

Laboratory Data Consultants, Inc.

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

February 1, 2011

Dear Ms. Crowley.

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on January 4, 2011. Attachment 1 is a summary of the samples that were reviewed for each analysis.

SUBJECT: 2010 Annual Remedial Performance Sampling, Data Validation

LDC Project # 24670:

SDG#

Fraction

345395, 345397, 345404, 346581 346719, 346730, 347038, 347852 347858, 347877, 347973, 348239 348296, 348330, 348765, 349052 349055, 349391, 349392, 349695 350454, 350459, 350602, 351562

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

24670ST.wpd

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Attachment 1

DL 01/04/11

Laboratory Data Consultants, Inc. **Data Validation Report**

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

October 4, 2010

LDC Report Date:

January 19, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 345397

Sample Identification

LVW UPGRADIENT LVW 6.05 LVW 5.5

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 200.7 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 345397

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 345397

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 345397

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

Stage 2A

LDC #: 24670B4 SDG #: 345397 Laboratory: MWH Laboratories METHOD: Metals (EPA Method 200.7)

Page: _ Reviewer: C 2nd Reviewer:_

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
J	Technical holding times	A	Sampling dates: 10 / 11/10
11	ICP/MS Tune	N	
111.	Calibration	N	
IV.	Blanks	17	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	N	Client specified
VII.	Duplicate Sample Analysis	\sim	7
VIII,	Laboratory Control Samples (LCS)	A	LCSID
IX.	Internal Standard (ICP-MS)	N	
X.	Furnace Atomic Absorption QC	\sim	
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:

LVW UPGRADIENT 11 21 LVW 6.05 12 22 32 LVW 5.5 13 23 33 14 24 15 35 6 16 26 36 17 27 37 18 28 38 19 29 39 20 30

Notes:			
		 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 1, 2010

LDC Report Date: January 18, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347852

Sample Identification

ART-1 PC-115RMS ART-2 PC-115RMSD

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-99R2/R3MS PC-99R2/R3MSD

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 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.
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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. 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 EB110110V (from SDG 347858) was identified as an equipment blank. No chromium was found in this blank.

Sample FB110110V (from SDG 347858) 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) 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 347852

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 347852

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 347852

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #:_ 24670H4 SDG #: 347852 Stage 2A Laboratory: MWH Laboratories

Date:	1/13/11
Page:_	10/2]
Reviewer:	0
2nd Reviewer:	<u></u>

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
l.	Technical holding times	A	Sampling dates: //// / / / / / / / / / / / / / / / /
II.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MSIP
VII.	Duplicate Sample Analysis	\mathcal{N}	
VIII.	Laboratory Control Samples (LCS)	A	LCSD
IX.	Internal Standard (ICP-MS)	N _C	
X.	Furnace Atomic Absorption QC	\mathcal{N}	
. XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	7	
XIV.	Field Duplicates	N	
xv	Field Blanks	M	FB=FB11016V, EB=EB110110V (506:347858)

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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:

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1	ART-1	11	SF-1	21	PC-115RMS	31	98.
2	ART-2	12	PC-117	22	PC-115RMSD	32	
3	ART-3	13	PC-118	23	(XXIS) DUPOR	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-99R2/R3MS	29		39	
10	PC-116R	20	PC-99R2/R3MSD	30		40	

Notes:		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 1, 2010

LDC Report Date:

January 18, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347858

Sample Identification

M-79

M-69

M-135

M-131

M-57A

M-99

M-25

M-37

FB110110V

EB110110V

M-135MS

M-135MSD

M-131MS

M-131MSD

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 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:

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- 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 EB110110V was identified as an equipment blank. No chromium was found in this blank.

Sample FB110110V 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) 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 347858

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 347858

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 347858

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #: 2467014 SDG#: 347858 Stage 2A Laboratory: MWH Laboratories

Date:	3/1)
Page: └of	1
Reviewer:	
2nd Reviewer:	\sim

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.

<u> </u>	Validation Area		Comments
<u> </u>	Technical holding times	A	Sampling dates: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
11.	ICP/MS Tune	N	
111.	Calibration	N	
IV.	Blanks	A	-
<u>v.</u>	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	msD
VII.	Duplicate Sample Analysis	W	
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	. N	
X.	Furnace Atomic Absorption QC	\triangle	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	N	B
xv	Field Blanks	NO	FB-9 ED=10

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:

r===	(x)GR/	<u> </u>			
1	M-79	11	M-135MS	21 PBW	31
2	M-69	12	M-135MSD	22	32
3	M-135	13	M-131MS	23	.33
4	M-131	14	M-131MSD	24	34
5	M-57A	15		25	35
6	M-99	16		26	36
7	M-25	17		27	37
8	M-37	18		28	38
9	FB110110V	19		29	39
10	EB110110V	20		30	40

Notes:	 	 _			
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 1, 2010

LDC Report Date: January 18, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347877

Sample Identification

I-C I-F
I-S I-E
I-L I-M
I-R I-D

I-B I-AR

PC-131

0-101

PC-128

PC-132

PC-130

PC-123 PC-129

1-0

I-P

I-H

I-U

I-T

I-G

I-Q

I-N

Introduction

This data review covers 24 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.

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- 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 EB110110V (from SDG 347858) was identified as an equipment blank. No chromium was found in this blank.

Sample FB110110V (from SDG 347858) 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) 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 347877

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 347877

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 347877

No Sample Data Qualified in this SDG

Tronox Northgate Henderson EET

LDC #: 24670J4	VALIDATION COMPLETENESS WORKSHE
SDG #: 347877	Stage 2A
Laboratory: MWH Laboratories	

Date:	13/	\ t <i>)</i>
Page:」	_of	_
Reviewer:	<u>سكن</u>	
2nd Reviewer:	<u></u>	/

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: 1// 1/10
<u>II.</u>	ICP/MS Tune	N	
Ш.	Calibration	N	
IV.	Blanks	A	
V	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MSD (506:347858
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	, N	
Х.	Furnace Atomic Absorption QC	\mathcal{N}	
XI.	ICP Serial Dilution	N	·
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	LA	
XIV.	Field Duplicates	W_	
ΧV	Field Blanks	NO	EB-EBILONOV, FB-FBLIDILOV (506:3478)

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-C	11	PC-123	21	I-F	31	P34/
2	I-S	12	PC-129	22	I-E	32	,
3	I-L	13	1-0	23	I-M	33	
4	I-R	14	I-P	24	I-D	34	
5	1-B	15	I-H	25		35	
6	I-AR	16	1-U	26		36	
7	PC-131	17	I-T	27		37	
8	PC-128	18	I-G	28		38	
9	PC-132	19	I-Q	29		39	
10	PC-130	20	I-N	30		40	

Notes:		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 2, 2010

LDC Report Date: January 19, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347973

Sample Identification

I-AB I-AAMSD I-AA PC-124MS PC-124 PC-124MSD PC-125 PC-125MS PC-126 PC-125MSD

PC-127

M-96

PC-54

M-48A

PC-71

PC-72

PC-73

PC-37

M-95

M-44

VD-1

VD-3

I-ABMS

I-ABMSD

I-AAMS

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 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

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 I-AA and VD-3 and samples M-44 and VD-1 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

	Concentration (mg/L) Analyte I-AA VD-3 (·	
Analyte			RPD (Limits)	Difference (Limits)	Flags	A or P
Chromium	0.060	0.058	-	0.002 (≤0.02)	-	-

	Concentration (mg/L)		RPD	Difference		
Analyte	M-44	VD-1	(Limits)	(Limits)	Flags	AorP
Chromium	0.62	0.62	0 (≤30)	-	-	

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 347973

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 347973

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 347973

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 24670K4	VALIDATION COMPLETENESS WORKSHEET
SDG #:347973	Stage 2A
Laboratory: MWH Laboratories	

Reviewer: 2nd Reviewer:

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
1.	Technical holding times	A	Sampling dates: 1/12/10
11.	ICP/MS Tune	N	, ,
III.	Calibration	N.	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	ms/p
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	<u> </u>	,
XIV.	Field Duplicates	SW	(2,17) (15,16)
χv	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:

PC-71

1	I-AB	11	PC-72	21	I-AAMSD	31	P34_
2_	I-AA	12	PC-73	22	PC-124MS	32	
3_	PC-124	13	PC-37	23	PC-124MSD	33	
4	PC-125	14	M-95	24	PC-125MS	34	
5	PC-126	15	M-44	25	PC-125MSD	35	
6	PC-127	16	VD-1	26		36	
7	M-96	17	VD-3	27		37	
8	PC-54	18	I-ABMS	28		38	
9	M-48A	19	I-ABMSD	29		39	

30

Notes:	·		

20

I-AAMS

LDC#: 24670K4

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:____ Reviewer: 2nd Reviewer:

METHOD: Metals (EPA Method 6010B/6020/7000)

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

	Concentrat	ion (mg/L)	(≤30)			Qualifications	
Analyte	2	17	RPD	Difference	Limits	(Parent Only)	
Chromium	0.060	0.058		0.002	(≤0.02)		

V:\FIELD DUPLICATES\FD_inorganic\24670K4.wpd

Analyte	Concentrati		(≤30) RPD	Difference Limits		Qualifications (Parent Only)
Chromium	0.62	0.62	0			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 3, 2010

LDC Report Date: January 19, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 4

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348239

Sample Identification

M-64 M-70
M-65 VD-4
M-66 M-92MS
M-92 M-92MSD
M-97 M-19MS
M-23 M-19MSD

M-35

M-19 M-39

M-68

M-74

M-67

I-K

I-J

I-Z

I-V I-I

M-73

M-100

EB110310V

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 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.

The following are definitions of the data qualifiers:

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- 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 preparation blanks.

Sample EB110310V was identified as an equipment blank. No chromium was found in this blank with the following exceptions:

Equipment Blank ID	Sampling Date	Analyte	Concentration	Associated Samples
EB110310V	11/3/10	Chromium	0.0042 mg/L	M-64 M-65 M-66 M-92 M-97 M-23 M-35 M-19 M-39 M-68 M-74 M-67 I-K I-J I-Z I-V I-I M-73 M-73 M-100 M-70 VD-4

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

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

Samples M-65 and VD-4 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

	Concentra	tion (mg/L)				
Analyte	M-65	VD-4	RPD (Limits)	Difference (Limits)	Flags	A or P
Chromium	28	29	4 (≤30)	-	-	-

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 348239

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 348239

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 348239

No Sample Data Qualified in this SDG

SDG : Labor MET H The s	#:24670L4 #:_348239 atory: <u>MWH Laboratories</u> HOD: Chromium (EPA SV amples listed below were tion findings worksheets.	N 84	 6 Method 60	: ⊃10)()	Stage	∋ 4	ESS WORK		n find	Date: 13/ Page: of 1 Reviewer: 32 2nd Reviewer: 42 dings are noted in attached
	Validation	Area	· - -		T			Comme	ents	
ı.	Technical holding times			A	Samp	lina d	Inter: 11/3	11		
)1.	ICP/MS Tune			<u> </u>			utilized	_110_/		
 . .	Calibration			A	1 / 00		JEMOLD,			
				A						<u> </u>
IV.	Blanks	!- "	OO) A==1:!-	A	 	****				
<u>V.</u> _	ICP Interference Check Sarr	ipie (i	Co) Analysis	Δ	m	\ <u> </u>	Ω			
VI.	Matrix Spike Analysis			$\frac{7}{\Lambda}$	 \ 	<u>')</u>	<u> </u>			
VII.	Duplicate Sample Analysis	# 00		In-	1, -	<1	\bigcirc			
VIII.	Laboratory Control Samples	(LCS)	11	1	-21	V 176	<i>a</i>		
IX.	Internal Standard (ICP-MS)			<i>N</i>	1 / / /	Ω∓	Utilize	J		
X.	Furnace Atomic Absorption	QC		1/	1		$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$		
XI.	ICP Serial Dilution		····	/ <u>/</u>	1/4	الم ل	(201791	· Cop		
XII.	Sample Result Verification			A				<u>.</u>	·······	
XIII.	Overall Assessment of Data				<u></u>	7	77			
XIV.	Field Duplicates			\bigcirc	1	<u></u>	-0			
_XV	Field Blanks			<u>15W</u>		12-	70			
Note: √alidate	A = Acceptable N = Not provided/applicable SW = See worksheet ed Samples;		R = Rin FR = Fi	o compound: sate eld blank	s detec	ted	D = Dupl TB = Trip EB = Eq		ς	
1	M-64	11	M-74			21	M-70		31	BB4)
	M-65	12	M-67			22	VD-4		32	J
	M-66	13	I-K			23	M-92MS		33	
	M-92	14	I-J				M-92MSD		34	
	M-97	15	I-Z				M-19MS		35	
	M-23	16	I-V				M-19MSD		36	
	M-35	17	I-I			27			37	
	M-19	18	M-73			28			38	
	M-39	19	M-100			29			39	
	M-68	20	EB110310V			30			40	_

10

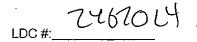
Notes:

VALIDATION FINDINGS CHECKLIST

Page: __of__ Reviewer: ____ 2nd Reviewer: ____

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

Wietnod: Metals (EPA SW 846 Method 60108/7000/6020)	,,	.,		- 10 10
Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times			1	
All technical holding times were met.				
Cooler temperature criteria was met.		ļ	<u> </u>	·
II. ICP/MS Tune		····	, ,	
Were all isotopes in the tuning solution mass resolution within 0.1 amu?				
Were %RSD of isotopes in the tuning solution ≤5%?				
III. Calibration				
Were all instruments calibrated daily, each set-up time?				
. Were the proper number of standards used?			ļ	
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?	/	<u> </u>	<u> </u>	
IV. Blanks				
Was a method blank associated with every sample in this SDG?	/		<u> </u>	
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) \leq 20% for waters and \leq 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were \leq 5X the RL, including when only one of the duplicate sample values were \leq 5X the RL.	/			
VII. Laboratory control samples		7		,
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?	/			



VALIDATION FINDINGS CHECKLIST

Page: Zof Z Reviewer: rE 2nd Reviewer: ______

Validation Area	Yes	No	NA	Findings/Comments
VIII. Furnace Atomic Absorption QC				
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?				<u> </u>
IX. ICP Serial Dilution		1		
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.			1	
X. Internal Standards (EPA SW 846 Method 6020/EPA 200.8)			1	
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?		<u> </u>		<u></u>
XI. Regional Quality Assurance and Quality Control		, .	· -	
Were performance evaluation (PE) samples performed?				
Were the performance evaluation (PE) samples within the acceptance limits?			<u> </u>	
XII. Sample Result Verification	,	T	- ₁	·
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	/	<u> </u>		
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.			_	
XIV. Field duplicates	<u> </u>	-,		
Field duplicate pairs were identified in this SDG.		1		
Target analytes were detected in the field duplicates.		1		
XV. Field blanks	.,			
Field blanks were identified in this SDG.				
Target analytes were detected in the field blanks.	/	<u> </u>		

LDC #: 24670L4

VALIDATION FINDINGS WORKSHEET Field Blanks

2nd Reviewer:

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

Were target analytes detected in the field blanks?

Were licus Were target analytes detected mg/L Associated sample units: mg/L Associated sample units: mg/L Associated Soil factor applied Soil fact

Sampling date: 11/3/10 Soil factor applied NA—Field blank type: (circle one) Field Blank / Rinsate / Other: /EB

Associated Samples: 1-19, 21, 22 Sample Identification No Qualifiers Action Level Blank ID 0.0042 20 Analyte ប

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#: 24670L4

VALIDATION FINDINGS WORKSHEET Field Duplicates

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2nd Reviewer:	Reviewer:

METHOD: Metals (EPA Method 6010B/6020/7000)

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

V:\FIELD DUPLICATES\FD_inorganic\24670L4.wpd

Analyte	Concentrat	ion (mg/L)	(≤30) RPD	Difference	Limits	Qualifications (Parent Only)
Chromium	28	29	4			

4225/2 HOOT

VALIDATION FINDINGS WORKSHEET Initial and Continuing Calibration Calculation Verification

Page: \ of \ Reviewer: \ C\f

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:

 $%R = Found \times 100$ 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

					Recalculated	Reported	
Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	%R	%R	Acceptable (YIN)
707	ICP (Initial calibration)	5	ا ، ا	10	99,4	8'3)-
	ICP/MS (Initial calibration)						
	CVAA (Initial calibration)		·				
222	ICP (Continuing calibration)	y	97.874C	5	97.B	h2b	Э-
	ICP/MS (Continuing calibration)						
	CVAA (Continuing calibration)						
	GFAA (Initial calibration)						
	GFAA (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#, 2882XY

VALIDATION FINDINGS WORKSHEET Level IV Recalculation Worksheet

2nd Reviewer: Reviewer:

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

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 = Found 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:

Where,

RPD = <u>|S-D|</u> x 100 (S+D)/2

S = Original sample concentration D = Duplicate sample concentration

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

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

 $%D = [-SDR] \times 100$

					Recalculated	Reported	
Sample ID	Type of Analysis	Element	Found 1811 (united my	True / D / SDR (units)	%R/RPD/%D	%R/RPD/%D	Acceptable (Y/N)
6	ICP interference check	J	b13 k2 'Q	0.25	99.5	99.5	<u>}_</u>
CCS	Laboratory control sample		1071		101	101	
23	Matrix spike		7bb' O		99	45	
282	Duplicate	7	1,17	1,1	0	ρ'o	\rightarrow
>	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#_ 77670LY

VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:_	L	of	
Reviewer:	\Box	2	
2nd reviewer:			

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

Please Y N Y N Y N	N/A N/A	Have results Are results wi	been reported and	d calculated cor i range of the ir	rectly?	cable questions are		
Detect equation		results for _		C.		were recalcu	lated and verified	using the following
RD FV In. Vol. Dil	= =	(RD)(FV)(Dil) (In. Vol.) Raw data concer Final volume (mi Initial volume (m Dilution factor)	Recall 1-Raw 2-Raw 3:Raw	culation: Data Data Data	=0,39mg/L =1,4mg/L(2) =1,51mag	(20)= 7.1 0)= 28mg/L 1/20)=	ŝngk - 30,2ngh
#	San	nple ID		Analyte		Reported Concentration ((^^X \)	Calculated Concentration	Acceptable (Y/N)
		\	(C/		7,8	7.8	7
		て		C		28	28	
		3	(30	30	
			,					
-					,			
 								
Note:								

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 4, 2010

LDC Report Date:

January 18, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348296

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 200.7 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 348296

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 348296

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 348296

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

.DC #: SDG #: .abora		VALIDATIO	N COM	PLETENESS Stage 2A	WORKSHEET	Date: 1/3/ Page:of_1 Reviewer:(\sigma_2 2nd Reviewer:(\sigma_2
he sa	OD: Metals (EPA Methorn mples listed below were on findings worksheets.	e reviewed for ea	ach of the f	following validation	on areas. Validation	findings are noted in attache
	Validation	Area			Commen	ıts
1.	Technical holding times		A	Sampling dates:	114/10	
ŧI.	ICP/MS Tune		N			
111.	Calibration		N			
IV.	Blanks		A			
V.	ICP Interference Check San	nple (ICS) Analysis	N			
VI.	Matrix Spike Analysis		N	Clientspe	eified	
VII.	Duplicate Sample Analysis		\mathcal{N}	7		
VIII.	Laboratory Control Samples	(LCS)	A	LCSD		
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			
χV	Field Blanks		N			***************************************
ote:	A = Acceptable N = Not provided/applicable SW = See worksheet	R = Rin	io compound isate eld blank	ls detected	D = Duplicate TB = Trip blank EB = Equipment blank	
1 N	I-10	11		21	31	1
2		12		22	32	
3		13		23	33	
4		14		24	34	
5		15		25	35	
6		16		26	36	
7	-	17		27	37	<u> </u>
в	-	18		28	38	
- 1		19		29	39	
9		,				
10 Notes:_		20		30	40	<u> </u>

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 4, 2010

LDC Report Date:

January 18, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348330

Sample Identification

M-31A

M-52

I-AD

I-AC

M-71

M-72

M-22A

M-38

M-115

M-14A

M-36

M-11

M-12A

M-10

VD-5

VD-2

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 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

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-71 and VD-5 and samples M-12A and VD-2 were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

	Concentra	tion (mg/L)			1	
Analyte	M-71	VD-5	RPD (Limits)	Difference (Limits)	Flags	A or P
Chromium	3.2	3.5	9 (≤30)	-	-	-

	Concentra	tion (mg/L)				
Analyte	M-12A	VD-2	RPD (Limits)	Difference (Limits)	Flags	A or P
Chromium	9.2	9.2	0 (≤30)	-	-	•

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 348330

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 348330

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 348330

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 24670N4	VALIDATION COMPLETENESS WORKSHEET
SDG #: 348330	Stage 2A
Laboratory: <u>MWH Laboratories</u>	

Date:	<u>1/13/U</u>
Page:_	
Reviewer:	02
2nd Reviewer:	

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
].	Technical holding times	A-	Sampling dates: 11/4/10
11.	ICP/MS Tune	N	<u>'</u>
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MS/D (506: 348239)
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	N	
Χ	Furnace Atomic Absorption QC	N	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	5W	(5,15),(13,16)
_XV	Field Blanks	\sim	

N	lote:	
IN	wit.	,

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:

wall

1	M-31A	11	M-36	21	89L/	31	
2	M-52	12	M-11	22	-	32	
3	I-AD	13	M-12A	23		33	
4	I-AC	14	M-10	24		34	
5	M-71	15	VD-5	25		35	
6	M-72	16	VD-2	26		36	
7	M-22A	17		27		37	
8	M-38	18		28		38	
9	M-115	19		29		39	
10	M-14A	20		30		40	

Notes:_			

LDC#:	2467	70N4

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:	of
Reviewer:	$\overline{\mathcal{M}}_{/}$
2nd Reviewer:	V

METHOD: Metals (EPA Method 6010B/6020/7000)

Y N NA Y N NA

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

V:\FIELD DUPLJCATES\FD_inorganic\24670N4.wpd

	Concentrat	ion (mg/L)	(≤30)	Difference	Limits	Qualifications
Analyte	5	15	RPD			(Parent Only)
Chromium	3.2	3.5	9			

	Concentrat	ion (mg/L)	(≤30)	,,		Qualifications
Analyte	13	16	RPD	Difference	Limits	(Parent Only)
Chromium	9.2	9.2	0			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 8 through November 10, 2010

LDC Report Date: January 18, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348765

Sample Identification

PC-98R	ARP-1	PC-137MSD
PC-86	ARP-2A	
PC-90	ARP-3A	
PC-56	ARP-4A	
PC-58	ARP-5A	
PC-59	ARP-6B	
PC-60	ARP-7	
PC-62	PC-53	
PC-68	PC-103	
PC-122	MW-K5	
PC-91	PC-137	
PC-97	PC-98RMS	
PC-18	PC-98RMSD	
PC-55	PC-86MS	
PC-101R	PC-86MSD	
ART-7B	PC-90MS	
PC-92	PC-90MSD	
PC-94	PC-56MS	
PC-136	PC-56MSD	
MW-K4	PC-137MS	

Introduction

This data review covers 41 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

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

No field duplicates were identified in this SDG.

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 348765

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 348765

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 348765

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

_DC #:	2467004	VALIDATION COMPLETENESS WOR
SDG #:	348765	Stage 2A
_aborato	ry: MWH Laboratories	<u> </u>

Date: 1/13/1)
Page: <u> </u> of <u> </u>
Reviewer: (2
2nd Reviewer:

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: 11/8-10/10
11.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	P	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	B	MSID
VII.	Duplicate Sample Analysis	\mathcal{N}	1
VIII.	Laboratory Control Samples (LCS)	A	LCSID
IX.	Internal Standard (ICP-MS)	N	
Χ.	Furnace Atomic Absorption QC	\mathcal{N}	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	$N_{\lambda \lambda}$	
ΧV	Field Blanks	70	

Note:	
IAOLE.	-

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:

ARP-1 PC-137 PC-91 21 31 PC-98R 2 12 PC-97 22 ARP-2A 32 PC-98RMS PC-86 PC-98RMSD 23 ARP-3A 33 13 3 PC-90 PC-18 34 PC-86MS 14 PC-55 24 ARP-4A PC-56 35 PC-86MSD 5 15 PC-101R 25 ARP-5A PC-58 26 ARP-6B 36 PC-90MS 16 ART-7B 6 PC-59 27 37 PC-90MSD 17 PC-92 ARP-7 7 PC-60 38 PC-56MS 8 PC-62 18 PC-94 28 PC-53 29 PC-103 39 PC-56MSD PC-68 19 PC-136 9 20 MW-K4 30 MW-K5 40 PC-137MS PC-122 10 PC-137MSD

Notes:			_	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 13, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349052

Sample Identification

M-70

M-71

M-179

M-69

M-73

M-70MS

M-70MSD

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 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

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

No field duplicates were identified in this SDG.

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 349052

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 349052

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 349052

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #:___ 24670P4 349052 Stage 2A SDG #: Laboratory: MWH Laboratories

Date: 1/13/
Page:of
Reviewer:
2nd Reviewer:

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	Ð	Sampling dates: 1/13/10
II.	ICP/MS Tune	N	7
111.	Calibration	N	
IV.	Blanks	P	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MS/Q
VII.	Duplicate Sample Analysis	\mathcal{N}_{-}	
VIII.	Laboratory Control Samples (LCS)	A	LCSD
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	
χV	Field Blanks	\mathcal{N}	

M	lat.	۵.	

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:

wall RB~ 21 31 M-70 11 32 22 M-71 12 13 23 33 M-179 24 34 14 M-69 25 35 15 5 M-73 26 36 6 M-70MS 16 27 37 M-70MSD 17 28 38 18 8 29 39 19 9 20 30 40 10

Notes:		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 12, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349055

Sample Identification

M-72

M-178

M-171

M-140

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 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

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

No field duplicates were identified in this SDG.

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 349055

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 349055

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 349055

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: <u>24670Q4</u>	VALIDATION COMPLETENESS WORKSHEET
SDG #: 349055	_ Stage 2A
Laboratory: MWH Laborator	ies

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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
J.	Technical holding times	A	Sampling dates: 11/12/10
11.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	\
VI.	Matrix Spike Analysis	BA	MSID (306: 349392)
VII.	Duplicate Sample Analysis	\sim	
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	\mathcal{N}	
χV	Field Blanks	\mathcal{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-72	11	21	31	
2	M-178	12	22	32	
3	M-171	13	23	33	
4	M-140	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:			
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 17, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349391

Sample Identification

M-171

M-140

M-178

M-179

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 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

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

No field duplicates were identified in this SDG.

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 349391

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 349391

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 349391

No Sample Data Qualified in this SDG

Tronox Northgate Henderson KSHEET

DC #:	24670R4	VALIDATION COMPLETENESS WORK
SDG #:	349391	Stage 2A
₋aborat	ory: <u>MWH Laboratories</u>	

Date: 1/13/1
Page:1_of
Reviewer:
2nd Reviewer:

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
1.	Technical holding times	A	Sampling dates: 11/17/10
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 (506: 349392)
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCS/D
IX.	Internal Standard (ICP-MS)	N	' '
X.	Furnace Atomic Absorption QC	Λ/	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	N	
xv	Field Blanks	N	

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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

war Validated Samples:

1	M-171	11 802~	21	31
2	M-140	12	22	32
3	M-178	13	23	33
4	M-179	14	24	34
5		15	25	35
6		16	26	36
7		17	27	37
8		18	28	38
g.		19	29	39
10		20	30	40

Notes:		 	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 18, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Chromium

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349392

Sample Identification

M-72

M-71

M-70

M-69

M-73

M-70MS

M-70MSD

M-69MS

M-69MSD

Introduction

This data review covers 9 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

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

No field duplicates were identified in this SDG.

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 349392

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 349392

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 349392

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #:___ 24670S4 SDG #: 349392 Stage 2A Laboratory: MWH Laboratories

Date: 11/3/1	
Page: _of__	
Reviewer: 0 C	
2nd Reviewer: 1	

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
l.	Technical holding times	A	Sampling dates: (1/18/10
U.	ICP/MS Tune	N	, ,
<u>10.</u>	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MSD
VII.	Duplicate Sample Analysis	~	
VIII.	Laboratory Control Samples (LCS)	A	LCS/Q
IX	Internal Standard (ICP-MS)	N	1
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	\mathcal{N}	
χV	Field Blanks	N	

Note:	A =	A
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cceptable

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-72	11	21	31
2	M-71	12	22	32
3	M-70	13	23	33
4	M-69	14	24	34
5	M-73	15	25	35
6	M-70MS	16	26	36
7	M-70MSD	17	27	37
8	M-69MS	18	28	38
9	M-69MSD	19	29	39
10		20	30	40

Notes:			
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 22 through November 23, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349695

Sample Identification

M-179

M-171

M-178

M-140

M-72

M-71

M-70

M-69

M-73

M-73 FD

M-69MS

M-69MSD

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

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-73 and M-73_FD were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

	Concentra	tion (mg/L)				
Analyte	M-73	M-73_FD	RPD (Limits)	Difference (Limits)	Flags	A or P
Chromium	9.7	10	3 (≤30)	•	•	-

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 349695

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 349695

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 349695

No Sample Data Qualified in this SDG

Tronox Northgate Henderson RKSHEET

LDC #: <u>24670T4</u>	VALIDATION COMPLETENESS WOR
SDG #: <u>349695</u>	Stage 2A
Laboratory: MWH Laboratories	<u> </u>

Date: <u>1/13/1</u>)	
Page: <u></u> of	
Reviewer:	
and Reviewer:	

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: II / ZZ-Z3/IO
B.	ICP/MS Tune	N	
<u>III.</u>	Calibration	N	
īV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	ms/D
VII.	Duplicate Sample Analysis	\sim	
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	SV	(11,12)
ΧV	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-179	11	M-73	21	31
2	M-171	12	M-73_FD	22	32
3	M-178	13	M-69MS	23	33
4	식 M-1X0	14	M-69MSD	24	34
5	M-72	15		25	35
6	M-71	16		26	36
7	M-70	17		27	37
8	M-69	18		28	38
9	M-69 MS	19		29	39
10	M-69 MSD	20		30	40

Notes:	

LDC#: 24670T4

VALIDATION FINDINGS WORKSHEET Field Duplicates

2nd Reviewer:

METHOD: Metals (EPA Method 6010B/6020/7000)

Y N NA

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

V:\FIELD DUPLICATES\FD_inorganic\24670T4.wpd

	Concentrat	ion (mg/L)	(≤30)	Difference	Limits	Qualifications	
Analyte	11	12	RPD			(Parent Only)	
Chromium	9,7	10	3	,			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: December 4, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 350454

Sample Identification

M-69

M-70

M-69MS

M-69MSD

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 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:

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- 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) 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 350454

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Laboratory Blank Data Qualification Summary - SDG 350454

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Chromium - Field Blank Data Qualification Summary - SDG 350454

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #: 24670U4 Stage 2A SDG #: 350454 Laboratory: MWH Laboratories

Date:	1/13/1
Page:_	
Reviewer:	00
2nd Reviewer:	<u> </u>

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
l.	Technical holding times	A	Sampling dates: 17/4/1
. 11.	ICP/MS Tune	N	
III.	Calibration	N	
IV.	Blanks	A	
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MSID
VII.	Duplicate Sample Analysis	2	
VIII.	Laboratory Control Samples (LCS)	A	LCSD
IX.	Internal Standard (ICP-MS)	N_	
X.	Furnace Atomic Absorption QC	\mathcal{N}	
XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	\mathcal{N}	
χv	Field Blanks	N	

Note
nore

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:

/alid	lated Samples:	water_			
1	M-69	11	21	31	
2	M-70	12	22	32	
3	M-69MS	13	23	33	
4	M-69MSD	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: December 3, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Chromium

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 350459

Sample Identification

M-140

M-171

M-178

M-178 FD

M-179

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 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

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-178 and M-178_FD were identified as field duplicates. No chromium was detected in any of the samples with the following exceptions:

	Concentration (mg/L)					
Analyte	M-178	M-178_FD	RPD (Limits)	Difference (Limits)	Flags	A or P
Chromium	4.9	4.9	0 (≤30)	-	-	-

2010 Annual Remedial Performance Sampling Chromium - Data Qualification Summary - SDG 350459

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Laboratory Blank Data Qualification Summary - SDG 350459

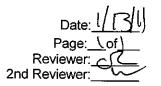
No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Chromium - Field Blank Data Qualification Summary - SDG 350459

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 24670V4	VALIDATION COMPLETENESS WORKSHEET
SDG #:350459	Stage 2A
Laboratory: MWH Laboratories	
METHOD: Chromium /FDA 14	-th - 1 0040)



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
<u> </u>	Technical holding times	A	Sampling dates: 12/3/17
11.	ICP/MS Tune	N	
111.	Calibration	N	
IV.	Blanks		
V.	ICP Interference Check Sample (ICS) Analysis	N	
VI.	Matrix Spike Analysis	A	MSID (SP6: 350454)
VII.	Duplicate Sample Analysis	N	
VIII.	Laboratory Control Samples (LCS)	A	LCSKO
IX.	Internal Standard (ICP-MS)	N _	
Χ.	Furnace Atomic Absorption QC	\sim	
_XI.	ICP Serial Dilution	N	
XII.	Sample Result Verification	N	
XIII.	Overall Assessment of Data	A	
XIV.	Field Duplicates	SW	(3,4)
ΧV	Field Blanks	N	

- N	ntn.	
- 13	ULC.	

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-140	11	21	31	
2	M-171	12	22	32	
3_	M-178	13	23	33	**-
4	M-178FD_FO	14	24	34	
5	M-179	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#: 24670V4

VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page:__of_ Reviewer:_____ 2nd Reviewer:_____

METHOD: Metals (EPA Method 6010B/6020/7000)

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

V:\FIELD DUPLICATES\FD_inorganic\24670V4.wpd

	Concentration (mg/L)		(≤30)	Difference	Limits	Qualifications
Analyte	3	44	RPD	Dillelelice	Limits	(Parent Only)
Chromium	4.9	4.9	0			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: October 4, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 345395

Sample Identification

ART-1 ART-3MS ART-2 ART-3MSD

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

SF-1DUP

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 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.

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.

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 345395

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 345395

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 345395

No Sample Data Qualified in this SDG

Tronox Northaate Henderson

	Tronox Hornigato Hondercon	1.01.
LDC #: 24670A6	VALIDATION COMPLETENESS WORKSHEET	ا/ا3/ر _{Date:}
SDG #: 345395	Stage 2A	Page:_/_of
Laboratory: MWH Laboratories	<u> </u>	Reviewer: _(2
•		2nd Reviewer: 1
METHOD: (Analyte) Perchlor	rate (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	<u> </u>	Comments
<u>l.</u>	Technical holding times	A	Sampling dates: \O/Y/I()
Ila.	Initial calibration	N	·
llb.	Calibration verification	N	
Ш <u>.</u>	Blanks	A	
lV	Matrix Spike/Matrix Spike Duplicates	A	ms/0
V	Duplicates	A	00
VI.	Laboratory control samples	A	LCSP
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
x	Field blanks	1 1	

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:

valida	ated Samples:	Her				
1	ART-1	11	SF-1	21 ()	3)m5 31	<u> </u>
2	ART-2	12	PC-117	22	J MSD 32	
3	ART-3	13	PC-118	23	33	
4	ART-4	14	PC-119	24	34	.i.
5	ART-6	15	PC-120	· 25	35	<u>,</u>
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	(MI)OR	29	39	
10	PC-116R	20	(A11) OR	30	40	

Notes:	 		

LDC#_74670A6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: ____of__!

Reviewer: _____2nd reviewer: _____

All circled methods are applicable to each sample.

ample ID	Matrix_	Parameter
1-18		pH (TDS) CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6 (CIO,)
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CRET CIO4
2:19		pH (TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
20		DH TDS CI F NO, NO, SO, PO, ALK CN- NH, TKN TOC CRET CIO,
121,22		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR (CIO4)
10		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		ph tds ci f No3 No2 So4 Po4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN" NH3 TKN TOC CR6+ ClO4
·		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ CIO4
		PH TDS CLE NO. NO. SO, PO. ALK CN. NH. TKN TOC CRET CIO.

	·
Comments:	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: October 4, 2010

LDC Report Date: January 18, 2011

Matrix: Water

Parameters: Total Dissolved Solids

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 345397

Sample Identification

LVW UPGRADIENT LVW 6.05 LVW 5.5

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.

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.

No field blanks were identified in this SDG.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analysis were not required by the method.

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 Total Dissolved Solids - Data Qualification Summary - SDG 345397

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Total Dissolved Solids - Laboratory Blank Data Qualification Summary - SDG 345397

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Total Dissolved Solids - Field Blank Data Qualification Summary - SDG 345397

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

LDC #: 24670B6	VALIDATION COMPLETENESS WORKSHEET
SDG #: <u>345397</u>	Stage 2A
Laboratory: <u>MWH Laboratories</u>	<u> </u>

_{Date} ! <u>/13/1/</u>
Page: <u></u> of <u></u>
Reviewer: 1
2nd Reviewer:

METHOD: (Analyte) Chloride (EPA Method 300:0) TDS (EPA Method 160.1/SM2540C), Color (Standard Method 2120B)

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
1.	Technical holding times	A	Sampling dates: \O\U\U
IIa.	Initial calibration	N	•
IIb.	Calibration verification	N	
10.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	\mathcal{N}	Notrequired Op CSDG: 345395
V	Duplicates	(Q)A	n p CSD6: 345395
VI.	Laboratory control samples	A	LCS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
×	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:

Valida	ated Samples:	162			
1	LVW UPGRADIENT	11	21	31	
2	LVW 6.05	12	22	32	,
3	LVW 5.5	13	23	33	
4		14	. 24	34	
5	,	15	25	35	
6		16	. 26	36	r
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:

October 4, 2010

LDC Report Date:

January 18, 2011

Matrix:

Water

Parameters:

Perchlorate

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 345404

Sample Identification

LVW UPGRADIENT

LVW 6.05

LVW 5.5

LVW 0.55

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 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).

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 perchlorate was 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) analysis were not required by the method.

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 Perchlorate - Data Qualification Summary - SDG 345404

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 345404

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Perchlorate - Field Blank Data Qualification Summary - SDG 345404

No Sample Data Qualified in this SDG

EDC:	#: 24670C6	V۵				Henderson IESS WORKS	HEET	Date: 1/13/1
	345404 Stage 2A				·	Page: Vof 1		
	ratory: MWH Laboratories	3		_	9			Page: \of \ Reviewer: \(\mathcal{O} \)
						•		2nd Reviewer:
	HOD: (Analyte) <u>Ammoni</u> od 314.0), Total Phesph						-Calculation (EPA Method 30 /-Calc (EPA	
	amples listed below were							
	ation findings worksheets.							
	Validation	Area				· · · · · · · · · · · · · · · · · · ·	Comments	
<u>l.</u>	Technical holding times			A	Sampling	dates: (0/4/1	<u>10</u>	
lla.	Initial calibration			N		•		
Ilb.	Calibration verification			N				
111.	Blanks			A				
IV.	Matrix Spike/Matrix Spike D	uplicat	es	N	1 Uli	entspecif	ited	
<u>v</u>	Duplicates			7/		<u> </u>		
VI.	Laboratory control samples		•	A	ics	$\sqrt{\mathcal{D}}$		
VII.	Sample result verification			N				
VIII.	Overall assessment of data			A				
IX.	Field duplicates			N				
<u> x</u>	Field blanks			N				
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet		R = Rins	o compound: sate eld blank	s detected	D = Duplicat TB = Trip bla EB = Equipr	ank	
√alidat	ed Samples: Wat	<u>_</u>						· · · · · · · · · · · · · · · · · · ·
1	LVW UPGRADIENT	11	By		21		31	
2	LVW 6.05	12	-		22		32	
3	LVW 5.5	13			23		33	
4	LVW 0.55	14			24		34	
5		15			25		35	*
6		16	·		26		36	
7		17			27		37	
8		18			28	1	38	
9	····	19			29		39	
10		20			30	1	40	

Notes:___

LDC#: 2467066

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:_	<u></u>
Reviewer:	
2nd reviewer:	

All circled methods are applicable to each sample.

_Matrix	Parameter
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+(CIO4)
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+ ClO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁸⁺ CIO ₄
	ph tds ci f NO ₃ NO ₂ SO ₄ PO ₄ ALK CN- NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	pH TDS CLE NO. NO. SO. PO. ALK CN. NH. TKN TOC CR6+ CIO.
	Matrix

Comments:	1
Commonce	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: October 12 through October 14, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 346581

Sample Identification

PC-91

PC-97

PC-18

PC-55

PC-101R

PC-86

PC-90

ARP-1

M-87

PC-56

PC-58

PC-59

PC-60

PC-62.

PC-68

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 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.

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) 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. Although the relative percent differences (RPD) were not within QC limits for one compound, the percent recoveries (%R) were within QC limits and no data were qualified.

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 346581

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 346581

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 346581

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #: 24670D6 SDG #: 346581 Laboratory: MWH Laboratories

Stage 2A

Date: 1/13/1)	
Page: <u> </u> of <u> </u>	
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
l.	Technical holding times	A	Sampling dates: 10/17-14/10
lla.	Initial calibration	N	
Ilb.	Calibration verification	N	
111.	Blanks	A	
1V	Matrix Spike/Matrix Spike Duplicates	N	Client specified
V	Duplicates	\mathcal{N}	7
VI.	Laboratory control samples	2055W	LCSIO
VII.	Sample result verification	N ·	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	$\mathcal{N}_{\mathcal{N}}$	
х	Field blanks	1//	

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-91	11	PC-58	21	PBL/	31	
2	PC-97	12	PC-59	22		32	
3	PC-18	13	PC-60	23		33	
4	PC-55	14	PC-62	24		34	
5	PC-101R	15	PC-68	25		35	
6	PC-86	16		26		36	,
7	PC-90	17		27		37	
8	ARP-1	18		28		38	
9	M-87	19		29		39	1
10	PC-56	20	·	30		40	

Notes:		

LDC#: 74670D6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: of /
Reviewer: 2

All circled methods are applicable to each sample.

N.H 4 !	Powerstan
watrix	Parameter
	pH(TDS) CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH-TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	ph tds ci f No3 No2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ ClO4
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
,	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	ph tds ci f no3 no2 so4 po4 alk cn nh3 tkn toc cr6+ cio4
	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
	ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	pH TDS CLE NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
	Matrix

Comments:	 	

9002972 "#DOT

VALIDATION FINDINGS WORKSHEET Laboratory Control Samples (LCS)

Page: Reviewer: _

2nd Reviewer:

METHOD: Inorganics, Method SQC COUNT

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

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

Qualifications	160/20 (LG12n)													
Associated Samples	5-15													
RPD (limits)	196215)	6												
LCSD %R (limits)													ANTANA MANAGAMAN PARAMANAN MANAGAMAN MANAGAMAN MANAGAMAN MANAGAMAN MANAGAMAN MANAGAMAN MANAGAMAN MANAGAMAN MAN	
LCS %R (limits)														
Analyte	Cla													
Matrix	3													
1 CS/I CSD ID	(1/S)71	4								·			amonte.	Comments.
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

October 18, 2010

LDC Report Date:

January 19, 2011

Matrix:

Water

Parameters:

Perchlorate

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 346719

Sample Identification

LVW UPGRADIENT

LVW 6.05

LVW 5.5

LVW 0.55

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 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).

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 perchlorate was 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) 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 Perchlorate - Data Qualification Summary - SDG 346719

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 346719

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Perchlorate - Field Blank Data Qualification Summary - SDG 346719

No Sample Data Qualified in this SDG

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	ratory: MWH Laboratories	S		_	J.u.g.		•				Page:lof_l Reviewer:C		
	, . <u></u>	-	•								2nd Reviewer:		
								N	Cata	J ot	=ion_		
MET	-IOD: (Analyte) <u>Аттопі</u>	<u>a Nit</u>	rogen (EPA	Method 3	50.1)	, Nitr	ate, I	ا Vitrite , کاری	(EPÀ M	etho	d 300:0) Perchiorate (EP/		
Methoda Thank	od 314.0), -Total Phosph	orou	s (EPA Met	10d-365.1/	SM4	500)		- 	Validadia	50	A 300.0		
	amples listed below were ation findings worksheets		ewed for ea	cn of the f	Ollow	ing v	alloat	ion areas.	validatio	n nne	dings are noted in attached		
valluc	adon inidings worksheets	•											
	1				Ī				_				
	Validation	Area	<u> </u>		<u> </u>		 	10/10	Comm	<u>ents</u>			
l.	Technical holding times				Sam	pling o	ates:	10/17	<u> </u>				
lia.	Initial calibration			N	 			!					
Ilb.	Calibration verification			N									
111.	Blanks			A					_				
IV	Matrix Spike/Matrix Spike D	uplica	tes	\mathcal{N}	Olien+ specified								
V	Duplicates			\mathcal{N}									
VI.	Laboratory control samples			A	LCS P								
VII.	Sample result verification			N									
VIII.	Overall assessment of data			A	ļ	-, -							
IX.	Field duplicates			1//									
Lx	Field blanks												
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet	:	R = Rin	o compound sate eld blank	s dete	cted		D = Duplica TB = Trip bl EB = Equip	ank	c			
Validat	ed Samples:												
1	LVW UPGRADIENT	11	RPL	/		21				31			
2	LVW 6.05	12				22				32			
3	LVW 5.5	13_				23				33			
II I	LVW 0.55	14				24				34			
4 5		15				25				35			
6		16				26				36			
7		17				27				37			
8	·	18				28				38			

Notes:_

LDC#: 45/066

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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Page:_	
Reviewer:_	<u>VL</u>
2nd reviewer:_	12

All circled methods are applicable to each sample.

0117		Powereston
Sample ID	Matrix	Parameter Parameter
1-2		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄ 100
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ (ClO ₄)
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
<u> </u>		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph tds ci f No3 No2 So4 Po4 Alk CN NH3 TKN TOC CR6+ CIO4
		ph tds cif no3 no2 so4 po4 alk cn- nh3 tkn toc cr6+ cio4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	,	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
,		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CLE NO. NO. SO. PO. ALK CN: NH. TKN TOC CR6+ ClO.
		pH TDS CLE NO. NO. SO. PO. ALK CN. NH. TKN TOC CR6+ ClO.
-		pH TDS CLE NO. NO. SO. PO. ALK CN. NH. TKN TOC CR6+ ClO.
 		pH TDS CLF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ ClO
		pH TDS CLE NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+ CIO,

Comments:	 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: October 18, 2010

LDC Report Date: January 18, 2011

Matrix: Water

Parameters: Perchlorate

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 346730

Sample Identification

LVW 0.55

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 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).

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 perchlorate was 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) 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 Perchlorate - Data Qualification Summary - SDG 346730

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Perchlorate - Laboratory Blank Data Qualification Summary - SDG 346730

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Perchlorate - Field Blank Data Qualification Summary - SDG 346730

No Sample Data Qualified in this SDG

Tronox Northgate Henderson ORKSHEET

LDC #: 24670F6	VALIDATION COMPLETENESS WO
SDG #: 346730	Stage 2A
Laboratory: MWH Laboratories	

Date! 13/1)
Page:lof__
Reviewer: <u>()</u> <u>/</u> _
2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 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
l.	Technical holding times	A	Sampling dates: IO/K/IO
_lla.	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	LC5/0
VII.	Sample result verification	N	1
VIII.	Overall assessment of data	<u> </u>	·
IX.	Field duplicates	N_{I}	
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:

Naer LVW 0.55 18 -

Notes:_		

Laboratory Data Consultants, Inc. **Data Validation Report**

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

October 20, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347038

Sample Identification

PC-122

PC-53

MW-K5

ARP-7

ARP-6B

ARP-5A ARP-4A

MW-K4

ARP-3A ARP-2A

PC-103

PC-98R

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 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.

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) 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 347038

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 347038

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 347038

No Sample Data Qualified in this SDG

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	Honox Northgate Henderson	11.01
LDC #: 24670G6	VALIDATION COMPLETENESS WORKSHEET	Date: 1/13/1
SDG #: 347038	Stage 2A	Page: <u>\</u> of <u>_</u>
Laboratory: MWH Laboratories	<u> </u>	Page:\of Reviewer: <i>\ol</i> 2
		2nd Reviewer:

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
1.	Technical holding times	A	Sampling dates: 10/70/10
lla.	Initial calibration	N	
Ilb.	Calibration verification	N	
111.	Blanks	PS	
IV	Matrix Spike/Matrix Spike Duplicates	N.	Client specified
V	Duplicates	\wedge	7
VI.	Laboratory control samples	A-	LCS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N_{i}	
x	Field blanks	l N	

м	ata.
IV	CHE.

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:

	0000				 	
1	PC-122	11	PC-103	21	31	
2	PC-53	12	PC-98R	22	32	
3	MW-K5	13		23	33	
4	ARP-7	14		24	34	
5	ARP-6B	15		25	35	
6	ARP-5A	16		26	36	
7	ARP-4A	17		27	37	
8	MW-K4	18		28	38	
9	ARP-3A	19		29	39	
10	ARP-2A	20		30	40	

Notes:	

LDC#_ 24670G6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

	/ /
Page:_	of
Reviewer:	02
2nd reviewer:	<u>_</u>

All circled methods are applicable to each sample.

0	M.A 45	Downwoodor
Sample ID	<u> Matrix</u>	Parameter Parameter
1-12		pH (TDS) CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+(CIO4)
		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
-		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph tds ci f no3 no2 so4 po4 alk cn nh3 tkn toc cr6+ cio4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	<u></u>	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		_
		pH TDS CLF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR64 ClO,
		ph tds ci f no ₃ no ₂ so ₄ po ₄ alk cn nh ₃ tkn toc cr ⁶⁺ cio ₄
		pH TDS CI F NO, NO, SO, FO, ALK CN NH, TKN TOC CR6+ CIO,
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
-		ph tds ci f No ₃ No ₂ So ₄ Po ₄ Alk cn Nh ₃ TKN Toc CR ⁶⁺ Clo ₄
<u> </u>		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
-		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
	····-	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLE NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO,

Comments:	-	•	-	
		,		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 1, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347852

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-1MS

ART-1MSD

PC-120DUP

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 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.

Sample EB110110V (from SDG 347858) 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
EB110110V	11/1/10	Perchlorate	9.3 ug/L	All samples in SDG 347852

Sample FB110110V (from SDG 347858) was identified as a field blank. No contaminant concentrations were found in this blank.

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. Although the relative percent differences (RPD) were not within QC limits for one compound, the percent recoveries (%R) were within QC limits and no data were qualified.

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 347852

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 347852

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 347852

No Sample Data Qualified in this SDG

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LDC #: <u>24670H6</u>	VALIDATION COMPLETENESS WORKSHEET
SDG #: <u>347852</u>	Stage 2A
Laboratory: MWH Laboratories	

Date: 1/13/1)
Page: \of_
Reviewer:
2nd Reviewer:

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	7	Sampling dates: [[/ I / I]]
lla.	Initial calibration	N	
IIb.	Calibration verification	. N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	mslo
V	Duplicates	A	DR.
VI.	Laboratory control samples	<i>A</i>	LCS/P
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N,	
x	Field blanks	SW	FB=FB110110V, EB=EB110110V (SDG: 347858)

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

Valid:	ated Samples:	JoseV					
1	ART-1	11	SF-1	21	CM15) DUP	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-1MS	29	•	39	
10	PC-116R	20	ART-1MSD	30		40	

Notes:			_

LDC # 2462046

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Pagel Reviewer: 2nd reviewer: 1

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-18		PH TOS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRE CIO
		PH TOS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
10:19:20	·	pH TDS CI F NO3 NO, SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
7		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
,		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
<u> </u>		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
\		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph tds cif no, no, so, po, alk cn nh, tkn toc cr6+ clo,
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+ ClO,

Comments:		

LDC #: 24670H6

VALIDATION FINDINGS WORKSHEET Field Blanks

ر ___Page:__ Reviewer: 2nd Reviewer:

METHOD: Inorganics, EPA Method See Cover Y N/A Were field blanks identified in this SDG?

YN N/A

Were target analytes detected in the field blanks? Blank units: ug/L Associated sample units: ug/L Y/N N/A

Soil factor applied NA Sampling date: 11/1/10

Field blank type: (circle one) Field Blank / Rinsate / Other.

Analyte

0 0 0

Sample Identification Associated Samples: 4-8 (PX) No Qualifiers **Action Limit** 93 EB110110V Blank ID 9.3

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:

2010 Annual Remedial Performance Sampling

Collection Date:

November 1, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347858

Sample Identification

M-79

M-69

M-135

M-131

M-57A

M-99

M-25

M-37

FB110110V

EB110110V

M-79DUP

M-135DUP

FB110110VMS

FB110110VMSD

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 Method 314.0 for Perchlorate and 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.

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 EB110110V 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
EB110110V	11/1/10	Perchlorate	9.3 ug/L	All samples in SDG 347858

Sample FB110110V was identified as a field blank. No contaminant concentrations were found in this blank.

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.

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 347858

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 347858

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 347858

No Sample Data Qualified in this SDG

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	i ronox Nortingate Henderson
LDC #: <u>24670l6</u>	VALIDATION COMPLETENESS WORKSHEET
SDG #: <u>347858</u>	Stage 2A
Laboratory: <u>MWH Laboratories</u>	<u></u>

Date: 1/13/1)	
Page:tof	
Reviewer:	
2nd Reviewer: 	_

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissovled Solids (EPA Method 160.1/SM2540C) Hexavalent Chromium (Method 7196), pH (EPA Method 9940),

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 1/1/10
lla.	Initial calibration	N	•
IIb.	Calibration verification	N	
III.	Blanks	A	
ΙV	Matrix Spike/Matrix Spike Duplicates	A	MSID
V	Duplicates	A	DO
VI.	Laboratory control samples	A	LCSID
VII.	Sample result verification	N	, ,
VIII.	Overall assessment of data	K,	
IX.	Field duplicates	\sim	A
X	Field hlanks	BW	FB=9 EB=10

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-79	11	M-79DUP	21	31	
2	M-69	12	M-135DUP	22	32	
3	M-135	13	FB110110VMS	23	33	
4	M-131	14	FB110110VMSD	24	34	
5	M-57A	15	@(N3)~5	25	35	·
6	M-99	16	1_m50	26	 36	
7	M-25	17		27	37	
8	M-37	18		28 -	38	
9	FB110110V	19		29	39	
10	EB110110V	20		30	40	

Notes:	*	

	24670I6
LDC #:_	

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: of Reviewer: 2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-7	IVIALIIA	
4-10		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4) pH (TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC (CR6+ CIO4)
0 '0 		,) - , ,
QC-11		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
1 12		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
13		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRF CIO4
1/14		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CN ⁶⁺ CIO ₄
115		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO
16		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
1		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO, NO, SO, PO, ALK CN' NH, TKN TOC CR6+ CIO.

Comments:	•				
				·	

LDC #: 2467014

VALIDATION FINDINGS WORKSHEET Field Blanks

Page:__ Reviewer:__

2nd Reviewer:

METHOD: Inorganics, EPA Method_See Cover

Were target analytes detected in the field blanks? Were field blanks identified in this SDG? Y) N N/A

Blank units: ug/L_Associated sample units: ug/L X N N/A

Sampling date: 11/1/10 Soil factor applied NA Field blank type: (circle one) Field Blank / Rinsate / Other:

Sample Identification Associated Samples: 1-8 No Qualifiers **Action Limit** 93 Blank ID 9.3 5 Analyte CI04

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: 2010 Annual Remedial Performance Sampling

Collection Date: November 1, 2010

LDC Report Date: January 31, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

I-D

Sample Delivery Group (SDG): 347877

Sample Identification

I-C I-F I-S I-E I-L I-M

I-B PC-123MS I-AR PC-123MSD

PC-123MSD PC-131 PC-129DUP

PC-128

PC-132

PC-130

PC-129

I-O

I-R

I-P

J-H

I-U

I-T

I-G

I-Q I-N

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 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.

Sample EB110110V (from SDG 347858) 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
EB110110V	11/1/10	Perchlorate	9.3 ug/L	All samples in SDG 347877

Sample FB110110V (from SDG 347858) was identified as a field blank. No contaminant concentrations were found in this blank.

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.

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 347877

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 347877

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 347877

No Sample Data Qualified in this SDG

SDG#	t: <u>24670J6</u> #: <u>347877</u> atory: <u>MWH Laboratorie</u>			N COMF	_		on RKSHEET		Date: 1/13/11 Page: _\of _ Reviewer: _\chi^2 2nd Reviewer: _
METH Chron	IOD: (Analyte) <u>Perchlor</u> nium (Method 7196) , pl	ate (I (E P	EPA Method A Method 9	d 314.0), T 040)_	Total Diss	ovled Solids	s (EPA Metho	od 16	60.1/SM2540C) Hexavalent
	amples listed below were tion findings worksheets		ewed for ea	ch of the f	ollowing v	alidation ar	eas. Validatio	on fin	dings are noted in attached
	Validation	Area	L				Comm	ents	,
l.	Technical holding times			A	Sampling	dates: \ []	1/10		
Ila.	Initial calibration			N					
IIb.	Calibration verification			N	,				
III.	Blanks			A					
١٧	Matrix Spike/Matrix Spike D	uplica	tes	A	M31	<u>) </u>			
V	Duplicates		· · · · · · · · · · · · · · · · · · ·	I A	Od	+			
VI.	Laboratory control samples			A	LES	P			
VII.	Sample result verification			N		d-Fl - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	···		
VIII.	Overall assessment of data			A					
IX.	Field duplicates		•.	<i>N</i> ,					
<u> </u>	Field blanks			<u>ISW</u>	E65=	EBIJOIO	V, FB= \$	FB	
Note:	A = Acceptable N = Not provided/applicable SW = See worksheet)	R = Rin	o compound sate eld blank	s detected	TB =	ouplicate Trip blank Equipment blan	k	(SD6: 347858)
Validate ——	ed Samples: Water		·						
1 1	i-C	11	PC-123		21	I-F		31	MILIMSO
2	i-S	12	PC-129		22	I-E		32	
3 1	-L	13	1-0		23	I-M		33	

	7,00 (1						
1	I-C	11	PC-123	21	I-F	31	MINMSD
2_	I-S	12	PC-129	22	I-E	32	(
3	I-L	13	1-0	23	I-M	33	
4	I-R	14	I-P	24	I-D	34	
5	I-B	15	I-H	25	HEDUP	35	
6	I-AR	16	I-U	26- -	PC-129DUP of um	36	
7	PC-131	17	I-T	27	I-ODUP	37	
8	PC-128	18	I-G	28	MDUP	38	
9	PC-132	19	I-Q	29	I DDUP	39	
10	PC-130	20	I-N	30 ((AII) MS	40	

Notes:_		

LDC#. 4467056

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: of Reviewer: 2nd reviewer:

All circled methods are applicable to each sample.

		
	Matrix_	Parameter
1-01		PH (TDS)CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+(CIO4)
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
90.25		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
26		PH(TDS)CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
27		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
78		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
29.		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
30		PH TDS CIF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CO
31		PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
-		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CIF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO, NO, SO, PO, ALK CN: NH, TKN TOC CR6+ ClO.

Comments:		

LDC #: 24670J6

VALIDATION FINDINGS WORKSHEET Field Blanks

2nd Reviewer:

METHOD: Inorganics, EPA Method See Cover

Y N/A Were field blanks identified in this SDG?

V/N N/A Were target analytes detected in the field blanks? Blank units: ug/L Associated sample units: ug/L

Sampling date: 11/1/10 Soil factor applied NA

Field blank type: (circle one) Field Blank / Rinsate / Other: EB

Associated Samples:__All

ntification						
Sample Identification						
				,		
:						
	No Qualifiers					
Action Limit		93				
Blank ID	EB110110V	9.3				
Analyte		CIO4				

Samples with analyte concentrations within five times the associated field blank concentration are listed above, these sample results were qualified as not detected, "U". CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 2, 2010

LDC Report Date:

January 19, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 347973

Sample Identification

I-AB

I-AA

PC-124

PC-125

PC-126

PC-127

M-96

PC-54

M-48A

PC-71

PC-72

PC-73

PC-37

M-95

M-44

VD-1

VD-3

PC-125DUP

M-48ADUP

VD-1MS

VD-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 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-95	Hexavalent chromium	27.75 hours	24 hours	J- (all detects) UJ (all non-detects)	P
M-44	Hexavalent chromium	28 hours	24 hours	J- (all detects) UJ (all non-detects)	Р
VD-1 VD-1MS VD-1MSD	Hexavalent chromium	32.25 hours	24 hours	J- (all detects) UJ (all non-detects)	Р

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-44 and VD-1 and samples I-AA and VD-3 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

	Concentration					
Analyte	I-AA	VD-3	(Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	3600 mg/L	3600 mg/L	0 (≤30)		-	-
Perchlorate	84000 ug/L	78000 ug/L	7 (≤30)		-	-

	Concer	ntration				
Analyte	M-44	VD-1	RPD (Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	6200 mg/L	6600 mg/L	6 (≤30)	-	-	-
Hexavalent chromium	0.65 mg/L	0.66 mg/L	2 (≤30)	-	-	-
Perchlorate	550000 ug/L	530000 ug/L	4 (≤30)	-	-	-

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 347973

SDG	Sample	Analyte	Flag	A or P	Reason
347973	M-95 M-44 VD-1	Hexavalent chromium	J- (all detects) UJ (all non-detects)	P	Technical holding times

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 347973

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Wet Chemistry - Field Blank Data Qualification Summary - SDG 347973

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #: 24670K6 SDG #: 347973 Stage 2A Laboratory: MWH Laboratories

Date:1/13/I
Page: <u> </u> of <u> </u>
Reviewer: CP-
2nd Reviewer: 1/

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissovled Solids (EPA Method 160.1/SM2540C) If exavalent

Chromium (Method 7196) PH (EPA Method 9049)

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

	Validation Area		Comments
1.	Technical holding times	SW	Sampling dates: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
IIa.	Initial calibration	N	• •
IIb.	Calibration verification	N	
111.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	mS Q
٧	Duplicates	A	
VI.	Laboratory control samples	A	LCSIO
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	52	(15,16),(2,17)
X	Eield blanks	N	

Note:

A = Acceptable

N = Not provided/applicable

c. masel -

SW = See worksheet

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

Validated Samples:

		<u>, </u>					
1	I-AB	11	PC-72	21	VD-1MS	31	PBU
2	I-AA	12	PC-73	22	VD-1MSD	32	
3	PC-124	13	PC-37	23	VD-3DUP	33	
4	PC-125	14	M-95	24		34	
5	PC-126	15	M-44	25		35	
6	PC-127	16	VD-1	26		36	
7	M-96	17	VD-3	27		37	
8	PC-54	18	PC-125DUP	28		38	
9	M-48A	19	PC-54DUP-	29		39	
10	PC-71	20	M-48ADUP	30		40	

Notes:_			,

LDC# 24670 KG

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: of 1

Reviewer: 2nd reviewer: 1

All circled methods are applicable to each sample.

ample ID	Matrix	Parameter
1-17		pH (TDS) CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+(CIO4)
14-16		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC (CR8+) CIO4
CIR		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
19		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
10		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
121		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC (CR)+ CIO4
W		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS CIO4
1225	•	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO, NO, SO4 PO4 ALK CN NH, TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLE NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO,
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph tds ci f No3 No2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		ph tds ci f No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
·		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO. NO. SO. PO. ALK CN. NH. TKN TOC CR6+ CIO.

On we we owite:	
Comments:	

VALIDATION FINDINGS WORKSHEET Technical Holding Times

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Page:_	of
Reviewer:	02
2nd reviewer:	

All circled dates have exceeded the technical holding time.

YN N/A

Were all samples preserved as applicable to each method?

N N/A Were all cooler temperatures within validation criteria? 7196 Method: Parameters: Technical holding time: **Analysis Analysis** Sampling **Analysis Analysis Analysis** date date date date date date Sample ID Qualifier 11/3/10 11/2/10 14 75hs 12:36 12:15 16:22 08:00

LDC#: 24670K6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page.	of
Reviewer:	Sh
2nd Reviewer:	

Inorganics, Method: See Cover

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

	Concentration (mg/L)					
Analyte	2	17	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	3600	3600	0			
Perchlorate (ug/L)	84000	78000	7			

V:\FIELD DUPLICATES\FD_inorganic\24670K6.wpd

	Concentration (mg/L)					
Analyte	15	16	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	6200	6600	6			
Hexavalent Chromium	0,65	0.66	2			
Perchlorate (ug/L)	550000	530000	4			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 3, 2010

LDC Report Date:

January 18, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 4

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348239

Sample Identification

M-64 M-92DUP
M-65 M-97MS
M-66 M-97MSD
M-92 EB110310VMS
M-97 EB110310VMSD
M-23 M-70DUP
M-35 M-70
VD-4

M-19 M-39 M-68

M-74

M-67 I-K

I-J I-7

I-Z I-V

I-I M-73

M-100

EB110310V

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 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.

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
1-J	Hexavalent chromium	27 hours	24 hours	J- (all detects) UJ (all non-detects)	Р
M-100	Hexavalent chromium	25 hours	24 hours	J- (all detects) UJ (all non-detects)	Р

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 preparation blanks.

Sample EB110310V was identified as an equipment blank. No contaminant concentrations were found in this blank with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
EB110310V	Perchlorate	550 ug/L	M-64 M-65 M-66 M-92 M-97 M-23 M-35 M-19 M-39 M-68 M-74 M-67 I-K I-J I-Z I-V I-I M-73 M-73 M-100 M-70 VD-4
EB110310V	Hexavalent chromium	0.0050 mg/L	I-J M-100

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	910 ug/L	910J+ ug/L
M-19	Perchlorate	2800 ug/L	2800J+ ug/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

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

Samples M-65 and VD-4 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

	Concentration					
Analyte	M-65	VD-4	RPD (Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	15000 mg/L	15000 mg/L	0 (≤30)	-	-	-
Perchlorate	1200000 ug/L	1200000 ug/L	0 (≤30)	-	-	-

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 348239

SDG	Sample	Analyte	Flag	A or P	Reason
348239	I-J M-100	Hexavalent chromium	J- (all detects) UJ (all non-detects)	Р	Technical holding times

2010 Annual Remedial Performance Sampling Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 348239

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Wet Chemistry - Field Blank Data Qualification Summary - SDG 348239

SDG	Sample	Analyte	Modified Final Concentration	A or P
348239	M-92	Perchlorate	910J+ ug/L	A
348239	M-19	Perchlorate	2800J+ ug/L	А

LDC #: 24670L6	VALIDATION COMPLETENESS WORKSHEET
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Stage 4

	Date:_	1	13/1	
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SDG #: 348239 Laboratory: MWH Laboratories

METHOD: (Analyte) Perchlorate (EPA Method 314.0), TDS (EPA Method 160.1), pH(EPA Method 9040), Hexavalent Chromium(EPA Method 7196)

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
l.	Technical holding times	5h/	Sampling dates: \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
IIa.	Initial calibration	A	
Ilb.	Calibration verification	A	
111.	Blanks	A	
ív ·	Matrix Spike/Matrix Spike Duplicates	17	msp
V	Duplicates	A	Op
VI.	Laboratory control samples	A	LCS/D
VII.	Sample result verification	A	
VIII.	Overall assessment of data	X	
IX.	Field duplicates	SW,	(2,30)
x	Field hlanks	SW	EB=20

Note:

A = Acceptable

N = Not provided/applicable SW = See worksheet

Marg

ND = No compounds detected

R = Rinsate

FB = Field blank

D = Duplicate

TB = Trip blank

EB = Equipment blank

Validated Samples:

	<u> </u>	<u> </u>					
1	M-64 · ·	11	M-74 · ·	21	M-92DUP	31	PBW
2	M-65 ·	12	M-67 ·	22	M-97MS	32	
3	M-66 · ·	13	I-K	23 ·	M-97MSD	33	
4	M-92 · ·	14	-J · ·	24	M-68DUP	34	
	M-97 · ·	15	I-Z	25	EB110310VMS	35	
6	M-23 · ·	16	I-V ·	26	EB110310VMSD	36	
7	M-35 · ·	17	- · ·	27	M-70DUP	37	
8	M-19	18	M-73 · •	-28	VD-4DUP	. 38	
5 6 7 8 9	M-39 · •	19	M-100 · ·	29	m-70 ··	39	
10	M-68 · ·	20	EB110310V · ·	30	VD-4	40	•

Notes:				
		•		
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VALIDATION FINDINGS CHECKLIST

Page: _ of _2
Reviewer: _ _2
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)		,	V	
Were balance checks performed as required? (Level IV only)				
III. Blanks		<i>,</i> .		
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) \leq 20% for waters and \leq 35% for soil samples? A control limit of \leq CRDL(\leq 2X CRDL for soil) was used for samples that were \leq 5X the CRDL, including when only one of the duplicate sample values were \leq 5X the CRDL.				
V. Laboratory control samples			٠	
Was an LCS anaylzed for this SDG?				
Was an LCS analyzed per extraction batch?	7			
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?			./	1

LDC# 24670 Lb

VALIDATION FINDINGS CHECKLIST

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?				· · · · · · · · · · · · · · · · · · ·
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.			_	
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.				
Target analytes were detected in the field duplicates.				
X. Field blanks				
Field blanks were identified in this SDG.		_		
Target analytes were detected in the field blanks.				

LDC#_ 2467016

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: of 1

Reviewer: 2nd reviewer: L

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-29, 79, 8	-	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ (ClO4)
14,19,7C		pH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (CR) CIO,
· · · · · · · · · · · · · · · · · · ·		DH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR64 CIO4
QC. 2]		pH(TDS) CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
122		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR (CIO)
123		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR (CIO)
24		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CREST CIO4
25		PH TDS CI F NO, NO, SO, PO, ALK CN' NH, TKN TOC (CR') CIO,
16.		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR CR CLO4
111		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
128		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6 CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR64 CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO,
		PH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
·		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁵⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		PH TDS CLE NO. NO. SO. PO. ALK CN. NH. TKN TOC CR6+ CIO.

Commonts:
Comments:

LDC# 71670 LG

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page: of)	
Reviewer: 07	
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

Y N N/A Were all coole	er temperatures	within validation	criteria?				
Method:	7196					·	
Parameters:		Got			,		
Technical holding time:		24 hs					
	Sampling	Analysis	Analysis	Analysis	Analysis	Analysis	
Sample ID	11/3/10	date	date	date	date	<u>date</u>	Qualifier
14	1 09:57	11/4/10	(27kg)				15-/05/F
19	11:57	13:01	(25hg)				1
•			-/				
						, , , , , , , , , , , , , , , , , , ,	
							
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LDC #: 24670<u>L</u>6

VALIDATION FINDINGS WORKSHEET Field Blanks

Page: Reviewer: 2nd Reviewer:

Were field blanks identified in this SDG? METHOD: Inorganics, EPA Method See Cover N N/A Y A N/A

Were target analytes detected in the field blanks? Blank units: ug/L Associated sample units: ug/L

Reason Code: be

Æ Sampling date: 11/3/10 Soil factor applied NA Field blank type: (circle one) Field Blank / Rinsate / Other:

Associated Samples: Alt I-I9, 29, 30Sample Identification 2800 J+ 910 J+ **Action Limit** 5500 Blank ID 550 읾 Analyte

Sample Identification Associated Samples: 14, 19 No Qualifiers EB, Field blank type: (circle one) Field Blank / Rinsate / Other: 0.05 mg/L **Action Limit** 0.0050 0.04/ Blank ID 2 Analyte

Soil factor applied NA

Sampling date: 11/3/10

CI04

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:

1910

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#: 24670L6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page:_	of \
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2nd Reviewer:_	<u>~~</u>

Inorganics, Method: See Cover

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

	Concentration (mg/L)					
Analyte	2	30	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	15000	15000	0			
Perchlorate (ug/L)	1200000	1200000	0			

V:\FIELD DUPLICATES\FD_inorganic\24670L6.wpd

noghi LDC #:

Initial and Continuing Calibration Calculation Verification Validatin Findings Worksheet

2nd Reviewer:

Method: Inorganics, Method Selcal

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula: The correlation coefficient (r) for the calibration of $\frac{OO_{\mathcal{A}}}{OO_{\mathcal{A}}}$ was recalculated.Calibration date: $\frac{OO_{\mathcal{A}}}{OO_{\mathcal{A}}}$

%R = Found X 100

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

					Recalculated	Reported	Acceptable
Type of analysis	Analyte	Standard	Conc. (ug/l)	Area	r or r²	r or r²	(Y/N)
Initial Calibration		0	2	0.001			
Verification		s1	4	0.003	0.999905	0.999941	
	<u> </u>	s2	10	0.007			,
) () ()	83	25	0.019			>
		\$4	90	0.038			
		SS	75	0.056			_
		9S	100	0.076			
Calibration verification		CO	25	25,345	101		
Calibration verification	Coff	\rightarrow	200	120,0	105	103	\rightarrow
2 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)							
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#: 28670x.6

VALIDATION FINDINGS WORKSHEET **Level IV Recalculation Worksheet**

Page; ⁽ 2nd Reviewer:

METHOD: Inorganics, Method SRC COVER

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

%R = Found × 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 = $1S-DL \times 100$ (S+D)/2

Where,

8 C

Original sample concentration Duplicate sample concentration

			T	·
	Acceptable (Y/N)	}		\rightarrow
Reported	%R/RPD	9037	70/	10,36 10,36
Recalculated	%R/RPD	701	106	02'0
	True / Dy (units) py (78752 780612	90'0	1970
	Found IS (units) my (L	780b12	(SSR-SR)	027
	Element	Cloy	C/est	705
	Type of Analysis	Laboratory control sample	Matrix spike sample	Duplicate sample
	Sample ID	23	52	12

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#: 24670U

VALIDATION FINDINGS WORKSHEET

Sample Calculation Verification

Page:_	of	
Reviewer:_	Q	
2nd reviewer:_		

			Gampie Galdalation ve	THICALIOTS	2nd revie	wer:	-
	METH	IOD: Inorganics, Metho	d See cover				
10:	YN YN Compression	N/A Have results N/A Are results w N/A Are all detect ound (analyte) results f	bow for all questions answered "N". Not ap been reported and calculated correctly? within the calibrated range of the instrumention limits below the CRQL? for CICY/TOS/C6+ g the following equation: CICY/TOS/C6+ Recalculation: CICY: 1= CICY: 1= CICY: 1= CICY: 1= CICY: 15= CICY:	rep (4(0)(0,05+0,002 Z(0) ,562%-0,002)(orted with a positi 8)+(0,00076) ³ -0,00 1000 -2 7,55 M	ve detect were	
5:	V) - 013 - 3	TOS: 15= 10 m		- 5 7 6 6	0	-
	#	Sample ID	Analyte	Reported Concentration (MS14-)	Calculated Concentration (M24L)	Acceptable (Y/N)	
			ClOu (not)	670000	66000	<i>y</i> .	
			105	7400	7400		
						<u> </u>	
		14	C-6+	7.6	7.6	<u> </u>	1
			Clay (ug(L)	75000	Z5000		#
			105	6400	6400		
		15	Clay (ugli)	38000	310000		
- 1				1-7	17700	1 4/	il

14 C(6+ 7.6 7.6 7.6 1 C(04 (ng/L) 7.5000 7.5000 7.5000 7.5000 7.00 1 TOS 7.00 7.00 7.00
15 ClOy (18/L) 38000 370000
105 72m 7200 +

Note:	,

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 4, 2010

LDC Report Date:

January 18, 2011

Matrix:

Water

Parameters:

Total Dissolved Solids

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348296

Sample Identification

M-10

M-10DUP

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.

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.

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) 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

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 Total Dissolved Solids - Data Qualification Summary - SDG 348296

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Total Dissolved Solids - Laboratory Blank Data Qualification Summary - SDG 348296

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Total Dissolved Solids - Field Blank Data Qualification Summary - SDG 348296

No Sample Data Qualified in this SDG

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LDC #: 24670M6	VALIDATION COMPLETENESS WORKSHEET
SDG #: 348296	Stage 2A
Laboratory: MWH Laboratories	<u> </u>

Date:_	<u>/13/1)</u>
Page:_	lof_
Reviewer:_	αc_{-}
2nd Reviewer:	

METHOD: (Analyte) Ammonia Nitrogen (EPA Method 350:1), Chloride, Nitrate, Nitrite, TIC (EPA Method 300:0) Perchlorate -(EPA Method 314.0); Total Dissolved Solids (EPA Method 160.1) Total Phosphorous (EPA Method 365.1/SM4500) --Sm 254047

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:
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
HI.	Blanks	A	
ΙV	Matrix Spike/Matrix Spike Duplicates	Ν	Oup ESP6: 748239)or
V	Duplicates	A	Dup (506: 348239) or
VI.	Laboratory control samples	A	LC\$10
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

Valida	ated Samples: Wate	1		
1	M-10	11	21	31
2.	M-10DUP	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
3 4 5 6 7 8 9		19	29	39
10		20	30	40

Notes:		
<u> </u>	 •	

LDC#24670M6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page: __of __ Reviewer: __02_ 2nd reviewer: __t__

All circled methods are applicable to each sample.

Sample ID	Vlatrix	Parameter
	WIALLIA	PH (TDS)CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
OC: 7_		pH (TD) CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
-		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		PH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	-	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
-		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLE NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO.

Comments:		 	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 4, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348330

Sample Identification

M-31A

M-52

I-AD

I-AC

M-71

M-72

M-22A

M-38

M-115

M-14A

M-36

M-11

M-12A

M-10

VD-5

VD-2

M-115DUP

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 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.

1. 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	27 hours	24 hours	J- (all detects) UJ (all non-detects)	ů.
M-11	Hexavalent chromium	26 hours	24 hours	J- (all detects) UJ (all non-detects)	Р
M-12A	Hexavalent chromium	26.75 hours	24 hours	J- (all detects) UJ (all non-detects)	Р
M-10	Hexavalent chromium	25 hours	24 hours	J- (all detects) UJ (all non-detects)	Р
VD-2	Hexavalent chromium .	30.25hours	24 hours	J- (all detects) UJ (all non-detects)	Р

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) 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

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-71 and VD-5 and samples M-12A and VD-2 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

	Concentration					
Analyte	M-71	VD-5	RPD (Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	5500 mg/L	5500 mg/L	0 (≤30)	- -	-	-
Perchlorate	420000 ug/L	410000 ug/L	2 (≤30)	-	-	-

	Concentration					
Analyte	M-12A	VD-2	RPD (Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	6300 mg/L	6100 mg/L	3 (≤30)		-	-
Hexavalent chromium	10 mg/L	9.7 mg/L	3 (≤30)	-	-	-
Perchlorate	210000 ug/L	210000 ug/L	0 (≤30)	-	-	-

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 348330

SDG	Sample	Analyte	Flag	A or P	Reason
348330	M-36 M-11 M-12A M-10 VD-2	Hexavalent chromium	J- (all detects) UJ (all non-detects)	Р	Technical holding times

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 348330

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Wet Chemistry - Field Blank Data Qualification Summary - SDG 348330

No Sample Data Qualified in this SDG

	Tronox Northgate Henderson
LDC #: 24670N6	VALIDATION COMPLETENESS WORKSHEET
SDG #: 348330	Stage 2A
Laboratory: MWH Laboratories	<u> </u>

Date: 1/13	<u> (</u> 17)
Page: <u> </u>	_
Reviewer:	_
2nd Reviewer:	1

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissovled 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
1.	Technical holding times	Su	Sampling dates: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Ila.	Initial calibration	N	
IIb.	Calibration verification	N	
111.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	\mathcal{N}	Client specified
V	Duplicates	A	Our '
VI.	Laboratory control samples	P	LCS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW,	(5,15),(13,16)
х	Field blanks	\sim	

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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:

Valida	/alidated Samples:						
1	M-31A	11	M-36	21	31		
2	M-52	12	M-11	22	32		
3	I-AD	13	M-12A	23	33		
4	I-AC	14	M-10	24	34		
5	M-71	15	VD-5	25	35		
6	M-72	16	VD-2	26	36		
7	M-22A	17	M-115DUP	27	37		
8	M-38	18		28	38		
9	M-115	19		29	39		
10	M-14A	20		30	40		

Notes:		
•		

LDC#_ 24670N6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

Page:___of___ Reviewer:____2nd reviewer:____

All circled methods are applicable to each sample.

ix Parameter
pH(TDS)CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4)
PH TOS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR CIO,
ph TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ ClO4
pH (TDS) CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+ cio4
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
ph TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺ CIO ₄
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
pH TDS CLE NO. NO. SO. PO. ALK CN. NH. TKN TOC CR6+ CIO.

Comments:	

LDC#_71670N6

VALIDATION FINDINGS WORKSHEET Technical Holding Times

Page:_	∫ _{of} /
Reviewer:	02
2nd reviewer:	كحك

All circled dates have exceeded the technical holding time.

N N/A

Were all samples preserved as applicable to each method?

Y N N/A Were all cook	er temperatures	within validation	criteria?				
Method:		7196				,	
Parameters:		C66+					
Technical holding ti	me:	2445					
Technica noung to	Sampling	Analysis	Analysis	Analysis	Analysis	Analysis	
Sample ID	date	date	date	date	date	date	Qualifier
1]	11/4/10	11/5/10	(Z7ks)				J-105/P
12	12:12		(26hrs)				
13	11:26	14:12				-	
14	13:17	14:14	(25 hs)		·		
16	08:00	14:13	(30,25hs)	<u> </u>			
				· 			
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LDC#: 24670N6

VALIDATION FINDINGS WORKSHEET Field Duplicates

Inorganics, Method: See Cover

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

	Concentration (mg/L)					
Analyte	5	15	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	5500	5500	0 .			·
Perchlorate (ug/L)	420000	410000	2		_	

V:\FIELD DUPLICATES\FD_inorganic\24670N6.wpd

	Concentration (mg/L)					O liff a aki a
Analyte	13	16	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	6300	6100	3			
Hexavalent Chromium	10	9.7	3			
Perchlorate (ug/L)	210000	210000	0 ·			

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 8 through November 10, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 348765

Sample Identification

PC-98R PC-86 PC-90 PC-56 PC-58 PC-59 PC-60 PC-62 PC-68 PC-122 PC-91 PC-97 PC-18 PC-55 PC-101R ART-7B

PC-92 PC-94 PC-136 MW-K4 ARP-1 ARP-2A ARP-3A ARP-4A ARP-5A ARP-6B ARP-7 PC-53 PC-103 MW-K5 PC-137 PC-86DUP PC-91DUP PC-137DUP

Introduction

This data review covers 34 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.

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) 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

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 348765

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 348765

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 348765

No Sample Data Qualified in this SDG

LDC #: 24670N6

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

Stage 2A

_{Date:} [/3/1]	
Page: <u>∖</u> of <u></u>	
Reviewer: 02	
2nd Reviewer:	_

SDG #:_ 348330- 765 Laboratory: MWH Laboratories

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissovled 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
l <u>.</u>	Technical holding times	A	Sampling dates: 11/8-10/10
IIa.	Initial calibration	N	·
IIb.	Calibration verification	N	
111.	Blanks	A	·
IV	Matrix Spike/Matrix Spike Duplicates	$ \mathcal{N} $	Client-specifies
V	Duplicates	A	DR
VI.	Laboratory control samples	A	(CS/D
VII.	Sample result verification	N_	
VIII.	Overall assessment of data	LA	
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:

,	(V)((-						
1	PC-98R	11	PC-91	21	ARP-1	31	PC-137
2	PC-86	12	PC-97	22	ARP-2A	32	PC-86DUP
3	PC-90	13	PC-18	23	ARP-3A	33	PC-91DUP
4	PC-56	14	PC-55	24	ARP-4A	34	PC-137DUP
5	PC-58	15	PC-101R	25	ARP-5A	35	
6	PC-59	16	ART-7B	26	ARP-6B	36	
7_	PC-60	17	PC-92	27	ARP-7	37	
8	PC-62	18	PC-94	28	PC-53	38	
9	PC-68	19	PC-136	29	PC-103	39	
10	PC-122	20	MW-K4	30	MW-K5	40	

Notes:			

LDC# 25/67006

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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Page:	ot
Reviewer:_	<u> </u>
2nd reviewer:_	

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-31		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ (CIO4)
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
QC:32		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ CIO4
33		pH(TDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
134		pH (TDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
•		pH TDS C! F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
L		pH TDS CLF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ ClO,

Comments:	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 13, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349052

Sample Identification

M-70

M-71

M-179

M-69

M-73

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.

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) 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 349052

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 349052

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Wet Chemistry - Field Blank Data Qualification Summary - SDG 349052

No Sample Data Qualified in this SDG

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LDC #: 24670P6	VALIDATION COMPLETENESS WORKSHEET
SDG #: 349052	Stage 2A
_aboratory: <u>MWH Laboratories</u>	<u> </u>

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Page:_	1_of
Reviewer:	62-
2nd Reviewer:	

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
1.	Technical holding times	17	Sampling dates: 11/13/10
I <u>la.</u>	Initial calibration	N N	
Ilb.	Calibration verification	N	
III	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Olien+specifieb
V	Duplicates	N	ν
VI.	Laboratory control samples	A	LCS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	I A	
IX.	Field duplicates	\mathcal{N}	
x	Field blanks	<u> </u>	

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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-70	11	PBW	21		31	
2	M-71	12		22		32	
3	M-179	13		23	· ·	33	<i>-</i>
4	M-69	14		24		34	
5	M-73	15		25		35	
6		16		26		36	
7		17		27	,	37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

Notes:				 	
		 	 	 	
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LDC # 24670Pb

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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2nd reviewer:	V

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1-5		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ (CIO4)
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
,		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR5+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6* ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+ ClO4
	<u> </u>	pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLE NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO,

Comments:	 ,	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 12, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349055

Sample Identification

M-72

M-178

M-171

M-140

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 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.

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) 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 349055

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 349055

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Wet Chemistry - Field Blank Data Qualification Summary - SDG 349055

No Sample Data Qualified in this SDG

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DC #: 24670Q6	VALIDATION COMPLETENESS WORKSHEET
SDG #: 349055	Stage 2A
_aboratory: <u>MWH Laboratories</u>	<u> </u>

Date:	1/3/11
Page:_	of
Reviewer:	<u> </u>
2nd Reviewer:	<u>~</u>

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: 11/17/10
lla.	Initial calibration	N	
Ilb.	Calibration verification	N	
111.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	Ν,	Clientspecified
V	Duplicates		1 1
VI.	Laboratory control samples	A	LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N_{ℓ}	
_x	Field blanks	<i>(V</i>	

Nota.	

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:

		10 to 0			
1	M-72	11 PP2	21	31	
2	M-178	12	22	32	
3	M-171	13	23	33	
4	M-140	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#: 2467006

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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All circled methods are applicable to each sample.

		Parameter
Sample ID	<u> Matrix</u>	~
1-4		PH (TD3) CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CRET (104)
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	-	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	· · ·	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	···-	ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	:	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN' NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	<u>.</u>	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	·	
		pH TDS CLF NO. NO. SO. PO. ALK CN: NH. TKN TOC CR6+ ClO.
		pH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		PH TDS CLE NO. NO. SO. PO. ALK CH. NH. TKN TOC CR6+ CIO.

Comments:	 	 	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

November 17, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349391

Sample Identification

M-171

M-140

M-178

M-179

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 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.

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.

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 349391

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 349391

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 349391

No Sample Data Qualified in this SDG

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LDC #: 24670R6 VALIDATION COMPLETENESS WORKSHEET	Date: [/ (3/ l
SDG #: 349391 Stage 2A	Page:of Reviewer:o/
Laboratory: MWH Laboratories	Reviewer: 🗸 🖊
	2nd Reviewer:

METHOD: (Analyte) Perchlorate (EPA Method 314.0), Total Dissoyled 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.

			1
	Validation Area		Comments
L.	Technical holding times	A	Sampling dates: 11/17/10
lla.	Initial calibration	N N	
Jib.	Calibration verification	N N	
111.	Blanks	A	
١٧	Matrix Spike/Matrix Spike Duplicates	<u> A</u>	MS/D (506: 349695) O, D (506: 34939Z)
V	Duplicates	A	0,0 (SD6: 34939Z)
VI.	Laboratory control samples	A	LCS (D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	10	
IX.	Field duplicates	N.	
x	Field blanks	N	

N	oto.	

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-171	11	21	31
2	M-140	12	22	32
3	M-178	13	23	33
4	M-179	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:	 		 	
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LDC #: 3467086

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter Parameter
14		pH(TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+(CIO,)
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
·		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	·	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TOS CLE NO, NO, SO, PO, ALK CN: NH, TKN TOC CR6+ CIO.

Comments:	·	 	 	 • •

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 18, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349392

Sample Identification

M-72

M-71

M-70

M-69

M-73

M-70DUP

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 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.

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) 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

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 349392

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 349392

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 349392

No Sample Data Qualified in this SDG

Tronox Northgate Henderson

Date: <u>1/13/1</u>
Page: Lof 1 Reviewer: O
Reviewer: 04
nd Reviewer:

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
ī.	Technical holding times	A	Sampling dates: U/18/10
Ila.	Initial calibration	N	
IIb.	Calibration verification	N_	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client specified
V	Duplicates	I A-	Dia -
VI.	Laboratory control samples	A	(CS/D
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
x	Field blanks	\mathcal{N}	

NIA	to.	

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-72	11	21	31
2	M-71	12	22	32
3	M-70	13	23	33
4	M-69	14	24	34
5	M-73	15	25	35
6	M-70DUP	16	26	36
7		17	27	37
8		18	28	38
9		19	29	39
10		20	30	40

Notes:			
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LDC#: 2467056

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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2nd reviewer:	\sim	_

All circled methods are applicable to each sample.

		,
Sample ID	Matrix	Parameter
1-5		pH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO,
		pH TDS CI F NO3 NO, SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
QC 6		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
		PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO,
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ C1O4
-		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		ph tds ci f NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	·	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph tds ci f No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLE NO. NO. SO. PO. ALK CN: NH. TKN TOC CR6+ CIO.

Comments:	*****	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: November 22 through November 23, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 349695

Sample Identification

M-179

M-171

M-178

M-140

M-72

M-71

M-70

M-69

M-73

M-73 FD

M-179DUP

M-69MS

M-69MSD

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 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.

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-73 and M-73_FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

	Concentration					
Analyte	M-73	M-73_FD	RPD (Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	7700 mg/L	7400 mg/L	4 (≤30)	-	-	-
Perchlorate	510000 ug/L	510000 ug/L	0 (≤30)	-	-	-

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 349695

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 349695

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling Wet Chemistry - Field Blank Data Qualification Summary - SDG 349695

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #: 24670T6 Stage 2A SDG #: 349695 Laboratory: MWH Laboratories

Date: 1/13/	
Page:lof_	
Reviewer:	
2nd Reviewer:	

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: 11/22-23/10
Ila.	Initial calibration	N	·
IIb.	Calibration verification	N	
III.	Blanks	A	
IV	Matrix Spike/Matrix Spike Duplicates	A	IMSID
V	Duplicates	A	DUP
VI.	Laboratory control samples	A	LCS/D
VII.	Sample result verification	N N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	SW	(11,1/4)
X	Field blanks	\mathcal{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-179	11	M-73	21	31
2	M-171	12	M-73_FD	22	32
3	M-178	13	M-179DUP	23	33
4	M-1X0	14	M-69MS	24	34
5	M-72	15	M-69MSD	25	35
6	M-71	16		26	36
7	M-70	17		27	37
8	M-69	18		28	38
9	M-69 MS	19		29	39
10	M-69 MSD	20		30	40

Notes:		
		 .==

LDC# 2467076

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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All circled methods are applicable to each sample.

		Downwater
\	Matrix	Parameter
1-8,11,72		pH (TD\$ CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+(CIO4)
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ ClO ₄
QC13		pH (TDS)CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
114,15		PH TDS CI F NO, NO, SO, PO, ALK CN NH, TKN TOC CR (CIO)
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
-		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR5+ ClO4
		pH TDS CI F_NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR5+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		ph tds ci f NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
	<u></u> -	PH TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR5+ CIO4
	: :	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CLF NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ ClO.

Comments:		

LDC#:_24670T6

VALIDATION FINDINGS WORKSHEET

Field Duplicates

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Reviewer:	de 1
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Inorganics, Method: See Cover

YN NA YN NA

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

	Concentrat	tion (mg/L)				
Analyte	11	12	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	7700	7400	4			
Perchlorate (ug/L)	510000	510000	0			

V:\FIELD DUPLICATES\FD_inorganic\24670T6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

December 4, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 350454

Sample Identification

M-69

M-70

M-70DUP

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 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.

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) 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

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 350454

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 350454

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 350454

No Sample Data Qualified in this SDG

Trongy Northgate Henderson

	Hollox Northgate Heliacison
LDC #: 24670U6	VALIDATION COMPLETENESS WORKSHEET
SDG #: 350454	Stage 2A
Laboratory: MWH Laboratories	

Date:	1/13/11
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Reviewer:	<u> </u>
2nd Reviewer:	

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
1.	Technical holding times	A	Sampling dates: 12/4/10
IIa.	Initial calibration	N	·
IIb.	Calibration verification	N	<u> </u>
<u>III.</u>	Blanks	A	<u> </u>
IV	Matrix Spike/Matrix Spike Duplicates	N	Clien+specified
V	Duplicates	A	DUR
VI.	Laboratory control samples	A	LCS (D
VII.	Sample result verification	Ŋ	
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: 1 ASSAN

	V4040			
1	M-69	11	21	31
2	M-70	12	22	32
3	TOUR	13	23	33
4		14	24	34
5		15	25	35
6	-w.	16	26	36
7		17	27	37
8	·	18	28	38
9	75	19	29	39
10		20	30	40

Notes:	 	 ·
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LDC#: 74670U6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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Reviewer:
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
154		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6 (CIO4)
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
QC-3		pH (TDS CI F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
·		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
·		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
		PH TDS CI F NO3 NO2 SO4 PO4: ALK CN NH3 TKN TOC CRS CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR8+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
		ph TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	,	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLE NO, NO, SO, PO, ALK CN NH, TKN TOC CR ⁶⁺ ClO,

Comments:	•	
——————————————————————————————————————		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

2010 Annual Remedial Performance Sampling

Collection Date:

December 3, 2010

LDC Report Date:

January 14, 2011

Matrix:

Water

Parameters:

Wet Chemistry

Validation Level:

Stage 2A

Laboratory:

MWH Laboratories, Inc.

Sample Delivery Group (SDG): 350459

Sample Identification

M-140

M-171

M-178

M-178 FD

M-179

M-179DUP

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 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.

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) 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

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-178 and M-178_FD were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

	Concentration					
Analyte	M-178	M-178_FD	RPD (Limits)	Difference (Limits)	Flags	A or P
Total dissolved solids	6300 mg/L	6200 mg/L	3 (≤30)	<u>.</u>	-	-
Perchlorate	880000 ug/L	850000 ug/L	3 (≤30)	•	-	-

2010 Annual Remedial Performance Sampling Wet Chemistry - Data Qualification Summary - SDG 350459

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 350459

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 350459

No Sample Data Qualified in this SDG

Tronox Northgate Henderson VALIDATION COMPLETENESS WORKSHEET

LDC #: 24670V6 VALIDATION COMPLETENESS WOR
SDG #: 350459 Stage 2A
Laboratory: MWH Laboratories

Date! <u>/ 13/1</u>)
Page: <u>(</u> of <u>)</u>
Reviewer:
2nd Reviewer:

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
].	Technical holding times	A	Sampling dates: 12/3/10
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
III.	Blanks	A	
١٧	Matrix Spike/Matrix Spike Duplicates	\mathcal{N}	Clientspecifica
· >	Duplicates	A	QR
VI.	Laboratory control samples	A	US 10
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates		(3,4)
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:

	LA	<i>0V</i>			
1	M-140	11	21	31	
2	M-171	12	22	32	
3	M-178	13	23	33	
4	M-178FD_F9	14	24	34	
5	M-179	15	25	35	
6	M-179DUP	16	26	36	
7		17	27	37	
8		18	28	38	
9		19	29	39	
10		20	30	40	

Notes:	

LDC#: 24620 V6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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Reviewer:	OL_
2nd reviewer:	

All circled methods are applicable to each sample.

Sample ID	Matrix	<u>Parameter</u>
1-5		PH (TDS)CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4)
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
Q(16		pH(TDS) CI F NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
·		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
	!	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph tds ci f no3 no2 so4 po4 alk cn nh3 tkn toc cr6+ cio4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CRS+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ ClO4
		PH TDS CLE NO, NO, SO, PO, ALK CN NH, TKN TOC CR6+ CIO.

Comments:	 	

LDC#:_24670V6

VALIDATION FINDINGS WORKSHEET Field Duplicates

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Page:_	of
Reviewer:	<u>ol</u>
2nd Reviewer:	

Inorganics, Method: See Cover

YN NA YN NA

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

Analyte	Concentral 3	tion (mg/L)	RPD (≤30)	Difference	Limits	Qualification (Parent only)
TDS	6300	6200	2			
Perchlorate (ug/L)	880000	850000	3			

V:\FIELD DUPLICATES\FD_inorganic\24670V6.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: December 7, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 350602

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-120DUP

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 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.

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) 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

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 350602

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 350602

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 350602

No Sample Data Qualified in this SDG

Tronox Northgate Henderson EET

LDC #: <u>24670W6</u>	VALIDATION COMPLETENESS WORKSH
SDG #: 350602	Stage 2A
_aboratory: MWH Laboratories	

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2nd Reviewer:	

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
<u>l.</u>	Technical holding times	A	Sampling dates: 17/10
IIa.	Initial calibration	N	
IIb.	Calibration verification	N	
111.	Blanks	B	
IV.	Matrix Spike/Matrix Spike Duplicates	N	Clientspecifiep
V	Duplicates	A	Old
VI.	Laboratory control samples	A	LCS ID
VII.	Sample result verification	N	
VIII.	Overall assessment of data	IA	
IX.	Field duplicates	N,	
x	Eield blanks	N	

Moto	

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:

	<i>\</i> \'	<u> </u>				
1 2 3 4 5 6 7 8	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-120DUP	29	39	
10	PC-116R	20	(A12) OUP	30	40	

Notes:_			

LDC #: 7467046

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

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Reviewer: 2nd reviewer:	

All circled methods are applicable to each sample.

Comple ID	Matrix	Parameter
Sample ID	<u>Matrix</u>	
1-18		pH/PDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶ CIO ₄
20:19		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
ac:19		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
-		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	-	PH TDS CLF NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR8+ ClO4
		ph tds ci f no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+ cio4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph tds ci f No3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁵ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
	ı	pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN ⁻ NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CI F NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CIO ₄
		pH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		pH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		ph tos ci f No ₃ No ₂ So ₄ Po ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ CiO ₄
		pH TDS CLF NO ₃ NO ₂ SO ₄ PO ₄ ALK CN NH ₃ TKN TOC CR ⁶⁺ ClO ₄
		pH TDS CLE NO, NO, SO, PO, ALK CN: NH, TKN TOC CR6+ CIO.

Comments:	 		
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: 2010 Annual Remedial Performance Sampling

Collection Date: December 13 through December 16, 2010

LDC Report Date: January 14, 2011

Matrix: Water

Parameters: Wet Chemistry

Validation Level: Stage 2A

Laboratory: MWH Laboratories, Inc.

Sample Delivery Group (SDG): 351562

Sample Identification

M-83 PC-103 PC-98R MW-K5 PC-86 PC-91 PC-90 PC-97 PC-56 PC-18 PC-58 PC-55 PC-59 PC-101R PC-60 M-83DUP PC-62 ARP-3ADUP PC-68 PC-91DUP

ARP-1 ARP-2A ARP-3A ARP-4A ARP-5A ARP-6B ARP-7

PC-53

PC-122 MW-K4

Introduction

This data review covers 30 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.

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) 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

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 351562

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 351562

No Sample Data Qualified in this SDG

2010 Annual Remedial Performance Sampling
Wet Chemistry - Field Blank Data Qualification Summary - SDG 351562

No Sample Data Qualified in this SDG

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	Tronox Northgate Fichacison
DC #: 24670X6	VALIDATION COMPLETENESS WORKSHEE
SDG #: 351562	Stage 2A
aboratory: MWH Laboratories	<u> </u>

Date: 24670
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Reviewer: 0
2nd Reviewer:

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
l.	Technical holding times	A	Sampling dates: 12/13-16/10
IIa.	Initial calibration	N	
llb.	Calibration verification	N	
Ш.	Blanks	H,	
IV	Matrix Spike/Matrix Spike Duplicates	N	Client specified
V	Duplicates	A	Dip
VI.	Laboratory control samples	A	LCSD
VII.	Sample result verification	N	
VIII.	Overall assessment of data	A	
IX.	Field duplicates	N	
х	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:

Valida	Validated Samples:						
1	M-83	11	PC-122	21	PC-103	31	
2	PC-98R	12	MW-K4	22	MW-K5	32	
3	PC-86	13	ARP-1	23	PC-91	33	
4	PC-90	14	ARP-2A	24	PC-97	34	
5	PC-56	15	ARP-3A	25	PC-18	35	
6	PC-58	16	ARP-4A	26	PC-55	36	
7	PC-59	17	ARP-5A	27	PC-101R	37	
8	PC-60	18	ARP-6B	28	M-83DUP	38	
9	PC-62	19	ARP-7	29	ARP-3ADUP	39	
10	PC-68	20	PC-53	30	PC-91DUP	40	

Notes:			

LDC#: 24670X6

VALIDATION FINDINGS WORKSHEET Sample Specific Analysis Reference

	1 1
Page:_	of/
Reviewer:	02
2nd reviewer:	1V

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter Parame
127		PH (FDS) CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph TDS CI F NO3 NO2 SO4 PO4 ALK CN' NH3 TKN TOC CR6+ CIO4
QC 28		pH(TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
29		pH (TDS)CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
30		pH(TDS)CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
7		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
		pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
	-	pH TDS CI F NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR5+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CNT NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		ph tds ci f No3 No2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ CIO4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph tds cif No3 No2 SO4 PO4 ALK CN. NH3 TKN TOC CR6+ CIO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN. NH3 TKN TOC CR6+ ClO4
		pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph tds cif no3 no2 so4 po4 alk cn. nh3 tkn toc cr6+ cio4
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN° NH3 TKN TOC CR6+ ClO4
	<u>.</u>	pH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		ph tds ci f no, no, so, po, alk cn nh, tkn toc cr6+ cio,
		PH TDS CLF NO3 NO2 SO4 PO4 ALK CN NH3 TKN TOC CR6+ ClO4
		PH TOS CLE NO. NO. SO, PO, ALK CN-NH. TKN TOC CR6+ CIO.

Comments:	
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