Laboratory Data Consultants, Inc.

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

March 18, 2011

SUBJECT: 2010 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 March 7, 2011. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 25082:

SDG #	Fraction
340274, 340282, 340444	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

DL 03/07/11

Attachment 1

LDC #25082 (Tronox LLC-Northgate, Henderson NV / Tronox Compliance)

Stage 2A/4

LDC	SDG#	DATE REC'D	(3) DATE DUE	Cr (6010B)		CLO_4 (314.0)		TDS (160.1)		Cr(VI) (7196A)		
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	S
A	340274	03/07/11	03/28/11	12	0	12	0	11	0	2	0	
B	340282	03/07/11	03/28/11	15	0	15	0	14	0	10	0	
C	340444	03/07/11	03/28/11	3	0	5	0	3	0	-	-	
Total	A/LR			30	0	32	0	28	0	11	0	101

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

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	2010 Annual Remedial Performance Sampling
Collection Date:	August 6, 2010
LDC Report Date:	March 16, 2011
Matrix:	Water
Parameters:	Chromium
Validation Level:	Stage 2A
Laboratory:	MWH Laboratories, Inc.
Sample Delivery Group (SDG):	340274

Sample Identification

M-11
M-31A
M-50
M-70
M-71
M-72
M-22A
M-89
M-87
M-10
M-48A
H-28A

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 6010 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).

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.

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) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. 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) 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 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.

2010 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 340274

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 340274

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 340274

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 25082A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/14/11

SDG #: 340274 Stage 2A Page: 1 of 1

Laboratory: MWH Laboratories Reviewer: CC

2nd Reviewer: LA

METHOD: Chromium (EPA Method 6010)

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: 8/6/10
II.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	N	
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	N	
XV	Field Blanks	N	

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

Validated Samples: water

1	M-11	11	M-48A	21		31	
2	M-31A	12	H-28A	22		32	
3	M-50	13		23		33	
4	M-70	14		24		34	
5	M-71	15		25		35	
6	M-72	16		26		36	
7	M-22A	17		27		37	
8	M-89	18		28		38	
9	M-87	19		29		39	
10	M-10	20		30		40	

Notes: _____

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	2010 Annual Remedial Performance Sampling
Collection Date:	August 5, 2010
LDC Report Date:	March 17, 2011
Matrix:	Water
Parameters:	Chromium
Validation Level:	Stage 2A
Laboratory:	MWH Laboratories, Inc.
Sample Delivery Group (SDG):	340282

Sample Identification

M-86A
M-38
M-85A
M-83
M-100
M-84
M-36
M-12A
M-95
M-44
M-37
EB080510V
1VD080510
2VD080510
M-5A
M-38MS
M-38MSD
M-100MS
MS-100MSD

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 6010 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).

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.

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 EB080510V was identified as an equipment blank. No metal contaminants were 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) 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 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-44 and 1VD080510 and samples M-37 and 2VD080510 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)	Flags	A or P
	M-41	1VD080510				
Chromium	0.66	0.68	3 (≤30)	-	-	-

Analyte	Concentration (mg/L)		RPD (Limits)	Difference (Limits)	Flags	A or P
	M-37	2VD080510				
Chromium	0.030	0.029	-	0.001 (≤0.02)	-	-

2010 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 340282

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 340282

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 340282

No Sample Data Qualified in this SDG

Tronox Northgate Henderson
VALIDATION COMPLETENESS WORKSHEET
Stage 2A

LDC #: 25082B4
SDG #: 340282
Laboratory: MWH Laboratories

Date: 3/11/11
Page: 1 of 1
Reviewer: CR
2nd Reviewer: V

METHOD: Chromium (EPA Method 6010)

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: 8/5/10
II.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MS/D
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	SW	(10, 13), (11, 14)
XV	Field Blanks	ND	EB=12

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

Validated Samples: water

1	M-86A	11	M-37	21	MS-100MSD	31	
2	M-38	12	EB080510V	22		32	
3	M-85A	13	1VD080510	23		33	
4	M-83	14	2VD080510	24		34	
5	M-100	15	M-5A	25		35	
6	M-84	16	~~2VD080510 MS~~	26		36	
7	M-36	17	~~M-38 DUP MSD~~	27		37	
8	M12A	18	M-38 MS	28		38	
9	M-95	19	MSD	29		39	
10	M-44	20	M-100 MS	30		40	

Notes: _____

LDC#: 25082B4

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: CV
2nd Reviewer: V

METHOD: Metals (EPA Method 6020/7000)

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	Difference	Limits	Qualifications (Parent Only)
	10	13				
Chromium	0.66	0.68	3			

V:\FIELD DUPLICATES\FD_inorganic\25082B4.wpd

Compound	Concentration (mg/L)		(≤30) RPD	Difference	Limits	Qualifications (Parent Only)
	11	14				
Chromium	0.030	0.029		0.001	(≤0.02)	

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	2010 Annual Remedial Performance Sampling
Collection Date:	December 3, 2010
LDC Report Date:	March 16, 2011
Matrix:	Water
Parameters:	Chromium
Validation Level:	Stage 2A
Laboratory:	MWH Laboratories, Inc.
Sample Delivery Group (SDG):	340444

Sample Identification

M-72
M-73
M-71

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 6010 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).

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.

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) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VII. 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) 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 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.

2010 Annual Remedial Performance Sampling
Chromium - Data Qualification Summary - SDG 340444

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 340444

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 340444

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 25082C4 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/11

SDG #: 340444 Stage 2A Page: 1 of 1

Laboratory: MWH Laboratories Reviewer: CR

2nd Reviewer: [illegible]

METHOD: Chromium (EPA Method 6010)

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: 12/3/10
II.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	N	Client specified
VII.	Duplicate Sample Analysis	N	J
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	N	
XV	Field Blanks	N	

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

Validated Samples: water

1	M-72	11		21		31	
2	M-73	12		22		32	
3	M-71	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: 2010 Annual Remedial Performance Sampling

Collection Date: August 6, 2010

LDC Report Date: March 16, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 340274

Sample Identification

M-11
M-31A
M-50
M-70
M-71
M-72
M-22A
M-89
M-87
M-10
M-48A
H-28A
M-70DUP
M-10MS
M-10MSD

Introduction

This data review covers 15 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate, EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, 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).

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.

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-11 M-10 M-10MS M-10MSD	Hexavalent chromium	5 days	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.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

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

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.

2010 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 340274

SDG	Sample	Analyte	Flag	A or P	Reason
340274	M-11 M-10	Hexavalent chromium	J- (all detects) R (all non-detects)	P	Technical holding times

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 340274

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 340274

No Sample Data Qualified in this SDG

Tronox Northgate Henderson
VALIDATION COMPLETENESS WORKSHEET
Stage 2A

LDC #: 25082A6
SDG #: 340274
Laboratory: MWH Laboratories

Date: 3/11/11
Page: 1 of 1
Reviewer: CS
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissolved Solids (EPA Method 160.1/SM2540C) Hexavalent Chromium (Method 7196), ~~pH (EPA Method 9040)~~

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: 8/6/10
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	MS/D
V	Duplicates	A	DUP
VI.	Laboratory control samples	A	LCS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks		

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

Validated Samples: water

1	M-11	11	M-48A	21		31	
2	M-31A	12	H-28A	22		32	
3	M-50	13	M-70 DUP	23		33	
4	M-70	14	M-10 MS	24		34	
5	M-71	15	↓ MSD	25		35	
6	M-72	16		26		36	
7	M-22A	17		27		37	
8	M-89	18		28		38	
9	M-87	19		29		39	
10	M-10	20		30		40	

Notes: _____

LDC #: 25860A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: [signature]
2nd reviewer: [signature]

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1,10		pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
2-9,11		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+} **ClO_4**
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
QC13		pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
14		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** ClO_4
15		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4

Comments:

LDC #: 25082A6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: CR
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:	24hrs						

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	8/16/10 05:00	8/11/10 13:06	(5days)				J/R/P (h)
2,10,14,15	07:50	13:03	↓				↓

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: August 5, 2010

LDC Report Date: March 17, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 340282

Sample Identification

M-86A
M-38
M-85A
M-83
M-100
M-84
M-36
M-12A
M-95
M-44
M-37
EB080510V
1VD080510
2VD080510
M-5A
2VD080510MS
M-38DUP
EB080510VMS
EB080510VMSD

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 314.0 for Perchlorate, EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids, 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).

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.

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	27 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-84	Hexavalent chromium	26.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-36	Hexavalent chromium	27.5 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-12A	Hexavalent chromium	25.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-95	Hexavalent chromium	25.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-44	Hexavalent chromium	24.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-37 2VD080510	Hexavalent chromium	24.25 hours	24 hours	J- (all detects) UJ (all non-detects)	P
EB080510V	Hexavalent chromium	28.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
1VD080510	Hexavalent chromium	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 EB080510V 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
EB080510V	8/5/10	Perchlorate	39 ug/L	M-86A M-38 M-85A M-83 M-100 M-84 M-36 M-12A M-95 M-44 M-37 1VD080510 2VD080510 M-5A
EB080510V	8/5/10	Total dissolved solids	7 ug/L	M-86A M-38 M-85A M-83 M-100 M-84 M-36 M-12A M-95 M-44 M-37 1VD080510 2VD080510

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

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
2VD080510MS (M-100 M-84 M-36 M-12A M-95 M-44 M-37 EB080510V 1VD080510 2VD080510)	Hexavalent chromium	0 (75-125)	-	-	J- (all detects) R (all non-detects)	A

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
LCS/D (M-5A)	Perchlorate	79 (85-115)	-	26 (≤15)	J (all detects) UJ (all non-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

Samples M-44 and 1VD080510 and samples M-37 and 2VD080510 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)	Flags	A or P
	M-44	1VD080510				
Perchlorate	590000 ug/L	590000 ug/L	0 (≤30)	-	-	-
Total dissolved solids	8100 mg/L	7600 mg/L	6 (≤30)	-	-	-
Hexavalent chromium	0.69 mg/L	0.68 mg/L	1 (≤30)	-	-	-

Analyte	Concentration		RPD (Limits)	Difference (Limits)	Flags	A or P
	M-37	2VD080510				
Perchlorate	1700000 ug/L	1700000 ug/L	0 (≤30)	-	-	-
Total dissolved solids	4600 mg/L	4400 mg/L	4 (≤30)	-	-	-
Hexavalent chromium	0.0050 mg/L	0.0060 mg/L	-	0.001 (≤0.005)	-	-

2010 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 340282

SDG	Sample	Analyte	Flag	A or P	Reason
340282	M-100 M-84 M-36 M-12A M-95 M-44 M-37 2VD080510 EB080510V 1VD080510	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times
340282	M-100 M-84 M-36 M-12A M-95 M-44 M-37 EB080510V 1VD080510 2VD080510	Hexavalent chromium	J- (all detects) R (all non-detects)	A	Matrix spike (%R)
340282	M-5A	Perchlorate	J (all detects) UJ (all non-detects)	P	Laboratory control samples (%R)(RPD)

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 340282

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 340282

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 25082B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/11/11

SDG #: 340282 Stage 2A Page: 1 of 1

Laboratory: MWH Laboratories Reviewer: CR

2nd Reviewer: A

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissolved Solids (EPA Method 160.1/SM2540C) Hexavalent Chromium (Method 7196), ~~pH (EPA Method 9040)~~

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: 8/5/10
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	SW	MS/D
V	Duplicates	A	D
VI.	Laboratory control samples	SW	LCS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(10,13), (11,14)
X	Field blanks	SW	EB=12

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

Validated Samples: water

1	M-86A	11	M-37	21		31	
2	M-38	12	EB080510V	22		32	
3	M-85A	13	1VD080510	23		33	
4	M-83	14	2VD080510	24		34	
5	M-100	15	M-5A	25		35	
6	M-84	16	2VD080510MS	26		36	
7	M-36	17	M-38 DUP	27		37	
8	M12A	18	EB080510VMS	28		38	
9	M-95	19	↓ MSD	29		39	
10	M-44	20		30		40	

Notes: _____

LDC #: 25082B4

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		pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} **ClO_4**
5-14		pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** **ClO_4**
15		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+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
QC:16		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC **CR^{6+}** ClO_4
17		pH **TDS** Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
18,19		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4

Comments:

LDC #: 25082B4

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: AR
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:	24hrs					

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
5	8/5/10 10:05	8/6/10 13:03	(27hrs)				J- /UJ/P(h)
6	10:30	13:06	(26.5hrs)				
7	09:43	13:07	(27.5hrs)				
8	11:20	13:11	(25.75hrs)				
9	11:55	13:04	(25.25hrs)				
10	12:25	13:05	(24.75hrs)				
11	12:53	13:12	(24.25hrs)				
12	08:20	13:10	(28.75hrs)				
13	—	13:18	(25hrs)				
14	—	13:08	(24.25hrs)				

LDC #: 25082B4

VALIDATION FINDINGS WORKSHEET
Field Blanks

METHOD: Trace Metals (EPA SW846 6010B/7000)

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: 8/5/10 Soil factor applied NA

Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: TDS=1-11, 13, 14 ClO4=1-11, 13-15

Analyte	Blank ID	Sample Identification										
	12	Action Level	No Qualifiers									
ClO4	39 ug/L	390										
TDS	7											

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 #: 25082B4
SDG #: —

VALIDATION FINDINGS WORKSHEET
Matrix Spike Analysis

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

METHOD: Inorganics, Method Recover

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

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125 (85-115% for Method 300.0)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Matrix Spike ID	Matrix	Analyte	%R	Associated Samples	Qualifications
		16	W	Cr6+	0	5-14	J-/R/A (m)

Comments: _____

LDC #: 27061136
SDG #: —

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: 2
2nd Reviewer: 1A

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 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
	LCSD	W	ClO4	79 (85-115)		26 (≤15)	15	J/UJ/P (l, ld)

Comments: _____

LDC#: 25082B6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: 1 of 1
Reviewer: CR
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)		RPD (≤30)	Difference	Limits	Qualification (Parent only)
	10	13				
Perchlorate (ug/L)	590000	590000	0			
TDS	8100	7600	6			
Hexavalent Chromium	0.69	0.68	1			

V:\FIELD DUPLICATES\FD_inorganic\25082B6.wpd

Analyte	Concentration (mg/L)		RPD (≤30)	Difference	Limits	Qualification (Parent only)
	11	14				
Perchlorate (ug/L)	1700000	1700000	0			
TDS	4600	4400	4			
Hexavalent Chromium	0.0050	0.0060		0.001	(≤0.005)	

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name:	2010 Annual Remedial Performance Sampling
Collection Date:	December 3, 2010
LDC Report Date:	March 16, 2011
Matrix:	Water
Parameters:	Wet Chemistry
Validation Level:	Stage 2A
Laboratory:	MWH Laboratories, Inc.
Sample Delivery Group (SDG):	340444

Sample Identification

M-72
FB120310N
Filter120310N
M-73
M-71

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 314.0 for Perchlorate and EPA Method 160.1 and Standard Method 2540C for Total Dissolved Solids.

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).

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.

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.

Samples FB120310N and Filter120310N were identified as filter blanks. No contaminant concentrations were found in these blanks with the following exceptions:

Filter Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
FB120310N	12/3/10	Perchlorate	71 ug/L	M-72 M-73 M-71

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) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

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.

2010 Annual Remedial Performance Sampling
Wet Chemistry - Data Qualification Summary - SDG 340444

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 340444

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 340444

No Sample Data Qualified in this SDG

Tronox Northgate Henderson
VALIDATION COMPLETENESS WORKSHEET
Stage 2A

LDC #: 25082C6
SDG #: 340444
Laboratory: MWH Laboratories

Date: 3/11/14
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissovled Solids (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: 12/3/10
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/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
X	Field blanks	SW	Filter Blk = 2, 3

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

Validated Samples: water

1	M-72	11		21		31	
2	FB120310N	12		22		32	
3	Filter120310N	13		23		33	
4	M-73	14		24		34	
5	M-71	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 #: 25082C6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

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

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1,4,5		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
2,3		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4
		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+} ClO_4

Comments:

LDC #: 25082C6

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: CR
2nd Reviewer:

METHOD: Trace Metals (EPA SW846 6010B/7000)

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: 12/3/10 Soil factor applied NA

Field blank type: (circle one) Field Blank / Rinsate / Other: EB Associated Samples: 1, 4, 5

Analyte	Blank ID	Sample Identification										
	12 2	Action Level	No Qualifiers									
ClO4	71 ug/L	710										

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".