/09
Page: 1 of 1
Reviewer: [signature]
2nd Reviewer: [signature]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/11/08 - 8/14/08
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS/LCSD
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not performed
XI.	Sample Result Verification	A	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	PC-55	11	PC-91	21	~~MWK-4~~ MW-K4	31	~~FB~~
2	PC-58	12	PC-17	22	~~MWK-5~~ MW-K5	32	MW-K4 MS
3	PC-56	13	PC-18	23	PC-53	33	↓ MSD
4	PC-60	14	ARP-1	24	PC-103	34	MB
5	PC-59	15	PC-134	25	PC-98R	35	
6	PC-62	16	PC-135	26	M-87	36	
7	PC-68	17	PC-122	27	L-635	37	
8	PC-97	18	ARP-6B	28	L-637	38	
9	PC-86	19	ARP-5A	29	PC-86MS	39	
10	PC-90	20	ARP-4A	30	PC-86MSD	40	

Notes: _____

LDC #: Y1109K4
SDG #: N51027

VALIDATION FINDINGS CHECKLIST

Reviewer:
2nd Reviewer:

Method: Metals (EPA SW 846 Method 6010B/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
[illegible]				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
[illegible]				
Were all isotopes in the tuning solution mass resolution within 0.1 amu?			✓	
Were %RSD of isotopes in the tuning solution ≤5%?			✓	
[illegible]				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury) QC limits?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
[illegible]				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
V. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
VI. Matrix Spike/Matrix Spike Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were < 5X the RL.	✓			
VII. Laboratory Control Samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			

LDC #: 21159K4
SDG #: K1079

VALIDATION FINDINGS CHECKLIST

Reviewer: W
2nd Reviewer: JA

Validation Area	Yes	No	NA	Findings/Comments
If MSA was performed, was the correlation coefficients > 0.995?			✓	
Do all applicable analysies have duplicate injections? (Level IV only)			✓	
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%? (Level IV only)			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the MDL (ICP)/>100X the MDL(ICP/MS)?		✓		
Were all percent differences (%Ds) < 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
Were all the percent recoveries (%R) within the 30-120% (6020)/60-125% (200.8) of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 21107K4
SDG #: 21107

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MH
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
ICV	ICP (Initial calibration)	Cr	10.2	10	102	101	Y
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
CCV	ICP (Continuing calibration)	Cr	5.08	5.0	102	101	Y
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
	ICP/MS (Initial calibration)						
	ICP/MS (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 21079K4
SDG #: 25279

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
ICSAB	ICP interference check	Cr	0.254	0.250	102	101	Y
LCS	Laboratory control sample		0.970	1.00	97.0	97.0	
MS	Matrix spike		(SSR-SR) 0.96	1.00	96.0	96.0	
MS30	Duplicate		0.949	0.960	1.2	NR	
MD	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 21097K4
SDG #: K1097

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MM
2nd reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for 12, 13, 21 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

#12

$Cr = 0.0417\ mg/L \times 2 = 0.0834\ mg/L$

Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
12	Cr	0.083	0.083	Y
	"			"
13	"	0.14	0.14	"
	"			"
21	"	0.041	0.041	"

RECALC.4S2

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 18, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 251181

Sample Identification

ART-6

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

VI. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 251181

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 251181

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 251181

No Sample Data Qualified in this SDG

LDC #: 21107L4
SDG #: 251181
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AJ
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/18/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	N	Client Specified
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	ART-6	11		21		31	
2	MB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 3, 2008

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258290

Sample Identification

I-AR
I-O
I-P
I-H
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-ARMS
I-ARMSD

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB-1 (from SDG 258305) was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258290

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258290

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258290

No Sample Data Qualified in this SDG

LDC #: 21107Q4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 258290 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/3/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	/ /
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	ND	FB: FB-1 (from 258305)

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wet

1	I-AR	11	I-E	21	MB	31	
2	I-O	12	I-M	22		32	
3	I-P	13	I-D	23		33	
4	I-H	14	I-C	24		34	
5	I-U	15	I-S	25		35	
6	I-T	16	I-L	26		36	
7	I-G	17	I-R	27		37	
8	I-Q	18	I-B	28		38	
9	I-F	19	I-ARMS	29		39	
10	I-N	20	I-ARMSD	30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 3, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258305

Sample Identification

PC-123
PC-124
PC-125
PC-126
PC-127
PC-128
PC-131
PC-132
FB-1
M-96
PC-54
I-AA
M-66
M-65
M-64
MD-3
M-95
FB-1MS
FB-1MSD

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample FB-1 was identified as a field blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples PC-128 and MD-3 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-128	MD-3				
Chromium	0.16	0.16	0 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258305

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258305

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258305

No Sample Data Qualified in this SDG

LDC #: 21107R4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 258305 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: A1
2nd Reviewer: ~

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/3/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	/ /
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 6 + 16
XIV.	Field Blanks	ND	FB: 9

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wet

1	PC-123	11	PC-54	21		31	
2	PC-124	12	I-AA	22		32	
3	PC-125	13	M-66	23		33	
4	PC-126	14	M-65	24		34	
5	PC-127	15	M-64	25		35	
6	PC-128 D	16	MD-3 D	26		36	
7	PC-131	17	M-95	27		37	
8	PC-132	18	FB-1MS	28		38	
9	FB-1	19	FB-1MSD	29		39	
10	M-96	20	MB	30		40	

Notes: _____

LDC#: 21107R4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: [signature]

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	6	16		
Chromium	0.16	0.16	0	

V:\FIELD DUPLICATES\FD_inorganic\21107R4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 4, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258410

Sample Identification

PC-129
PC-130
PC-71
PC-72
PC-73
M-44
PC-37
M-48
MD-4
M-57A
EB-1
M-131
M-79
M-69
M-135
M-25
M-37
M-99
M-79MS
M-79MSD

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-1 was identified as a equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples PC-71 and MD-4 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-71	MD-4				
Chromium	0.73	0.46	45 (≤30)	-	J (all detects)	A

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258410

SDG	Sample	Analyte	Flag	A or P	Reason
258410	PC-71 MD-4	Chromium	J (all detects)	A	Field duplicates (RPD)

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258410

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258410

No Sample Data Qualified in this SDG

LDC #: 21107S4
SDG #: 258410
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/4/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 3+9
XIV.	Field Blanks	ND	EB: 11

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wet

1	PC-129	11	EB-1	21	MB	31	
2	PC-130	12	M-131	22		32	
3	PC-71 D	13	M-79	23		33	
4	PC-72	14	M-69	24		34	
5	PC-73	15	M-135	25		35	
6	M-44	16	M-25	26		36	
7	PC-37	17	M-37	27		37	
8	M-48	18	M-99	28		38	
9	MD-4 D	19	M-79MS	29		39	
10	M-57A	20	M-79MSD	30		40	

Notes:

LDC#: 21107S4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	Parent only
	3	9		
Chromium	0.73	0.46	45	J d+ | A

(fd)

V:\FIELD DUPLICATES\FD_inorganic\21107S4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 5, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258563

Sample Identification

M-92
M-97
M-31A
M-52
M-50
M-34
M-35
M-19
M-39
M-68
M-61
I-K
I-J
I-Z
I-I
I-V
M-84
M-10
EB-2
M-11
MD-1
M-10MS
M-10MSD

Introduction

This data review covers 23 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

Sample EB-2 was identified as an equipment blank. No chromium was found in this blank.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples M-11 and MD-1 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-11	MD-1				
Chromium	3.6	3.7	3 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258563

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258563

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258563

No Sample Data Qualified in this SDG

LDC #: 21107T4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 258563 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AR
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/5/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not reviewed for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 20 + 21
XIV.	Field Blanks	ND	EB: 19

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wet

1	M-92	11	M-61	21	MD-1 D	31	
2	M-97	12	I-K	22	M-10MS	32	
3	M-31A	13	I-J	23	M-10MSD	33	
4	M-52	14	I-Z	24	MB	34	
5	M-50	15	I-I	25		35	
6	M-34	16	I-V	26		36	
7	M-35	17	M-84	27		37	
8	M-19	18	M-10	28		38	
9	M-39	19	EB-2	29		39	
10	M-68	20	M-11 D	30		40	

Notes:

LDC#: 21107T4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	20	21		
Chromium	3.6	3.7	3	

V:\FIELD DUPLICATES\FD_inorganic\21107T4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 6, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258623

Sample Identification

M-67
M-133
M-74
M-73
M-88
M-87
M-70
M-71
M-72
M-38
M-36
M-12A
M-100
M-22A
M-89
M-17A
MD-2
M-70MS
M-70MSD

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

Samples M-12A and MD-2 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-12A	MD-2				
Chromium	13	13	0 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258623

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258623

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258623

No Sample Data Qualified in this SDG

LDC #: 21107U4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 258623 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer:

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/6/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	SW	D: 12+17
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: all each

1	M-67	11	M-36	21		31	
2	M-133	12	M-12A D	22		32	
3	M-74	13	M-100	23		33	
4	M-73	14	M-22A	24		34	
5	M-88	15	M-89	25		35	
6	M-87	16	M-17A	26		36	
7	M-70	17	MD-2 D	27		37	
8	M-71	18	M-70MS	28		38	
9	M-72	19	M-70MSD	29		39	
10	M-38	20	M8	30		40	

Notes:

LDC#: 21107U4
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

METHOD: Metals (EPA Method 6010B)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (mg/L)		(≤ 30) RPD	
	12	17		
Chromium	13	13	0	

V:\FIELD DUPLICATES\FD_inorganic\21107U4.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 7, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258639

Sample Identification

M-76
M-75
M-115
M-14A

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258639

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258639

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258639

No Sample Data Qualified in this SDG

LDC #: 21107V4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 258639 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AL
2nd Reviewer: [illegible]

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/7/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	for 258623
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wet

1	M-76	11		21		31	
2	M-75	12		22		32	
3	M-115	13		23		33	
4	M-14A	14		24		34	
5	MB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 10, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258779

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
SF-1MS
SF-1MSD

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 258779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 258779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 258779

No Sample Data Qualified in this SDG

LDC #: 21107W4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 258779 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: A
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	1 1
X.	ICP Serial Dilution	N	Not required for Lvl 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	ART-1	11	SF-1	21	MB	31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	SF-1MS	29		39	
10	PC-116R	20	SF-1MSD	30		40	

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 10 through November 12, 2008

LDC Report Date: July 9, 2009

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 259063

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-122
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-18
PC-55
L-635
L-637
ARP-5AMS
ARP-5AMSD

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blanks are summarized in Section IV.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. ICPMS Tune

ICP-MS was not utilized in this SDG.

III. Calibration

Calibration data were not reviewed for Stage 2A.

IV. Blanks

Method blanks were reviewed for each matrix as applicable. No chromium was found in the preparation blanks.

No field blanks were identified in this SDG.

V. ICP Interference Check Sample (ICS) Analysis

ICP Interference check sample analysis data were not reviewed for Stage 2A.

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) were within QC limits.

IX. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

X. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

XI. ICP Serial Dilution

ICP serial dilution analysis data were not reviewed for Stage 2A.

XII. Sample Result Verification

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

XIV. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 259063

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 259063

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 259063

No Sample Data Qualified in this SDG

LDC #: 21107X4 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/8/09
SDG #: 259063 Stage 2A Page: 1 of 1
Laboratory: MWH Laboratories Reviewer: AA
2nd Reviewer: W

METHOD: Chromium (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10 - 11/12/08
II.	Calibration	N	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not Utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required for Level 2A
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all wet

1	M-87	11	PC-122	21	PC-97	31	
2	PC-98R	12	MW-K4	22	PC-18	32	
3	PC-86	13	ARP-1	23	PC-55	33	
4	PC-90	14	ARP-4A	24	L-635	34	
5	PC-56	15	ARP-5A	25	L-637	35	
6	PC-58	16	ARP-6B	26	ARP-5AMS	36	
7	PC-59	17	PC-53	27	ARP-5AMSD	37	
8	PC-60	18	PC-103	28	MB	38	
9	PC-62	19	MW-K5	29		39	
10	PC-68	20	PC-91	30		40	

Notes:

2008 Annual Remedial Performance Sampling
Data Validation Reports
LDC# 21107

Wet Chemistry

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: July 14 through July 17, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 248147

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-122
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-17
PC-18
PC-55
L-635
L-637

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 248147

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 248147

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 248147

No Sample Data Qualified in this SDG

LDC #: 21107A6
SDG #: 248147
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 7/14 → 7/17/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All water

1	M-87	11	PC-122	21	PC-97	31	
2	PC-98R	12	~~MW-4~~ MW-K4	22	PC-17	32	
3	PC-86	13	ARP-1	23	PC-18	33	
4	PC-90	14	ARP-4A	24	PC-55	34	
5	PC-56	15	ARP-5A	25	L-635	35	
6	PC-58	16	ARP-6B	26	L-637	36	
7	PC-59	17	PC-53	27	DB	37	
8	PC-60	18	PC-103	28		38	
9	PC-62	19	~~MW-5~~ MW-K5	29		39	
10	PC-68	20	PC-91	30		40	

Notes:

LDC #: 21107A6
SDG #: 248147

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: W

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-26	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 4, 2008

LDC Report Date: July 28, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A & 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249697

Sample Identification

PC-123	FB-1
PC-124	MD-3
PC-125	MD-4
PC-126	PC-124MS
PC-127**	PC-124MSD
PC-128**	PC-124DUP
PC-129**	FB-1MS
PC-130**	FB-1MSD
PC-131**	MD-3DUP
PC-132**	
M-96**	
PC-54**	
M-48**	
PC-71**	
PC-72**	
PC-73**	
PC-37**	
M-23**	
M-95**	
M-44**	

**Indicates sample underwent Stage 4 review

Introduction

This data review covers 29 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a Stage 4 review. A Stage 2A review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Stage 2A criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-95**	Hexavalent chromium	31.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-44** FB-1 FB-1MS FB-1MSD	Hexavalent chromium	32 hours	24 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.

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Sample FB-1 was identified as a field blank. No contaminant concentrations were found in this blank.

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.

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

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples PC-71** and MD-3 and samples M-23** and MD-4 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-71**	MD-3				
Total dissolved solids	8270 mg/L	8050 mg/L	3 (≤30)	-	-	-
Perchlorate	468000 ug/L	451000 ug/L	4 (≤30)	-	-	-

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-23**	MD-4				
Total dissolved solids	5260 mg/L	4720 mg/L	11 (≤30)	-	-	-
Perchlorate	493000 ug/L	514000 ug/L	4 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 249697

SDG	Sample	Analyte	Flag	A or P	Reason
249697	M-95** M-44** FB-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 249697

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 249697

No Sample Data Qualified in this SDG

LDC #: 21107B6
SDG #: 249697
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A/4

Date: 7/28/09
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 8/4/08
IIa.	Initial calibration	A	Not reviewed for Level 2A validation.
IIb.	Calibration verification	A	Not reviewed for Level 2A validation.
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	3 MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	A	Not reviewed for Level 2A validation.
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(14,22) (18,23)
X.	Field blanks	SW	FB=21

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Stage 4 validation

1	PC-123	11	M-96**	21	FB-1	31	
2	PC-124	12	PC-54**	22	MD-3	32	
3	PC-125	13	M-48**	23	MD-4	33	
4	PC-126	14	PC-71**	24	PC-124MS	34	
5	PC-127**	15	PC-72**	25	PC-124MSD	35	
6	PC-128**	16	PC-73**	26	PC-124DUP	36	
7	PC-129**	17	PC-37**	27	FB-1MS	37	
8	PC-130**	18	M-23**	28	FB-1MSD	38	
9	PC-131**	19	M-95**	29	MD-3DUP	39	
10	PC-132**	20	M-44**	30		40	

Notes:

LDC #: 21107B6
SDG #: 49617

VALIDATION FINDINGS CHECKLIST

Reviewer: JM
2nd Reviewer: JM

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			85-115% for clay
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix Spike/Matrix Spike Duplicate				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory Control Samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Field Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 21107B6
SDG #: 49697

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
Overall assessment of data was found to be acceptable.	✓			
Field duplicate pairs were identified in this SDG.	✓			
Target analytes were detected in the field duplicates.	✓			
Field blanks were identified in this SDG.	✓			
Target analytes were detected in the field blanks.		✓		

LDC #: 21097B6
SDG #: 249697

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MU
2nd reviewer: P

All circled methods are applicable to each sample.

Sample ID	Parameter
1-23	pH **(TDS)** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **(ClO4)** ___ ___ ___
19-21	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **(CR^{6+})** ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
m 27, 28	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **(CR^{6+})** ___ ___ ___ ___
24, 26	pH **(TDS)** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___ ___
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107B6
SDG #: 46969

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(N) N N/A Were all cooler temperatures within validation criteria?

Method:	7196					
Parameters:	Cr6+					
Technical holding time:	24hr					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
19	8/4/09 1030	8/5/09 1802	(31.5hr)				J-/ug/L (h)
20	1010	↓	(32hr)				↓
21, 27, 28	1001	↓	↓				↓

LDC# 21107B6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: V
2nd Reviewer: A

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	14	22		
TDS	8270	8050	3	
Perchlorate (ug/L)	468000	451000	4	

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	18	23		
TDS	5260	4720	11	
Perchlorate (ug/L)	493000	514000	4	

LDC #: 31107B6
SDG #: 49694

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: W
2nd Reviewer: S

Method: Inorganics, Method see cover

The correlation coefficient (r) for the calibration of Cr6+ was recalculated. Calibration date: 8/4/18

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Abs	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cr (VI)	s1	0	0	*0.99997*	NR	Y
		s2	0.005	0.01			
		s3	0.02	0.037			
		s4	0.05	0.099			
		s5	0.2	0.389			
		s6	0.5	0.955			
CCV Calibration verification	Cr6+	0.050	0.051		102	108	Y
CCV Calibration verification	Cr6+	5	5.05		102.5	103.5	Y
~~CCV~~ Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 11078B
SDG #: 49697

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MM
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Cd	0.051	0.050	102	108	Y
MS	Matrix spike sample	Cd	(SSR-SR) 5.15	5.0	100.6	100.4	↓
DUP	Duplicate sample	Tl	6172	6188	0.2	0.2	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 21107B6
SDG #: 2969 7

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: MH
2nd reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 6, 19 reported with a positive detect were recalculated and verified using the following equation:

Concentration =

$$ClO_4 = \frac{Area}{0.001024631} \times DF$$

Recalculation:

$$\#6 \quad ClO_4 = \frac{0.103 \times 2000}{0.001024631} = 201050 \text{ ug/L}$$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	6	ClO4 (ug/L)	198000	201000	Y
		TDS (mg/L)	5610	5620	↓
2	19	ClO4 (ug/L)	508000	488000	Y
		Cr6+ (ug/L)	1.3	1.3	
		TDS ↓	7390	7430	↓

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 5, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249779

Sample Identification

M-5A
M-6A
M-7B
M-5ADUP

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-6A	Total dissolved solids	13 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 249779

SDG	Sample	Analyte	Flag	A or P	Reason
249779	M-6A	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 249779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 249779

No Sample Data Qualified in this SDG

LDC #: 21107C6
SDG #: 249779
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AR
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 8/5/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wat

1	M-5A	11		21		31	
2	M-6A	12		22		32	
3	M-7B	13		23		33	
4	M-5ADUP	14		24		34	
5	PB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21107C6
SDG #: 249779

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: A L
2nd reviewer: V

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
2 - 3	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
4	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____

LDC #: 21107C6
SDG #: 249779

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer: W

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1/SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
2	8/5/08	8/18/08		(13 days)			J-/UJ/P (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 5, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249900

Sample Identification

I-O
I-P
I-H
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-AR
I-FDUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Sample EB-1 (from SDG 249949) was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-1	8/5/09	Perchlorate Total dissolved solids	255 ug/L 18 mg/L	All samples in SDG 249900

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 249900

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 249900

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 249900

No Sample Data Qualified in this SDG

LDC #: 21107D6
SDG #: 249900
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/5/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	Dup (MS/MSD from 249949)
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB: EB-1 (fm 249949)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all wet

1	I-O	11	I-M	21		31	
2	I-P	12	I-D	22		32	
3	I-H	13	I-C	23		33	
4	I-U	14	I-S	24		34	
5	I-T	15	I-L	25		35	
6	I-G	16	I-R	26		36	
7	I-Q	17	I-B	27		37	
8	I-F	18	I-AR	28		38	
9	I-N	19	I-FDUP	29		39	
10	I-E	20	PB	30		40	

Notes:

LDC #: 21107D6
SDG #: 249900

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
19	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______

LDC #: 21107D6
SDG #: 24990

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Inorganics, EPA Method Sm Cu

~~Y~~ N N/A Were field blanks identified in this SDG?
~~Y~~ N N/A Were target analytes detected in the field blanks?

Blank units: mg/L **Associated sample units:** mg/L
Sampling date: 8/5/09 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All (> 10x)

Analyte	Blank ID	Sample Identification								
	EB-1									
ClO4 (µg/L)	255									
TDS	18									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 5, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 249949

Sample Identification

I-AA
M-131
M-64
M-65
M-66
M-79
M-69
M-135
M-99
M-25
M-57A
M-37
EB-1
MD-5
EB-1MS
EB-1MSD

Introduction

This data review covers 16 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-37 EB-1	Hexavalent chromium	31.75 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB-1 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-1	8/5/08	Perchlorate Total dissolved solids	255 ug/L 18 mg/L	I-AA M-131 M-64 M-65 M-66 M-79 M-69 M-135 M-99 M-25 M-57A M-37 MD-5

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-65 and MD-5 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-65	MD-5				
Total dissolved solids	17500 mg/L	18300 mg/L	4 (≤30)	-	-	-
Perchlorate	1410000 ug/L	1400000 ug/L	1 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 249949

SDG	Sample	Analyte	Flag	A or P	Reason
249949	M-37 EB-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 249949

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 249949

No Sample Data Qualified in this SDG

LDC #: 21107E6
SDG #: 249949
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 8/5/09
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D = 4 + 14
X	Field blanks	SW	EB = 13

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	I-AA	11	M-57A	21		31	
2	M-131	12	M-37	22		32	
3	M-64	13	EB-1	23		33	
4	M-65 D	14	MD-5 D	24		34	
5	M-66	15	EB-1MS	25		35	
6	M-79	16	EB-1MSD	26		36	
7	M-69	17	PB	27		37	
8	M-135	18		28		38	
9	M-99	19		29		39	
10	M-25	20		30		40	

Notes:

LDC #: 21107E6
SDG #: 249949

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-11, 14	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
12-13	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2C 15-16	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107E4
SDG #: 249949

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		7196					
Parameters:		Cr^{6+}					
Technical holding time:		24 hrs					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
12	8/5/08	8/6/08		~~(31.75hrs)~~	(31.75hrs)		J-/UJ/P (4)
	0930	1721					
13	8/5/08	8/6/08		(31.75hrs)			↓
	0935	1721					

LDC #: 21107E6
SDG #: 249949

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer:

METHOD: Inorganics, EPA Method Sm Cr

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: mg/L **Associated sample units:** mg/L
Sampling date: 8/5/08 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All except #13 (10x)

Analyte	Blank ID	Sample Identification								
	13									
ClO4 (mg/L)	255									
TDS	18									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21107E6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: A
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	4	14		
TDS	17500	18300	4	
Perchlorate (ug/L)	1410000	1400000	1	

V:\FIELD DUPLICATES\FD_inorganic\21107E6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 6, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250101

Sample Identification

I-Z
I-I
I-V
M-67
M-74
M-73
M-88
M-12A
M-11
MD-1
EB-2
EB-2MS
EB-2MSD

Introduction

This data review covers 13 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-12A	Hexavalent chromium	33.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-11	Hexavalent chromium	33 hours	24 hours	J- (all detects) UJ (all non-detects)	P
MD-1	Hexavalent chromium	53.5 hours	24 hours	J- (all detects) R (all non-detects)	P
EB-2	Hexavalent chromium	35.5 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB-2 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	8/6/08	Perchlorate	9.8 ug/L	I-Z I-I I-V M-67 M-74 M-73 M-88 M-12A M-11 MD-1

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-11 and MD-1 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-11	MD-1				
Total dissolved solids	3260 mg/L	3200 mg/L	2 (≤30)	-	-	-

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-11	MD-1				
Perchlorate	43100 ug/L	43400 ug/L	1 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 250101

SDG	Sample	Analyte	Flag	A or P	Reason
250101	M-12A M-11 EB-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
250101	MD-1	Hexavalent chromium	J- (all detects) R (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 250101

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 250101

No Sample Data Qualified in this SDG

LDC #: 21107F6
SDG #: 250101
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 8/6/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 9+10
X	Field blanks	SW	EB: 11

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wet

1	I-Z	11	EB-2	21		31	
2	I-I	12	EB-2MS	22		32	
3	I-V	13	EB-2MSD	23		33	
4	M-67	14	PB	24		34	
5	M-74	15		25		35	
6	M-73	16		26		36	
7	M-88	17		27		37	
8	~~M12A~~ M-12A	18		28		38	
9	~~M11~~ M-11	19		29		39	
10	MD-1	20		30		40	

Notes:

LDC #: 21107F6
SDG #: 250101

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-7	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
8-11	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC (CR^{6+}) (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
DC 12-13	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC (CR^{6+}) ~~ClO_4~~ AL ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______

LDC #: 21107E6
SDG #: 250101

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	7196						
Parameters:	Cr6+						
Technical holding time:	24 hrs						

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
8	8/6/08	8/~~7~~ 8/08		(33.75 hrs)			J-/UJ/P	(h)
	0844	1828						
9	8/6/08	8/7/08		(33 hrs)			↓	↓
	0930	1828						
10	8/6/08	8/8/08		(53.5 hrs)			J-/R/P	↓
	0930	1457						
11	8/6/08	8/7/08		(35.5 hrs)			J-/UJ/P	↓
	0705	1828						

LDC #: 21107F6
SDG #: 250101

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer:

METHOD: Inorganics, EPA Method Sm Cu

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: µg/L **Associated sample units:** µg/L
Sampling date: 8/6/08 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other: EB) Associated Samples: All except #11 (>10x)

Analyte	Blank ID	Sample Identification								
	11									
ClO_4	9.8									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21107F6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer: [signature]

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	9	10		
TDS	3260	3200	2	
Perchlorate (ug/L)	43100	43400	1	

V:\FIELD DUPLICATES\FD_inorganic\21107F6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 6, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250123

Sample Identification

M-92
M-97
M-31A
M-50
M-34
M-35
M-19
M-39
M-68
M-61
I-K
I-J

Introduction

This data review covers 12 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Sample EB-2 (from SDG 250101) was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	8/6/09	Perchlorate	9.8 ug/L	All samples in SDG 250123

Sample concentrations were compared to concentrations detected in the field blanks as required by the QAPP. No sample data was qualified.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 250123

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 250123

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 250123

No Sample Data Qualified in this SDG

LDC #: 21107G6
SDG #: 250123
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/6/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	EB = EB-2 (for 250101)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	M-92	11	I-K	21		31	
2	M-97	12	I-J	22		32	
3	M-31A	13	PB	23		33	
4	M-50	14		24		34	
5	M-34	15		25		35	
6	M-35	16		26		36	
7	M-19	17		27		37	
8	M-39	18		28		38	
9	M-68	19		29		39	
10	M-61	20		30		40	

Notes:

LDC #: 2110796
SDG #: 250123

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-12	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107G6
SDG #: 250123

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: AL
2nd Reviewer: LA

METHOD: Inorganics, EPA Method Sr Conc

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks?

Blank units: µg/L **Associated sample units:** µg/L
Sampling date: 8/6/08 Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / (Other): EB Associated Samples: All (>10x)

Analyte	Blank ID	Sample Identification								
	EB-2									
Clo4	9.8									

Blank units: _____ **Associated sample units:** _____
Sampling date: _____ Soil factor applied _____
Field blank type: (circle one) Field Blank / Rinsate / Other: _____ Associated Samples: _____

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 7, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250139

Sample Identification

M-87
M-70
M-71
M-72
M-38
M-22A
M-89
M-17A
M-115
M-14A
M-36
M-84
M-10
MD-2
M-100
M-17ADUP
M-84MS
M-84MSD

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
MD-2	Total dissolved solids	43 days	7 days	J- (all detects) R (all non-detects)	P
M-36	Hexavalent chromium	30.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-84 MD-2	Hexavalent chromium	31 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-10	Hexavalent chromium	29.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-100	Hexavalent chromium	31.25 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-84 and MD-2 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-84	MD-2				
Hexavalent chromium	0.065 mg/L	0.070 mg/L	7 (≤30)	-	-	-
Total dissolved solids	1210 mg/L	958 mg/L	23 (≤30)	-	-	-
Perchlorate	9360 ug/L	9260 ug/L	0 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 250139

SDG	Sample	Analyte	Flag	A or P	Reason
250139	MD-2	Total dissolved solids	J- (all detects) R (all non-detects)	P	Technical holding times
250139	M-36 M-84 M-10 MD-2 M-100	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 250139

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 250139

No Sample Data Qualified in this SDG

LDC #: 21107H6
SDG #: 250139
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 8/7/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 12+14
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	M-87	11	M-36	21		31	
2	M-70	12	M-84 D	22		32	
3	M-71	13	M-10	23		33	
4	M-72	14	MD-2 D	24		34	
5	M-38	15	M-100	25		35	
6	M-22A	16	M-17ADUP	26		36	
7	M-89	17	M-84MS	27		37	
8	M-17A	18	M-84MSD	28		38	
9	M-115	19	PB	29		39	
10	M-14A	20		30		40	

Notes:

LDC #: 21107H6
SDG #: 250139

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 10	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
11 - 15	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4** ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
16	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
17 - 18	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ____________________

LDC #: 21107H6
SDG #: 250139

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 | SM2540C		7196				
Parameters:	TDS		Cr^{6+}				
Technical holding time:	7 days		24 hrs				

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
14	8/7/08	9/19/08		(43 days)			J-/R/P	(4)
11	8/7/08			8/8/08	(30.5 hrs)		J-/UJ/P	↓
	0823			1457				
12	8/7/08			8/8/08	(31 hrs)		↓	↓
	0805			1457				
13	8/7/08			8/8/08	(29.5 hrs)		↓	↓
	0930			1457				
14	8/7/08			8/8/08	(31 hrs)		↓	↓
	0805			1457				
15	8/7/08			8/8/08	(31.25 hrs)		↓	↓
	0746			1457				

LDC# 21107H6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AA
2nd Reviewer: [illegible]

Inorganics, Method See Cover

(Y)N NA Were field duplicate pairs identified in this SDG?
(Y)N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	12	14		
Hexavalent Chromium	0.065	0.070	7	
TDS	1210	958	23	
Perchlorate (ug/L)	9360	9260	1	

V:\FIELD DUPLICATES\FD_inorganic\21107H6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 11, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250388

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
PC-99R2/R3DUP

Introduction

This data review covers 18 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS3 (PC-120)	Perchlorate	129.0 (75-125)	-	-	J+ (all detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 250388

SDG	Sample	Analyte	Flag	A or P	Reason
250388	PC-120	Perchlorate	J+ (all detects)	P	Laboratory control samples (%R)

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 250388

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 250388

No Sample Data Qualified in this SDG

LDC #: 21107I6
SDG #: 250388
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: VA

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/11/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	SW	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all Water

1	ART-1	11	PC-117	21		31	
2	ART-2	12	PC-118	22		32	
3	ART-3	13	PC-119	23		33	
4	ART-4	14	PC-120	24		34	
5	ART-7	15	PC-121	25		35	
6	ART-8	16	PC-133	26		36	
7	PC-99R2/R3	17	ART-9	27		37	
8	PC-115R	18	PC-99R2/R3DUP	28		38	
9	PC-116R	19	PB	29		39	
10	SF-1	20		30		40	

Notes:

LDC #: 21107I6

SDG #: 250388

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Reviewer: AL

2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-17	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2C 18	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107I6
SDG #: 250388

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: AI
2nd Reviewer: [illegible]

METHOD: Inorganics, Method Sm Con

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y (N) N/A Were the LCS percent recoveries (%R) ~~and relative percent difference (RPD)~~ within the QC limits?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS/LCSD ID	Matrix	Analyte	LCS %R (limits)	~~LCSD %R (limits)~~	RPD (limits)	Associated Samples	Qualifications
	LCS3	W	ClO_4	129.0 (75-125)	—		14	J+ det | P

Comments: _____

LCSD.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 13, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 250906

Sample Identification

H-28A

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

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.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 250906

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 250906

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 250906

No Sample Data Qualified in this SDG

LDC #: 21107J6
SDG #: 250906
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AP
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/13/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	} from 25027
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	H-28A	11		21		31	
2	PB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2110756
SDG #: 250906

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 11 through August 14, 2008

LDC Report Date: July 28, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 251027

Sample Identification

PC-55
PC-58
PC-56
PC-60
PC-59
PC-62
PC-68
PC-97
PC-86
PC-90
PC-91
PC-17
PC-18
ARP-1
PC-134
PC-135
PC-122
ARP-6B
ARP-5A
ARP-4A
MW-K4
MW-K5
PC-53
PC-103
PC-98R
M-87
L-635
L-637
PC-55MS
PC-55MSD
PC-55DUP
PC-18DUP

Introduction

This data review covers 32 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

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 with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
PC-55DUP (PC-55)	Total dissolved solids	13.7 (≤10)	-	J (all detects) UJ (all non-detects)	A

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS (PC-55)	Total dissolved solids	77.4 (80-114)	-	-	J- (all detects) UJ (all non-detects)	P

VII. Sample Result Verification

All sample result verifications were acceptable.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 251027

SDG	Sample	Analyte	Flag	A or P	Reason
251027	PC-55	Total dissolved solids	J (all detects) UJ (all non-detects)	A	Duplicate sample analysis (RPD)
251027	PC-55	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 251027

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 251027

No Sample Data Qualified in this SDG

LDC #: 21107K6
SDG #: 251027
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 4

Date: 9/28/09
Page: 1 of 1
Reviewer: VL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/11/08 - 8/14/08
IIa.	Initial calibration	A	
IIb.	Calibration verification	A	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/pmp
V	Duplicates	SW	
VI.	Laboratory control samples	SW	LCS/LCSD
VII.	Sample result verification	A	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All

1	PC-55	11	PC-91	21	MW-K4	31	PC-55DUP
2	PC-58	12	PC-17	22	MW-K5	32	PC-18DUP
3	PC-56	13	PC-18	23	PC-53	33	EMB
4	PC-60	14	ARP-1	24	PC-103	34	
5	PC-59	15	PC-134	25	PC-98R	35	
6	PC-62	16	PC-135	26	M-87	36	
7	PC-68	17	PC-122	27	L-635	37	
8	PC-97	18	ARP-6B	28	L-637	38	
9	PC-86	19	ARP-5A	29	PC-55MS	39	
10	PC-90	20	ARP-4A	30	PC-55MSD	40	

Notes:

LDC #: 31107K6
SDG #: 35037

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer: JF

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients > 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)	✓			
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix Spike/Matrix Spike Duplicate				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.		✓		
V. Laboratory Control Samples				
Was an LCS anaytzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓	✓		
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?			✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 21107K6
SDG #: M5607

VALIDATION FINDINGS CHECKLIST

Reviewer: MM
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
[illegible]				
Overall assessment of data was found to be acceptable.	✓			
[illegible]				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
[illegible]				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 21107K6
SDG #: 25107

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: MH
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Parameter
1-28	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} Cond ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
29,30	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
31,32	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ____ ____ ____ ____
	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21109K6
SDG #: [illegible]

VALIDATION FINDINGS WORKSHEET
Duplicate Analysis

Reviewer: MH
2nd Reviewer: [illegible]

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water and ≤ 35% for soil samples (≤ 10% for Method 300.0)? If no, see qualification below. A control limit of ±CRDL (±2X CRDL for soil) was used for samples that were ≤5X the CRDL, including when only one of the duplicate sample values were ≤5X the CRDL. If field blanks were used for laboratory duplicates, see overall assessment. lab limits

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Duplicate ID	Matrix	Analyte	RPD (Limits)	Associated Samples	Qualifications
1	31	AQ	TDS	13.7 (≤10)	1	J/UJ/A (ld)

Comments:

LDC #: 21107k6
SDG #: 21107

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: MH
2nd Reviewer:

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y (N) N/A Were all LCS percent recoveries (%R) within the control limits of 80-120% (85-115% for Method 300.0)?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

lab limits

#	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
1	LCS*	AQ	TDS	77.4 (80-114)	1	J- / UJ / P (2)

Comments: * RPD is not applicable. Since LCS1 spiked at 175 ppm, and LCS2 spiked at 700 ppm

LDC #: 21107K6
SDG #: 21107

Validatin Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of ClO4 was recalculated. Calibration date: 8/27/08

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{\text{Found} \times 100}{\text{True}}$$

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (ug/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	ClO4	s1	2	0.002	*0.999957*	0.999985	Y
		s2	4	0.004			
		s3	10	0.01			
		s4	25	0.025			
		s5	50	0.052			
		s6	100	0.104			
8/30/08 Calibration verification	ClO4	50	52.5		102.1	102.1	Y
9/1/08 Calibration verification	ClO4	50	52		100.8	100.7	
Calibration verification							

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 21107K6
SDG #: 21107

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: MM
2nd Reviewer: [signature]

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Tl	182	175	104	104	Y
29	Matrix spike sample	Pb	(SSR-SR) 23.9	250	96.4	98	↓
31	Duplicate sample	Tl	6450	7400	13.7	13.7	↓

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 51107K6
SDG #: 51077

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: MH
2nd reviewer:

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for 1, 11, 21 reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

#1 $clO_4 = \frac{Area \times DF}{0.0010378}$ $clO_4 = \frac{0.048 \times 20}{0.0010378} = 925\ ug/L$

#	Sample ID	Analyte	Reported Concentration ( )	Calculated Concentration ( )	Acceptable (Y/N)
1	1	clO_4 (ug/L)	927	925	Y
		TDS (mg/L)	7400	7400	
2	11	clO_4 (ug/L)	12500	12500	Y
		TDS (mg/L)	7730	7730	
3	21	clO_4 (ug/L)	88600	88600	Y
		TDS (mg/L)	7300	7300	

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: August 18, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 251181

Sample Identification

ART-6

Introduction

This data review covers one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS1 (All samples in SDG 251181)	Total dissolved solids	125.7 (80-114)	-	-	J+ (all detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 251181

SDG	Sample	Analyte	Flag	A or P	Reason
251181	ART-6	Total dissolved solids	J+ (all detects)	P	Laboratory control samples (%R)

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 251181

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 251181

No Sample Data Qualified in this SDG

LDC #: 21107L6
SDG #: 251181
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 8/18/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client specified
V	Duplicates	N	
VI.	Laboratory control samples	SW	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	ART-6	11		21		31	
2	PB	12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 2110726
SDG #: 251181

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ___

LDC #: 21107LCW
SDG #: 25181

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: ad
2nd Reviewer: W

METHOD: Inorganics, Method Ion Chr

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y (N) N/A Were all LCS percent recoveries (%R) within the control limits of ~~80-120% (85-115% for Method 300.0)~~? 80 - 114

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications
		LCS1	W	TDS	125.7	All	J (all +) P

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: September 8, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 253362

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
PC-116RDUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ART-7	Total dissolved solids	11 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 253362

SDG	Sample	Analyte	Flag	A or P	Reason
253362	ART-7	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 253362

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 253362

No Sample Data Qualified in this SDG

LDC #: 21107M6
SDG #: 253362
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/6/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: M

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 9/8/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wells

1	ART-1	11	SF-1	21		31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	PC-116RDUP	29		39	
10	PC-116R	20	PB	30		40	

Notes:

LDC #: 21107M6
SDG #: 253362

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: ✓

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
19	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 21137M6
SDG #: 253362

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: A
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
Y (N) N/A Were all cooler temperatures within validation criteria?

Method:		160.1/5M2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
6	9/8/08	9/19/08		(11 days)			J-/UJ/P (h)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: September 8 through September 11, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 253834

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-91
PC-97
PC-17
PC-18
PC-55
L-635
L-637
MWK-4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MWK-5

Introduction

This data review covers 25 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
ARP-1	Total dissolved solids	13 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 253834

SDG	Sample	Analyte	Flag	A or P	Reason
253834	ARP-1	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 253834

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 253834

No Sample Data Qualified in this SDG

LDC #: 21107N6
SDG #: 253834
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: V

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 9/8 - 9/11/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specific
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	M-87	11	PC-91	21	ARP-5A	31	
2	PC-98R	12	PC-97	22	ARP-6B	32	
3	PC-86	13	PC-17	23	~~PC-83~~ PC-53	33	
4	PC-90	14	PC-18	24	PC-103	34	
5	PC-56	15	PC-55	25	MWK-5	35	
6	PC-58	16	L-635	26	PB	36	
7	PC-59	17	L-637	27		37	
8	PC-60	18	MWK-4	28		38	
9	PC-62	19	ARP-1	29		39	
10	PC-68	20	ARP-4A	30		40	

Notes:

LDC #: 21107N6
SDG #: 253834

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: W

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-25	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
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		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 21107N6
SDG #: 253834

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 / SM2540C					
Parameters:	TDS					
Technical holding time:	7 days					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
19	9/9/08	9/22/08		(13 days)			J-/UJ/P (4)

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: October 13, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 256589

Sample Identification

ART-1	ART-1DUP
ART-2	
ART-3	
ART-4	
ART-6	
ART-7	
ART-8	
PC-99R2/R3	
PC-115R	
PC-116R	
SF-1	
PC-117	
PC-118	
PC-119	
PC-120	
PC-121	
PC-133	
ART-9	
ART-1MS	
ART-1MSD	

Introduction

This data review covers 21 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	6.0 mg/L	ART-4

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

No field blanks were identified in this SDG.

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:

LCS ID (Associated Samples)	Analyte	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Flag	A or P
LCS1 (ART-1 ART-2 ART-3 ART-6 ART-7 ART-8 PC-99R2/R3 PC-115R PC-116R SF-1 PC-117 PC-118 PC-119 PC-120 PC-121 PC-133 ART-9)	Total dissolved solids	125.7 (80-114)	-	-	J+ (all detects)	P

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 256589

SDG	Sample	Analyte	Flag	A or P	Reason
256589	ART-1 ART-2 ART-3 ART-6 ART-7 ART-8 PC-99R2/R3 PC-115R PC-116R SF-1 PC-117 PC-118 PC-119 PC-120 PC-121 PC-133 ART-9	Total dissolved solids	J+ (all detects)	P	Laboratory control samples (%R)

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 256589

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 256589

No Sample Data Qualified in this SDG

LDC #: 21107O6
SDG #: 256589
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/13/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	SW	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wet

1	ART-1	11	SF-1	21	ART-1DUP	31	
2	ART-2	12	PC-117	22	PB	32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	ART-1MS	29		39	
10	PC-116R	20	ART-1MSD	30		40	

Notes:

LDC #: 2110706
SDG #: 256585

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: V

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
19-20	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
21	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107C6
SDG #: 256583

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AR
2nd Reviewer:

METHOD: Inorganics, Method Ion Cr

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L **Associated Samples:** 4 (>PQL)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	6.0		~~5.2~~ 6									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 21107D6
SDG #: 25589

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Inorganics, Method Sm Com

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y (N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

LEVEL IV ONLY: (80-114)

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	LCS/LCSD ID	Matrix	Analyte	LCS %R (limits)	LCSD %R (limits)	RPD (limits)	Associated Samples	Qualifications
	LCS1	W	TDS	125.7			1-3, 5-18	J+ | P

Comments: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: October 14 through October 15, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 257010

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-17
PC-18
PC-55
L-635
L-637
PC-86MS
PC-86MSD
PC-60DUP

Introduction

This data review covers 28 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

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R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PC-98R PC-86 PC-90 PC-56 PC-58 PC-60 PC-62 PC-68 ARP-1 PC-91 PC-97 PC-17 PC-18 PC-55 L-635 L-637	Total dissolved solids	8 days	7 days	J- (all detects) UJ (all non-detects)	P
PC-59	Total dissolved solids	11 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 257010

SDG	Sample	Analyte	Flag	A or P	Reason
257010	PC-98R PC-86 PC-90 PC-56 PC-58 PC-59 PC-60 PC-62 PC-68 ARP-1 PC-91 PC-97 PC-17 PC-18 PC-55 L-635 L-637	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 257010

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 257010

No Sample Data Qualified in this SDG

LDC #: 21107P6
SDG #: 257010
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1/ SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 10/14 - 10/15/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wells

1	M-87	11	MW-K4	21	PC-17	31	
2	PC-98R	12	ARP-1	22	PC-18	32	
3	PC-86	13	ARP-4A	23	PC-55	33	
4	PC-90	14	ARP-5A	24	L-635	34	
5	PC-56	15	ARP-6B	25	L-637	35	
6	PC-58	16	PC-53	26	PC-86MS	36	
7	PC-59	17	~~PC103~~ PC-103	27	PC-86MSD	37	
8	PC-60	18	MW-K5	28	PC-60DUP	38	
9	PC-62	19	PC-91	29	PB	39	
10	PC-68	20	PC-97	30		40	

Notes:

LDC #: 21107P6
SDG #: 257010

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-25	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
26-27	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
28	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 211078 6
SDG #: 257010

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer:
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	160.1 / SM 2540C						
Parameters:	TDS						
Technical holding time:	7 days						

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
2-6, 8-10,	10/14/08	10/22/08		(8 days)			J-/UJ/P (4)
12, 19-25							
7	10/14/08	10/25/08		(11 days)			↓ ↓

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 3, 2008

LDC Report Date: July 14, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258290

Sample Identification

I-AR	I-NMSD
I-O	
I-P	
I-H	
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-ARDUP	
I-NMS	

Introduction

This data review covers 21 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

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U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

Sample FB-1 (from SDG 258305) was identified as a field blank. No contaminant concentrations were found in this blank.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258290

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258290

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258290

No Sample Data Qualified in this SDG

LDC #: 21107Q6
SDG #: 258290
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/3/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	ND	FB: FB-1 (from 258305)

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

all wtr

1	I-AR	11	I-E	21	I-NMSD	31	
2	I-O	12	I-M	22	P8	32	
3	I-P	13	I-D	23		33	
4	I-H	14	I-C	24		34	
5	I-U	15	I-S	25		35	
6	I-T	16	I-L	26		36	
7	I-G	17	I-R	27		37	
8	I-Q	18	I-B	28		38	
9	I-F	19	I-ARDUP	29		39	
10	I-N	20	I-NMS	30		40	

Notes:

LDC #: 21107Q6
SDG #: 258290

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter (pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}) — circled
1-18	W	TDS, ClO4
19	W	TDS
20-21	W	ClO4

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 3, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258305

Sample Identification

PC-123
PC-124
PC-125
PC-126
PC-127
PC-128
PC-131
PC-132
FB-1
M-96
PC-54
I-AA
M-66
M-65
M-64
MD-3
M-95
PC-125DUP
M-95MS
M-95MSD

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-95	Hexavalent chromium	31.25 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample FB-1 was identified as a field blank. No contaminant concentrations were found in this blank.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples PC-128 and MD-3 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-128	MD-3				
Total dissolved solids	5620 mg/L	5400 mg/L	4 (≤30)	-	-	-
Perchlorate	187000 ug/L	231000 ug/L	21 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258305

SDG	Sample	Analyte	Flag	A or P	Reason
258305	M-95	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258305

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258305

No Sample Data Qualified in this SDG

LDC #: 21107R6
SDG #: 258305
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: V

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 11/3/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 6 + 16
X	Field blanks	ND	FB: 9

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples: All wat

1	PC-123	11	PC-54	21	PB	31	
2	PC-124	12	I-AA	22		32	
3	PC-125	13	M-66	23		33	
4	PC-126	14	M-65	24		34	
5	PC-127	15	M-64	25		35	
6	PC-128 D	16	MD-3 D	26		36	
7	PC-131	17	M-95	27		37	
8	PC-132	18	PC-125DUP	28		38	
9	FB-1	19	M-95MS	29		39	
10	M-96	20	M-95MSD	30		40	

Notes:

LDC #: 21107R6

SDG #: 258305

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Reviewer: AL

2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-16	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4) ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
17	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC (CR^{6+}) (ClO_4) ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
18	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
19-20	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC (CR^{6+}) ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 21107R6
SDG #: 25R305

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AI
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		7196					
Parameters:		Cr^{6+}					
Technical holding time:		24 hrs					
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
17	11/3/08	11/4/08		(31.25 hrs)			J-/UJ/P (h)
	1212	1922					

LDC# 21107R6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	6	16		
TDS	5620	5400	4	
Perchlorate (ug/L)	187000	231000	21	

V:\FIELD DUPLICATES\FD_inorganic\21107R6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 4, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258410

Sample Identification

PC-129
PC-130
PC-71
PC-72
PC-73
M-44
PC-37
M-48
MD-4
M-57A
EB-1
M-131
M-79
M-69
M-135
M-25
M-37
M-99
M-44DUP
M-57ADUP
EB-1MS
EB-1MSD
M-131MS
M-131MSD

Introduction

This data review covers 24 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
EB-1	Hexavalent chromium	80 hours	24 hours	J- (all detects) R (all non-detects)	P
M-37	Hexavalent chromium	75 hours	24 hours	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

Sample EB-1 was identified as an equipment blank. No contaminant concentrations were found in this blank.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples PC-71 and MD-4 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	PC-71	MD-4				
Total dissolved solids	8650 mg/L	7960 mg/L	8 (≤30)	-	-	-
Perchlorate	577000 ug/L	457000 ug/L	19 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258410

SDG	Sample	Analyte	Flag	A or P	Reason
258410	EB-1 M-37	Hexavalent chromium	J- (all detects) R (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258410

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258410

No Sample Data Qualified in this SDG

LDC #: 21107S6
SDG #: 258410
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: [signature]

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 11/4/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 3+9
X	Field blanks	ND	EB: 11

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	PC-129	11	EB-1	21	EB-1MS	31	
2	PC-130	12	M-131	22	EB-1MSD	32	
3	PC-71 D	13	M-79	23	M-131MS	33	
4	PC-72	14	M-69	24	M-131MSD	34	
5	PC-73	15	M-135	25		35	
6	M-44	16	M-25	26		36	
7	PC-37	17	M-37	27		37	
8	M-48	18	M-99	28		38	
9	MD-4 D	19	M-44DUP	29		39	
10	M-57A	20	M-57ADUP	30		40	

Notes:

LDC #: 2110756
SDG #: 258410

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: V

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-10,	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___ ___
12-16,		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
18		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
11, 17	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4** ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
19-20	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
21-22	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
23-24	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4** ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments: ______________________________

LDC #: 211075G
SDG #: 258410

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	7196						
Parameters:	Cr 6+						
Technical holding time:	24 hrs						

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
11	11/4/08	11/7/08		(80 hrs)			J-/R/P (L)
	0755	1404					
17	11/4/08	11/7/08		(75 hrs)			↓ ↓
	1100	1404					

LDC# 21107S6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	3	9		
TDS	8650	7960	8	
Perchlorate (ug/L)	577000	475000	19	

V:\FIELD DUPLICATES\FD_inorganic\21107S6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 5, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258563

Sample Identification

M-92	MD-1
M-97	
M-31A	
M-52	
M-50	
M-34	
M-35	
M-19	
M-39	
M-68	
M-61	
I-K	
I-J	
I-Z	
I-I	
I-V	
M-84	
M-10	
EB-2	
M-11	

Introduction

This data review covers 21 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-84	Hexavalent chromium	50.5 hours	24 hours	J- (all detects) R (all non-detects)	P
M-10	Hexavalent chromium	47.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
EB-2	Hexavalent chromium	52 hours	24 hours	J- (all detects) R (all non-detects)	P
M-11 MD-1	Hexavalent chromium	49.75 hours	24 hours	J- (all detects) R (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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	14 mg/L	M-92 M-97 I-K I-J I-Z I-I I-V MD-1

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

Sample EB-2 was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB-2	11/5/08	Perchlorate Hexavalent chromium	127 ug/L 0.017 mg/L	M-92 M-97 M-31A M-52 M-50 M-34 M-35 M-19 M-39 M-68 M-61 I-K I-J I-Z I-I I-V M-84 M-10 M-11 MD-1

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:

Sample	Analyte	Reported Concentration	Modified Final Concentration
M-92	Perchlorate	884 ug/L	884J+ ug/L
M-84	Hexavalent chromium	0.056 mg/L	0.056J+ mg/L

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-11 and MD-1 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-11	MD-1				
Hexavalent chromium	3.38 mg/L	3.58 mg/L	6 (≤30)	-	-	-
Total dissolved solids	3520 mg/L	3620 mg/L	3 (≤30)	-	-	-
Perchlorate	50400 ug/L	48900 ug/L	3 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258563

SDG	Sample	Analyte	Flag	A or P	Reason
258563	M-10	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
258563	M-84 EB-2 M-11 MD-1	Hexavalent chromium	J- (all detects) R (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258563

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258563

SDG	Sample	Analyte	Modified Final Concentration	A or P
258563	M-92	Perchlorate	884J+ ug/L	A
258563	M-84	Hexavalent chromium	0.056J+ mg/L	A

LDC #: 21107T6
SDG #: 258563
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AJ
2nd Reviewer: VV

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM 2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 11/5/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	A	fm 258410
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 20+21
X	Field blanks	SW	EB: 19

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: All wet

1	M-92	11	M-61	21	MD-1	31	
2	M-97	12	I-K	22	PB	32	
3	M-31A	13	I-J	23		33	
4	M-52	14	I-Z	24		34	
5	M-50	15	I-I	25		35	
6	M-34	16	I-V	26		36	
7	M-35	17	M-84	27		37	
8	M-19	18	M-10	28		38	
9	M-39	19	EB-2	29		39	
10	M-68	20	M-11	30		40	

Notes:

LDC #: 21107T6
SDG #: 258563

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-16	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
17-21	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 211076
SDG #: 258563

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	7196					
Parameters:	Cr^{6+}					
Technical holding time:	24 hrs					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
17	11/5/08	11/7/08		(50.5 hrs)			J-/R/P	(h)
	1128	1404						
18	11/5/08	11/7/08		~~(48.75 hrs~~ (47.25 hrs)			J-/UJ/P	↓
	1318	1404						
19	11/5/08	11/7/08		(52 hrs)			J-/R/P	↓
	1000	1404						
20	11/5/08	11/7/08		(49.75 hrs)			↓	↓
	1215	1404						
21	11/5/08	11/7/08		(49.75 hrs)			↓	↓
	1215	1404						

LDC #: 21107T6
SDG #: 258563

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: CJ
2nd Reviewer: [illegible]

METHOD: Inorganics, Method [illegible]

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L

Associated Samples: 1-2, 12-16, 21 (5x10x)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	14											

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 21107356
SDG #: 258563

Reviewer: AP
2nd Reviewer: [illegible]

VALIDATION FINDINGS WORKSHEET
Field Blanks

METHOD: Inorganics, EPA Method See Cover

(Y) N N/A Were field blanks identified in this SDG?
(Y) N N/A Were target analytes detected in the field blanks? (code: bc)

Blank units: see below **Associated sample units:** see below
Sampling date: 11/5/08 Soil factor applied ______
Field blank type: (circle one) Field Blank / Rinsate / (Other:) EB Associated Samples: All except 19

Analyte	Blank ID	Sample Identification								
	19	1	17							
ClO4 (mg/L)	127	884J+								
Cr6+ (mg/L)	0.017		0.056J+							

Blank units: ______ **Associated sample units:** ______
Sampling date: ______ Soil factor applied ______
Field blank type: (circle one) Field Blank / Rinsate / Other: ______ Associated Samples: ______

Analyte	Blank ID	Sample Identification								

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U".

LDC# 21107T6
SDG#: See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: A1
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	20	21		
Hexavalent Chromium	3.38	3.58	6	
TDS	3520	3620	3	
Perchlorate (ug/L)	50400	48900	3	

V:\FIELD DUPLICATES\FD_inorganic\21107T6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 6, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258623

Sample Identification

M-67
M-133
M-74
M-73
M-88
M-87
M-70
M-71
M-72
M-38
M-36
M-12A
M-100
M-22A
M-89
M-17A
MD-2
M-100MS
M-100MSD
MD-2DUP

Introduction

This data review covers 20 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
M-36	Hexavalent chromium	29.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-12A MD-2	Hexavalent chromium	30 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-100	Hexavalent chromium	29.75 hours	24 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

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the preparation blanks.

No field blanks were identified in this SDG.

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

Samples M-12A and MD-2 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flag	A or P
	M-12A	MD-2				
Hexavalent chromium	13.7 mg/L	14.7 mg/L	7 (≤30)	-	-	-
Total dissolved solids	8100 mg/L	7950 mg/L	2 (≤30)	-	-	-
Perchlorate	289000 ug/L	288000 ug/L	0 (≤30)	-	-	-

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258623

SDG	Sample	Analyte	Flag	A or P	Reason
258623	M-36 M-12A M-100 MD-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258623

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258623

No Sample Data Qualified in this SDG

LDC #: 21107U6
SDG #: 258623
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AJ
2nd Reviewer: W

METHOD: (Analyte) Hexavalent Chromium (EPA SW846 Method 7196), Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) (SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 11/6/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/MSD/Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	D: 12+17
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wet

1	M-67	11	M-36	21	PB	31	
2	M-133	12	M-12A D	22		32	
3	M-74	13	M-100	23		33	
4	M-73	14	M-22A	24		34	
5	M-88	15	M-89	25		35	
6	M-87	16	M-17A	26		36	
7	M-70	17	MD-2 D	27		37	
8	M-71	18	M-100MS	28		38	
9	M-72	19	M-100MSD	29		39	
10	M-38	20	MD-2DUP	30		40	

Notes:

LDC #: 21107A6
SDG #: 258623

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: W

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-11, 15-16	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
12-14, 17	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
DC 18-19	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
20	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107L6
SDG #: 258623

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	7196						
Parameters:	Cr^{6+}						
Technical holding time:	24 hrs						
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
11	11/6/08	11/7/08		~~(30.5 hrs)~~ (29.5 hrs)	(29.5 hrs)		J-/UJ/P (1)
	1037	1550					
12	11/6/08	11/7/08		(30 hrs)			↓ ↓
	1000	1550					
13	11/6/08	11/7/08		(29.75 hrs)			↓ ↓
	1014	1550					
17	11/6/08	11/7/08		(30 hrs)			↓ ↓
	1000	1550					

LDC# 21107U6
SDG#:See Cover

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: AL
2nd Reviewer:

Inorganics, Method See Cover

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/L)		(≤ 30) RPD	
	12	17		
Hexavalent Chromium	13.7	14.7	7	
TDS	8100	7950	2	
Perchlorate (ug/L)	289000	288000	0	

V:\FIELD DUPLICATES\FD_inorganic\21107U6.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 7, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258639

Sample Identification

M-76
M-75
M-115
M-14A

Introduction

This data review covers 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258639

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258639

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258639

No Sample Data Qualified in this SDG

LDC #: 21107V6
SDG #: 258639
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/7/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All water

1	M-76	11		21		31	
2	M-75	12		22		32	
3	M-115	13		23		33	
4	M-14A	14		24		34	
5	PB	15		25		35	
6		16		26		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:

LDC #: 21107V6

SDG #: 258639

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Reviewer: AL

2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-4	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 10, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 258779

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
ART-3DUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 258779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 258779

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 258779

No Sample Data Qualified in this SDG

LDC #: 21107W6
SDG #: 258779
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AA
2nd Reviewer: W

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 11/10/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wells

1	ART-1	11	SF-1	21		31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	ART-3DUP	29		39	
10	PC-116R	20	PB	30		40	

Notes:

LDC #: 21107W6
SDG #: 258779

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
19	W	pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ___ ___ ___
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: November 10 through November 13, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 259063

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-122
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-18
PC-55
L-635
L-637
PC-58DUP

Introduction

This data review covers 26 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
PC-58	Total dissolved solids	9 days	7 days	J- (all detects) UJ (all non-detects)	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	14 mg/L	MW-K4 ARP-1 ARP-4A ARP-5A ARP-6B PC-53 PC-103 MW-K5 PC-55 L-635

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 259063

SDG	Sample	Analyte	Flag	A or P	Reason
259063	PC-58	Total dissolved solids	J- (all detects) UJ (all non-detects)	P	Technical holding times

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 259063

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 259063

No Sample Data Qualified in this SDG

LDC #: 21107X6
SDG #: 259063
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: A
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	SW	Sampling dates: 11/10 - 11/12/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X.	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All water

1	M-87	11	PC-122	21	PC-97	31	
2	PC-98R	12	MW-K4	22	PC-18	32	
3	PC-86	13	ARP-1	23	PC-55	33	
4	PC-90	14	ARP-4A	24	L-635	34	
5	PC-56	15	ARP-5A	25	L-637	35	
6	PC-58	16	ARP-6B	26	PC-58DUP	36	
7	PC-59	17	PC-53	27	PB	37	
8	PC-60	18	PC-103	28		38	
9	PC-62	19	MW-K5	29		39	
10	PC-68	20	PC-91	30		40	

Notes:

LDC #: 21107X6
SDG #: 259063

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-25	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
26	W	pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107x6
SDG #: 25903

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AL
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		160.1 / SM2540C					
Parameters:		TDS					
Technical holding time:		7 days					
Sample ID	**Sampling date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Analysis date**	**Qualifier**
6	11/10/08	11/~~05~~ 19/08		(9 days)			J-/UJ/P (4)

LDC #: 21107X6
SDG #: 259063

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AA
2nd Reviewer: [illegible]

METHOD: Inorganics, Method Ion Cor

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L **Associated Samples:** 12-19, 23-24 (>10x)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	14											

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the methoc blank concentration were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: December 8 through December 9, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 261012

Sample Identification

ART-1
ART-2
ART-3
ART-4
ART-6
ART-7
ART-8
PC-99R2/R3
PC-115R
PC-116R
SF-1
PC-117
PC-118
PC-119
PC-120
PC-121
PC-133
ART-9
ART-1DUP

Introduction

This data review covers 19 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	36 mg/L	ART-1 ART-2 ART-3 ART-4 ART-6 ART-7 ART-8 PC-99R2/R3 PC-115R PC-116R PC-117 PC-118 PC-119 PC-120 PC-121 PC-133 ART-9

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

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.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 261012

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 261012

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 261012

No Sample Data Qualified in this SDG

LDC #: 21107Y6
SDG #: 261012
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/8/08 - 12/9/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	N	Dup
V	Duplicates	A	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

All wells

1	ART-1	11	SF-1	21		31	
2	ART-2	12	PC-117	22		32	
3	ART-3	13	PC-118	23		33	
4	ART-4	14	PC-119	24		34	
5	ART-6	15	PC-120	25		35	
6	ART-7	16	PC-121	26		36	
7	ART-8	17	PC-133	27		37	
8	PC-99R2/R3	18	ART-9	28		38	
9	PC-115R	19	ART-1DUP	29		39	
10	PC-116R	20	PB	30		40	

Notes:

LDC #: 21107Y6
SDG #: 261012

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Page: 1 of 1
Reviewer: AL
2nd reviewer: [illegible]

All circled methods are applicable to each sample.

	Sample ID	Matrix	Parameter
	1-18	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
2c	19	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
			pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21137A6
SDG #: 241012

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AL
2nd Reviewer: [illegible]

METHOD: Inorganics, Method Ion Chrom

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L

Associated Samples: 1-10, 12-18 (>10x)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	36											

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2008 Annual Remedial Performance Sampling

Collection Date: December 8 through December 11, 2008

LDC Report Date: July 10, 2009

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 261275

Sample Identification

M-87
PC-98R
PC-86
PC-90
PC-56
PC-58
PC-59
PC-60
PC-62
PC-68
PC-122
MW-K4
ARP-1
ARP-4A
ARP-5A
ARP-6B
ARP-7
PC-53
PC-103
MW-K5
PC-91
PC-97
PC-17
PC-18
PC-55
L-635
L-637

Introduction

This data review covers 27 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids and EPA Method 314.0 for Perchlorate.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (October 2004) and the EPA Region 9 Superfund Data Evaluation/Validation Guidance, NDEP guidance (May 2006) as there are no current guidelines for the methods stated above.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

J+ Data are qualified as estimated, with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

J- Data are qualified as estimated, with a low bias likely to occur. False positives or false negatives are unlikely to have been reported.

J Data are qualified as estimated; it is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

R Data are qualified as rejected. There is a significant potential for the reporting of false negatives or false positives.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration data were not reviewed for Stage 2A.

b. Calibration Verification

Calibration verification data were not reviewed for Stage 2A.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Total dissolved solids	6 mg/L	ARP-1 PC-18 PC-55

Sample concentrations were compared to concentrations detected in the method blanks as required by the QAPP. No sample data was qualified.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) analyses specified for the samples in this SDG, and therefore matrix spike analyses were not performed for this SDG.

V. Duplicates

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report if data has been qualified.

IX. Field Duplicates

No field duplicates were identified in this SDG.

2008 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 261275

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 261275

No Sample Data Qualified in this SDG

2008 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 261275

No Sample Data Qualified in this SDG

LDC #: 21107Z6
SDG #: 261275
Laboratory: MWH Laboratories

VALIDATION COMPLETENESS WORKSHEET
Stage 2A

Date: 7/8/09
Page: 1 of 1
Reviewer: AL
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1) SM2540C

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/8 - 12/11/08
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	SW	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client Specified
V	Duplicates	N	
VI.	Laboratory control samples	A	LCS/LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

All wtr

1	M-87	11	PC-122	21	PC-91	31	
2	PC-98R	12	MW-K4	22	PC-97	32	
3	PC-86	13	ARP-1	23	PC-17	33	
4	PC-90	14	ARP-4A	24	PC-18	34	
5	PC-56	15	ARP-5A	25	PC-55	35	
6	PC-58	16	ARP-6B	26	L-635	36	
7	PC-59	17	ARP-7	27	L-637	37	
8	PC-60	18	PC-53	28	PB	38	
9	PC-62	19	PC-103	29		39	
10	PC-68	20	MW-K5	30		40	

Notes:

LDC #: 2110726
SDG #: 261275

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: AL
2nd reviewer: L

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 - 27	W	pH (TDS) Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} (ClO_4)
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+}

Comments:

LDC #: 21107Z6
SDG #: 261275

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: AL
2nd Reviewer:

METHOD: Inorganics, Method Ion Chr

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
(Y) N N/A Were all samples associated with a given method blank?
(Y) N N/A Were any inorganic contaminants detected above the reporting limit in the method blanks? If yes, please see qualifications below.

Conc. units: mg/L **Associated Samples:** 13, 24-25 (>10x)

Analyte	Blank ID	Maximum ICB/CCB	Blank Action Limit	Sample Identification								
	PB											
TDS	6											

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".