



**MWH**

**LABORATORIES**

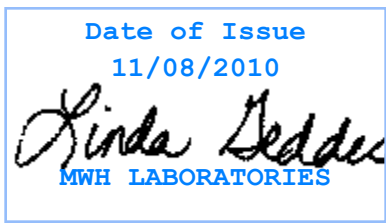
*A Division of MWH Americas, Inc.*

750 Royal Oak Dr., Suite 100  
Monrovia, California, 91016-3629  
Tel: 626 386 1100  
Fax: 626 386 1101  
1 800 566 LABS (1 800 566 5227)

## Laboratory Report

for

Tronox LLC  
PO Box 55  
Henderson, NV 89009  
Attention: Susan Crowley  
Fax: 702-651-2310



LXG: Linda Geddes  
Project Manager



Report#: 344161  
Project: CWA-RCRA  
Group: Weekly  
Influent-Effluent long TAT

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are Hits Reports, Comments, QC Summary, QC Report and Regulatory Forms. This report shall not be reproduced except in full, without the written approval of the laboratory.

### Acknowledgement of Samples Received

**Tronox LLC**  
 PO Box 55  
 Henderson, NV 89009  
 Attn: Susan Crowley  
 Phone: 702-651-2234

Customer Code: TRONOX  
 Folder #: 344161  
 Project: CWA-RCRA  
 Sample Group: Weekly Influent-Effluent long TAT  
 Project Manager: Linda Geddes  
 Phone: (626) 386-1163

The following samples were received from you on **September 21, 2010**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using MWH Laboratories.

Sample #	Sample ID	Sample Date												
201009210231	Effluent	Sep 20, 2010 08:30												
	<table border="1"> <tr> <td>@ACOPEDD</td> <td>@R226EDD</td> <td>@R228EDD</td> </tr> <tr> <td>Apparent Color</td> <td>Chromium Total ICAP</td> <td>Hexavalent chromium(Dissolved)</td> </tr> <tr> <td>Iron Total ICAP</td> <td>PH (H3=past HT not compliant)</td> <td>Total Kjeldahl Nitrogen</td> </tr> <tr> <td>Total phosphorus as P</td> <td>Total Suspended Solids (TSS)</td> <td></td> </tr> </table>	@ACOPEDD	@R226EDD	@R228EDD	Apparent Color	Chromium Total ICAP	Hexavalent chromium(Dissolved)	Iron Total ICAP	PH (H3=past HT not compliant)	Total Kjeldahl Nitrogen	Total phosphorus as P	Total Suspended Solids (TSS)		
@ACOPEDD	@R226EDD	@R228EDD												
Apparent Color	Chromium Total ICAP	Hexavalent chromium(Dissolved)												
Iron Total ICAP	PH (H3=past HT not compliant)	Total Kjeldahl Nitrogen												
Total phosphorus as P	Total Suspended Solids (TSS)													
201009210232	Influent	Sep 20, 2010 09:00												
	<table border="1"> <tr> <td>Apparent Color</td> <td>Chromium Total ICAP</td> <td>Hexavalent chromium(Dissolved)</td> </tr> <tr> <td>Total Kjeldahl Nitrogen</td> <td>Total phosphorus as P</td> <td></td> </tr> </table>	Apparent Color	Chromium Total ICAP	Hexavalent chromium(Dissolved)	Total Kjeldahl Nitrogen	Total phosphorus as P								
Apparent Color	Chromium Total ICAP	Hexavalent chromium(Dissolved)												
Total Kjeldahl Nitrogen	Total phosphorus as P													

#### Test Description

- @ACOPEDD -- Gross Alpha by Co-precipitation (Sub)
- @R226EDD -- Radium 226 (Sub)
- @R228EDD -- Radium 228 (Sub)



750 Royal Oaks dr. Suite 100 Monrovia, Ca., 91016-3629  
(626) 386-1100 (800) 566-5227

MWLABS USE ONLY:

LOGIN COMMENTS:

SAMPLES CHECKED/LOGGED IN BY JS/JS

SAMPLE TEMP, RECEIPT AT LAB: 50

BLUE ICE: FROZEN  PARTIALLY FROZEN THAWED

344161

TO BE COMPLETED BY SAMPLER:

COMPANY / PROJECT NAME TRONOX		PROJECT JOB # / P.O.# CWA-RCRA		REFER TO ATTACHED BOTTLE ORDER FOR ANALYSES <input type="checkbox"/> (check for yes)														
Sampler Signature: <u>Michele Brown</u> Susan Crowley (702) 651-2234		Tronox LLC - Henderson Plant PO Box 55 Henderson, NV 89009		ANALYSES REQUIRED (mark an 'X' in all tests required for each sample line)														
TIME	DATE	LOCATION	IDENTIFIER, STATE ID#	MATRIX *	GRAB	COMP	CMV	ALPHA	FE, CR	T-P, TKN	Color	RA228EDD/RA226EDD (2 Bils.)	CR	pH	@ALPHA	TSS	SAMPLER COMMENTS	
8:30 AM	9/20/2010		EFFLUENT	RSW	X		X	X	X	X	X	X	X	X	X	X		
9:00	9/20/2010		INFLUENT	RSW	X		X											

\* MATRIX TYPES:

Reported by Volume:  
CFW = Chlor(am)inated Finished Water  
FW = Other Finished Water

RGW = Raw Ground Water  
RSW = Raw Surface Water

CWW = Chlorinated Waste Water  
WW = Other Waste Water  
SW = Storm Water

Reported by Weight:  
SO = Soil  
SL = Sludge

SIGNATURE

PRINT NAME

COMPANY/TITLE

DATE

TIME

RELINQUISHED BY: Michele Brown  
RECEIVED BY: Joe Sanchez  
RELINQUISHED BY:  
RECEIVED BY:

Michele Brown

Veolia Water NA for Tronox LLC - Henderson Plant

9/20/2010

12:00 PM

MWL

9/21/10 1141

Group#
Date Sampled
Date Received

Linda Geddes Your MWHL Project Manager

Client Code TRONOX  
 Project Code CWA-RCRA Bottle Orders  
 Group Name Weekly Influent-Effluent long TAT  
 PO# / Job#

BO #: 22025

Created By: LXG

Order Date: 08/04/2010

Bottle Orders

**Sampler: please return  
 this paper with your samples**

Ship Sample Kits to  
 Veolia Water-Tronox LLC  
 Gate 1  
 560 West Lake Mead Pkwy  
 Henderson, NV 89015

Send Report to  
 Tronox LLC  
 PO Box 55  
 Henderson, NV 89009

Billing Address

Tronox LLC  
 PO Box 55  
 Henderson, NV 89009  
 Attn: Susan Crowley  
 Phone: 702-651-2234  
 Fax: 702-651-2310

Ship By:
08/24/2010

Attn: Wendy Prescott  
 Phone:  
 Fax:

Attn: Susan Crowley  
 Phone: 702-651-2234  
 Fax: 702-651-2310

UN DOT #

# of Samples	Tests	Qteline#	Bottles - Qty for each sample, type & preservative if any	UN DOT #
2			1 sterile 125ml poly Sterile filter + syringe and instructions	
1	@ALPHA		1 500ml poly 2ml 18%HNO3+125ml poly/no pres	
1	@R226EDD		1 1L poly RA_226_4ml HNO3 18%	
1	@R228EDD		1 1L poly 4ml HNO3 (18%)	
2	Apparent Color		1 500ml amber glass no preservative	
1	Chromium Total ICAP		1 250ml acid rinsed 1ml HNO3 (18%)	
1	Chromium Total ICAP, Iron Total ICAP		1 250ml acid rinsed 1ml HNO3 (18%)	
2	Hexavalent Chromium (Dissolved)		1 125ml poly 1ml NH4SO4/NH4OH buffer	
1	PH (H3=past HT not compliant)		1 125ml poly no preservative	
2	Total Kjeldahl Nitrogen, Total phosphorus as P		1 250ml poly 0.5ml H2SO4 (50%)	
1	Total Suspended Solids (TSS)		1 500ml poly TDS - no preservative	

Comments

Weekly influent effluent - long TAT tests
Use sample ID of EFFLUENT and INFLUENT
Effluent gets - alpha, 226/228, color, cr, hex chrome, Fe, PH, TKN, T-P, TSS
Influent gets - color, chormium, hex chrome, TKN, T P

Code Status Date Shipped Via Tracking # # of Coolers Prepared By

THIS MEMORANDUM is an acknowledgement that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

SHIPPER'S NUMBER: 144470

RECEIVED subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading.

**From: TRONOX LLC**

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said Carrier (the word Carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another Carrier on the route to said destination. It is mutually agreed, as to each Carrier of all or any said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said Bill of Lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the Shipper and accepted for himself and his assigns.

CARRIER <b>Federal Express</b>		Date <b>9/20/10</b>	FROM NO. STATION: STATE <b>Henderson, NV 89015</b>
MWH LABORATORIES 750 Royal Oaks Avenue, Suite #100 Monrovia, CA 91016-3629 Phone: 626-568-6400		Authorization <b>S. CROWLEY</b>	
FREIGHT CHARGES <input checked="" type="checkbox"/> Prepaid <input type="checkbox"/> Collect		FULL NAME OF SHIPPER <b>TRONOX LLC</b>	
N/A/R		CUSTOMER PO OR REQ'N NO.	CODE NO. WCN IS <b>10181</b>
SHIPPED FROM <b>Henderson, NV</b>		If it moves between two ports by water, the law requires that the Bill of Lading shall state whether it is Carrier's or Shippers weight.	
LINE NO.	DESCRIPTION AND CLASSIFICATION	STOCK NO.	TOTAL QUANTITY
	<b>Weekly Discreets—  (Influent – Effluent Weekly Grabs) Not Regulated  One - ice chest @ 10 lbs One - ice chest @ 29 lbs</b>		<b>2 COOLERS</b>
		Subject to Section 7 of Conditions of applicable Bill of Lading, if this shipment is to be delivered to the Consignee without recourse on the Consignor, the Consignor shall sign the following statement:  The Carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.  <b>TRONOX LLC</b>	
		The description and weight indicated on this Bill of Lading are correct. Subject to verification by the Governing Weighing and Inspection Bureau according to Agreement.	
TRUCK SHIPMENTS		FOR CHEMICAL EMERGENCY-SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC – DAY OR NIGHT 800-424-9300 483-7616 IN DISTRICT OF COLUMBIA 202-483-7616 FROM OUTSIDE THE CONTINENTAL US.	
PLACARDS OFFERED	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	PLACARDS ACCEPTED	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
NUMBER OF PACKAGES	GROSS WEIGHT	TARE WEIGHT	NET WEIGHT
		<b>0</b>	
<b>2</b>	TOTAL GROSS WEIGHT <b>39</b>	TOTAL TARE WEIGHT <b>0</b>	<b>39</b>
NOTE: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____		"Shippers imprint in lieu of stamp; not a part of Bill of Lading approved by the Interstate Commerce Commission"	
THIS IS TO CERTIFY THAT THE ABOVE-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.			
TRONOX LLC Shipper permanent post office address of shipper, PO Box 268859, Oklahoma City, OK 73126-8859	PER <b>Chuck Whitney</b>	AGENT	PER

From: Origin ID: LASA (702) 651-2200  
Tronox  
Tronox  
560 W. Lake Mead Parkway  
  
Henderson, NV 89015



J10301008090225

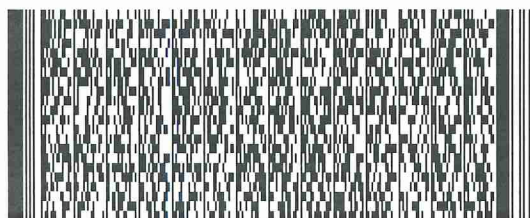
Ship Date: 20SEP10  
ActWgt: 29.0 LB  
CAD: 100845654/INET3090

Delivery Address Bar Code



Ref # MSO #144470  
Invoice #  
PO #  
Dept #

SHIP TO: (626) 568-6400 **BILL SENDER**  
**Attn: Sample Receiving**  
**Montgomery Watson Labs**  
**750 ROYAL OAKS DR STE 100**  
  
**MONROVIA, CA 91016**

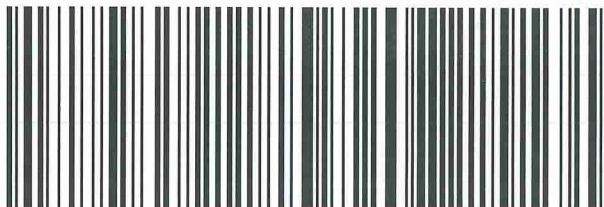


TRK# 7939 3062 4800  
0201

**TUE - 21 SEP A1**  
**PRIORITY OVERNIGHT**

91016  
CA-US  
BUR

**QZ WHPA**



50AG18292/2780

**After printing this label:**

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

**Warning:** Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$500, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

November 06, 2010

Ms. Susan Crowley  
Tronox  
PO Box 55  
Henderson, NV 89009

Subject: Case Narrative report 344161


Sample receipt: The samples arrived at MWH Laboratories, Monrovia, CA on September 21, 2010 with proper chain of custody. All containers were received without any visible signs of tampering or breakage at proper temperature. Samples are identified on the acknowledgement, which is part of the report package, along with the chain of custody.

Case Narrative:  
For the MWH Laboratories data the following issues were observed:

Other Observations:

Gross Alpha and Radium226/228 were submitted by Pace Labs. Please see their case narrative for any issues.

Sincerely,



Linda Geddes  
Project Manager



**MWH**

**LABORATORIES**

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Monrovia, California, 91016-3629  
Tel: 626 386 1100  
Fax: 626 386 1101  
1 800 566 LABS (1 800 566 5227)

Tronox LLC  
Susan Crowley  
PO Box 55  
Henderson, NV 89009

**Laboratory Comments**  
**Report: #344161**

---

**Client specific Comments**

I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Signature:  \_\_\_\_\_

**Group Comments**

Analytical results for Alpha by Co-precipitation, Radium 226 and Radium 228 are submitted by Pace Analytical Services, Greensburg, PA





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Laboratory  
Hits Report: 344161

**Tronox LLC**  
Susan Crowley  
PO Box 55  
Henderson, NV 89009

Samples Received on:  
09/21/2010

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
		<b>201009210231</b>	<b><u>Effluent</u></b>			
09/21/2010	17:21	Apparent Color	15	15	ACU	3
10/29/2010	22:16	Gross Alpha by Coprecipitation	13.7	15	pCi/L	3.2
10/06/2010	2:39	Iron Total ICAP	1.8	0.3	mg/L	0.02
09/22/2010	18:09	Kjeldahl Nitrogen	2.5		mg/L	0.2
09/22/2010	13:25	PH (H3=past HT not compliant)	6.8		Units	0.1
09/23/2010	20:16	Total phosphorus as P	0.75		mg/L	0.02
09/24/2010	16:16	Total Suspended Solids (TSS)	13		mg/L	10
		<b>201009210232</b>	<b><u>Influent</u></b>			
09/21/2010	17:20	Apparent Color	25	15	ACU	3
10/06/2010	2:44	Chromium Total ICAP	0.013		mg/L	0.01
09/21/2010	14:00	Hexavalent chromium(Dissolved)	2.0		ug/L	0.1
09/22/2010	18:10	Kjeldahl Nitrogen	6.4		mg/L	1
09/23/2010	20:17	Total phosphorus as P	0.11		mg/L	0.02



# MWH

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Laboratory Data  
Report: 344161

**Tronox LLC**  
Susan Crowley  
PO Box 55  
Henderson, NV 89009

Samples Received on:  
09/21/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MDL	MRL	SQL	Dilution
<b>Effluent (201009210231)</b>						<b>Sampled on 09/20/2010 0830</b>				
<b>EPA 903.1 - Radium 226 (Sub)</b>										
10/01/2010	13:34		(EPA 903.1)	Radium 226	<1.07	pCi/L		1.1	0.0000	1
10/01/2010	13:34		(EPA 903.1)	Radium 226 Minimal Detectable	1.07	pCi/L			0.0000	1
10/01/2010	13:34		(EPA 903.1)	Radium 226 Two Sigma Error	0.476	pCi/L			0.0000	1
<b>EPA 904.0 - Radium 228 (Sub)</b>										
10/12/2010	12:05		(EPA 904.0)	Radium 228	<0.824	pCi/L		0.82	0.0000	1
10/12/2010	12:05		(EPA 904.0)	Radium 228 Minimum Detectable	0.824	pCi/L			0.0000	1
10/12/2010	12:05		(EPA 904.0)	Radium 228 Two Sigma Error	0.431	pCi/L			0.0000	1
<b>SM 7110C - Gross Alpha by Co-precipitation (Sub)</b>										
10/29/2010	22:16		(SM 7110C)	Alpha, Min Detectable Activity	3.18	pCi/L			0.0000	1
10/29/2010	22:16		(SM 7110C)	Alpha, Two Sigma Error	2.57	pCi/L			0.0000	1
10/29/2010	22:16		(SM 7110C)	Gross Alpha by Coprecipitation	13.7	pCi/L		3.2	0.0000	1
<b>EPA 351.2 - Total Kjeldahl Nitrogen</b>										
09/22/2010	18:09	570169	(EPA 351.2)	Kjeldahl Nitrogen	2.5	mg/L	0.044	0.2	0.044	1
<b>EPA 200.7 - ICP Metals</b>										
10/06/2010	2::39	571619	(EPA 200.7)	Chromium Total ICAP	0.007 J	mg/L	0.00044	0.01	0.0004	1
10/06/2010	2::39	571619	(EPA 200.7)	Iron Total ICAP	1.8	mg/L	0.0050	0.02	0.0050	1
<b>EPA 218.6 - Hexavalent chromium(Dissolved)</b>										
09/21/2010	13:51	570011	(EPA 218.6)	Hexavalent chromium(Dissolved)	ND	ug/L	0.033	0.05	0.033	1
<b>SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)</b>										
09/23/2010	20:16	570676	(SM4500-PE/EP A 365.1)	Total phosphorus as P	0.75	mg/L	0.0084	0.02	0.0084	1
<b>SM4500-HB - PH (H3=past HT not compliant)</b>										
09/22/2010	13:25	570121	(SM4500-HB)	PH (H3=past HT not compliant)	6.8	Units	0.10	0.1	0.100	1
<b>SM 2540D - Total Suspended Solids (TSS)</b>										
09/24/2010	16:16	570424	(SM 2540D)	Total Suspended Solids (TSS)	13	mg/L	4.4	10	4.4	1
<b>SM 2120B - Apparent Color</b>										

Rounding on totals after summation.  
(c) - indicates calculated results

Sample Quantitation Limit (SQL) =  
MDL \* Dilution Factor



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**Laboratory Data**  
**Report: 344161**

**Tronox LLC**  
Susan Crowley  
PO Box 55  
Henderson, NV 89009

Samples Received on:  
09/21/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MDL	MRL	SQL	Dilution	
	09/21/2010 17:21	570511	(SM 2120B)	Apparent Color	15	ACU	3	3	3.0	1	
<b><u>Influent (201009210232)</u></b>							<b>Sampled on 09/20/2010 0900</b>				
<b>EPA 351.2 - Total Kjeldahl Nitrogen</b>											
	09/22/2010 18:10	570169	(EPA 351.2)	Kjeldahl Nitrogen	6.4	mg/L	0.044	1	0.22	5	
<b>EPA 200.7 - ICP Metals</b>											
	10/06/2010 2::44	571619	(EPA 200.7)	Chromium Total ICAP	0.013	mg/L	0.00044	0.01	0.0004	1	
<b>EPA 218.6 - Hexavalent chromium(Dissolved)</b>											
	09/21/2010 14:00	570011	(EPA 218.6)	Hexavalent chromium(Dissolved)	2.0	ug/L	0.033	0.1	0.066	2	
<b>SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)</b>											
	09/23/2010 20:17	570676	(SM4500-PE/EP A 365.1)	Total phosphorus as P	0.11	mg/L	0.0084	0.02	0.0084	1	
<b>SM 2120B - Apparent Color</b>											
	09/21/2010 17:20	570511	(SM 2120B)	Apparent Color	25	ACU	3	3	3.0	1	



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Laboratory  
QC Summary: 344161

Tronox LLC

---

**QC Ref # 570011 - Hexavalent chromium(Dissolved)**

201009210231 Effluent  
201009210232 Influent

**Analysis Date: 09/21/2010**

Analyzed by: TLH  
Analyzed by: TLH

**QC Ref # 570121 - PH (H3=past HT not compliant)**

201009210231 Effluent

**Analysis Date: 09/22/2010**

Analyzed by: SAR

**QC Ref # 570169 - Total Kjeldahl Nitrogen**

201009210231 Effluent  
201009210232 Influent

**Analysis Date: 09/22/2010**

Analyzed by: NJR  
Analyzed by: NJR

**QC Ref # 570424 - Total Suspended Solids (TSS)**

201009210231 Effluent

**Analysis Date: 09/24/2010**

Analyzed by: JRF

**QC Ref # 570511 - Apparent Color**

201009210231 Effluent  
201009210232 Influent

**Analysis Date: 09/21/2010**

Analyzed by: NEM  
Analyzed by: NEM

**QC Ref # 570676 - Total phosphorus as P (T-P)**

201009210231 Effluent  
201009210232 Influent

**Analysis Date: 09/23/2010**

Analyzed by: NJR  
Analyzed by: NJR

**QC Ref # 571619 - ICP Metals**

201009210231 Effluent  
201009210232 Influent

**Analysis Date: 10/06/2010**

Analyzed by: NINA  
Analyzed by: NINA



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Laboratory  
QC Report: 344161

Tronox LLC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
<b>QC Ref# 570011 - Hexavalent chromium(Dissolved) by EPA 218.6</b>					<b>Analysis Date: 09/21/2010</b>				
LCS1	Hexavalent chromium(Dissolved)		2.0	2.07	ug/L	103	(90-110)		
LCS2	Hexavalent chromium(Dissolved)		2.0	1.97	ug/L	98	(90-110)		
MBLK	Hexavalent chromium(Dissolved)			<0.1	ug/L				
MRL_CHK	Hexavalent chromium(Dissolved)		0.05	0.0483	ug/L	97	(50-150)		
MS_201009200193	Hexavalent chromium(Dissolved)	2.3	2.0	4.37	ug/L	102	(90-110)		
MSD_201009200193	Hexavalent chromium(Dissolved)	2.3	2.0	4.39	ug/L	103	(90-110)	20	0.98
<b>QC Ref# 570121 - PH (H3=past HT not compliant) by SM4500-HB</b>					<b>Analysis Date: 09/22/2010</b>				
DUP1_201009200039	PH (H3=past HT not compliant)	7.7		7.71	Units		(0-20)	20	0.13
DUP2_201009200210	PH (H3=past HT not compliant)	7.9		7.89	Units		(0-20)	20	0.0
LCS1	PH (H3=past HT not compliant)		6.0	6.00	Units	100	(98-102)		
LCS2	PH (H3=past HT not compliant)		6.0	6.00	Units	100	(98-102)	20	0.0
<b>QC Ref# 570169 - Total Kjeldahl Nitrogen by EPA 351.2</b>					<b>Analysis Date: 09/22/2010</b>				
LCS1	Kjeldahl Nitrogen		4.0	4.13	mg/L	103	(90-110)		
LCS2	Kjeldahl Nitrogen		4.0	4.25	mg/L	106	(90-110)	20	2.9
MBLK	Kjeldahl Nitrogen			<0.1	mg/L				
MRL_CHK	Kjeldahl Nitrogen		0.2	0.203	mg/L	102	(50-150)		
MS_201009170142	Kjeldahl Nitrogen	0.26	4.0	4.34	mg/L	102	(90-110)		
MSD_201009170142	Kjeldahl Nitrogen	0.26	4.0	4.39	mg/L	103	(90-110)	20	0.98
<b>QC Ref# 570424 - Total Suspended Solids (TSS) by SM 2540D</b>					<b>Analysis Date: 09/24/2010</b>				
DUP_201009210231	Total Suspended Solids (TSS)	13		12.0	mg/L		(0-10)	10	8.0
DUP_201009240070	Total Suspended Solids (TSS)	ND		1.00	mg/L		(0-10)	10	0.0
LCS1	Total Suspended Solids (TSS)		175	160	mg/L	91	(71-107)		
LCS2	Total Suspended Solids (TSS)		175	164	mg/L	94	(71-107)	20	2.5
MBLK	Total Suspended Solids (TSS)			<10	mg/L				
MRL_CHK	Total Suspended Solids (TSS)		10	12.0	mg/L	120	(50-150)		
<b>QC Ref# 570511 - Apparent Color by SM 2120B</b>					<b>Analysis Date: 09/21/2010</b>				
DUP_201009200232	Apparent Color	ND		ND	ACU		(0-20)		
DUP1_201009210231	Apparent Color	15		15.0	ACU		(0-20)	20	0.0
MBLK	Apparent Color			<3	ACU				
<b>QC Ref# 570676 - Total phosphorus as P (T-P) by SM4500-PE/EPA 365.1</b>					<b>Analysis Date: 09/23/2010</b>				
LCS1	Total phosphorus as P		0.4	0.374	mg/L	94	(90-110)		
LCS2	Total phosphorus as P		0.4	0.377	mg/L	94	(90-110)	20	0.80
MBLK	Total phosphorus as P			<0.02	mg/L				
MRL_CHK	Total phosphorus as P		0.02	0.0174	mg/L	87	(50-150)		

Spike recovery is already corrected for native results.

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.

Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates

are advisory only, unless otherwise specified in the method.

(S) Indicates surrogate compound.

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(I) Indicates internal standard compound.

RPD not calculated for LCS2 when different a concentration than LCS1 is used

RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level)



# MWH

## LABORATORIES

A Division of MWH Americas, Inc.

750 Royal Oak Dr., Suite 100  
Monrovia, California, 91016-3629  
Tel: 626 386 1100  
Fax: 626 386 1101  
1 800 566 LABS (1 800 566 5227)

Laboratory  
QC Report: 344161

Tronox LLC  
(continued)

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MS_201009180087	Total phosphorus as P	0.47	0.4	0.911	mg/L	110	(90-110)		
MS2_201009180088	Total phosphorus as P	0.47	0.4	0.902	mg/L	108	(90-110)		
MSD_201009180087	Total phosphorus as P	0.47	0.4	0.910	mg/L	110	(90-110)	20	0.0

### QC Ref# 571619 - ICP Metals by EPA 200.7

Analysis Date: 10/05/2010

LCS1	Chromium Total ICAP		1.0	1.02	mg/L	102	(85-115)		
LCS2	Chromium Total ICAP		1.0	1.03	mg/L	103	(85-115)	20	0.98
MBLK	Chromium Total ICAP			<0.01	mg/L				
MRL_CHK	Chromium Total ICAP		0.01	0.0104	mg/L	104	(50-150)		
MS_201009290611	Chromium Total ICAP	ND	1.0	1.02	mg/L	102	(70-130)		
MS2_201009290612	Chromium Total ICAP	ND	1.0	1.02	mg/L	102	(70-130)		
MSD_201009290611	Chromium Total ICAP	ND	1.0	1.03	mg/L	102	(70-130)	20	0.0
MSD2_201009290612	Chromium Total ICAP	ND	1.0	1.03	mg/L	103	(70-130)	20	0.98
LCS1	Iron Total ICAP		5.0	5.1	mg/L	102	(85-115)		
LCS2	Iron Total ICAP		5.0	5.21	mg/L	104	(85-115)	20	2.1
MBLK	Iron Total ICAP			<0.02	mg/L				
MRL_CHK	Iron Total ICAP		0.02	0.0216	mg/L	108	(50-150)		
MS_201009290611	Iron Total ICAP	0.22	5.0	5.45	mg/L	105	(70-130)		
MS2_201009290612	Iron Total ICAP	0.27	5.0	5.48	mg/L	104	(70-130)		
MSD_201009290611	Iron Total ICAP	0.22	5.0	5.45	mg/L	105	(70-130)	20	0.0
MSD2_201009290612	Iron Total ICAP	0.27	5.0	5.57	mg/L	106	(70-130)	20	1.9

Spike recovery is already corrected for native results.

Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.

Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates

are advisory only, unless otherwise specified in the method.

(S) Indicates surrogate compound.

14/39

(I) Indicates internal standard compound.

RPD not calculated for LCS2 when different a concentration than LCS1 is used

RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level)

November 03, 2010

Ms. Jaclyn L. Contreras  
MWH Americas, Inc.  
Royal Oaks Dr.  
Suite 100  
Monrovia, CA 910163629

RE: Project: PACE-PA 344161  
Pace Project No.: 3035915

Dear Ms. Contreras:

Enclosed are the analytical results for sample(s) received by the laboratory on October 21, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jacquelyn Collins

jacquelyn.collins@pacelabs.com  
Project Manager

Enclosures

cc: Mr. Aleksandar D. Tomovich, MWH Americas, Inc.

**REPORT OF LABORATORY ANALYSIS**

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## CERTIFICATIONS

Project: PACE-PA 344161  
Pace Project No.: 3035915

### Pennsylvania Certification IDs

1638 Roseytown Road Suites 2,3&4, Greensburg, PA 15601

Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California/NELAC Certification #: 04222CA  
Colorado Certification  
Connecticut Certification #: PH 0694  
Delaware Certification  
Florida/NELAC Certification #: E87683  
Guam/PADEP Certification  
Hawaii/PADEP Certification  
Idaho Certification  
Illinois/PADEP Certification  
Indiana/PADEP Certification  
Iowa Certification #: 391  
Kansas/NELAC Certification #: E-10358  
Kentucky Certification #: 90133  
Louisiana/NELAC Certification #: LA080002  
Louisiana/NELAC Certification #: 4086  
Maine Certification #: PA0091  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification  
Missouri Certification #: 235  
Montana Certification #: Cert 0082  
Nevada Certification  
New Hampshire/NELAC Certification #: 2976  
New Jersey/NELAC Certification #: PA 051  
New Mexico Certification  
New York/NELAC Certification #: 10888  
North Carolina Certification #: 42706  
Oregon/NELAC Certification #: PA200002  
Pennsylvania/NELAC Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
South Dakota Certification  
Tennessee Certification #: TN2867  
Texas/NELAC Certification #: T104704188-09 TX  
Utah/NELAC Certification #: ANTE  
Virgin Island/PADEP Certification  
Virginia Certification #: 00112  
Washington Certification #: C1941  
West Virginia Certification #: 143  
Wisconsin/PADEP Certification  
Wyoming Certification #: 8TMS-Q

## REPORT OF LABORATORY ANALYSIS

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Page 2 of 8

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### SAMPLE SUMMARY

Project: PACE-PA 344161

Pace Project No.: 3035915

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3035915001	201009210231	Drinking Water	09/20/10 08:30	10/21/10 10:00

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PACE-PA 344161

Pace Project No.: 3035915

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3035915001	201009210231	SM 7110C	JC2	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: PACE-PA 344161  
Pace Project No.: 3035915

---

**Method:** SM 7110C  
**Description:** 7110C Gross Alpha  
**Client:** MWH Laboratories  
**Date:** November 03, 2010

**General Information:**

1 sample was analyzed for SM 7110C. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PACE-PA 344161

Pace Project No.: 3035915

**Sample: 201009210231**      **Lab ID: 3035915001**      Collected: 09/20/10 08:30      Received: 10/21/10 10:00      Matrix: Drinking Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Gross Alpha	SM 7110C	13.7 ± 2.57 (3.18)	pCi/L	10/29/10 22:16	12587-46-1	

### QUALITY CONTROL DATA

Project: PACE-PA 344161  
Pace Project No.: 3035915

---

QC Batch: RADC/6587	Analysis Method: SM 7110C
QC Batch Method: SM 7110C	Analysis Description: 7110C Gross Alpha
Associated Lab Samples: 3035915001	

---

METHOD BLANK: 232669	Matrix: Water
Associated Lab Samples: 3035915001	

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Gross Alpha	-0.431 ± 0.687 (2.16)	pCi/L	10/29/10 05:58	

## QUALIFIERS

Project: PACE-PA 344161

Pace Project No.: 3035915

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty

(MDC) - Minimum Detectable Concentration

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

# Quality Control Sample Performance Assessment



Test: Gross Alpha  
 Analyst: JMC  
 Date: 10/29/2010  
 Worklist: 6587 DW  
 Matrix (DW, W, F, Solid):

Method Blank Assessment	
MB concentration:	-0.431
MB Counting Uncertainty:	0.682
MB MDC:	2.157
MB Numerical Performance Indicator:	-1.24
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment		
Count Date:	LCS	LSCD
Spike I.D.:	10/29/2010	10/29/2010
Spike Concentration (pCi/mL):	08-026	08-026
Volume Used (mL):	30.198	30.198
Aliquot Volume (L, g, F):	0.10	0.10
Target Conc. (pCi/L, g, F):	0.200	0.200
Uncertainty (Calculated):	15.099	15.099
Result (pCi/L, g, F):	0.947	0.947
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	16.788	17.261
Numerical Performance Indicator:	2.636	2.761
Percent Recovery:	1.18	1.45
Status vs Numerical Indicator:	N/A	114.32%
Status vs Recovery:	Pass	N/A
		Pass

Duplicate Sample Assessment	
Sample I.D.:	LCS
Duplicate Sample I.D.:	LSCD
Sample Result (pCi/L, g, F):	16.788
Sample Duplicate Result (pCi/L, g, F):	2.636
Sample Duplicate Result (pCi/L, g, F):	17.261
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	2.761
Are sample and/or duplicate results below MDC?	No
Duplicate Numerical Performance Indicator:	-0.243
Duplicate RPD:	2.76%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*Om 11/3/10*

Sample Matrix Spike Control Assessment	
Sample Collection Date:	9/10/2010
Sample I.D.:	3035061002
Sample MS I.D.:	3035061002MS
Sample MSD I.D.:	
Spike I.D.:	08-026
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	30.198
Spike Volume Used in MS (mL):	0.20
Spike Volume Used in MSD (mL):	
MS Aliquot (L, g, F):	0.050
MS Target Conc. (pCi/L, g, F):	120.793
MSD Aliquot (L, g, F):	
MSD Target Conc. (pCi/L, g, F):	
Spike uncertainty (calculated):	7.576
Sample Result Counting Uncertainty (pCi/L, g, F):	52.280
Sample Matrix Spike Result:	3.531
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	144.882
Sample Matrix Spike Duplicate Result:	15.833
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
MS Numerical Performance Indicator:	-3.086
MSD Numerical Performance Indicator:	
MS Percent Recovery:	76.66%
MSD Percent Recovery:	
MS Status vs Numerical Indicator:	N/A
MSD Status vs Numerical Indicator:	
MS Status vs Recovery:	Pass
MSD Status vs Recovery:	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	
Sample MS I.D.:	
Sample MSD I.D.:	
Sample Matrix Spike Result:	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
MS/MSD Duplicate RPD:	
MS/MSD Duplicate Status vs Numerical Indicator:	
MS/MSD Duplicate Status vs RPD:	



MWH Laboratories  
 A Division of MWH Americas, Inc.  
 750 Royal Oaks Drive Suite 100  
 Monrovia, CA 91016-3629  
 Ph (626) 386-1100 Fax (626) 386-1095

Ship To  
 1638 Roseytown Road, Suite 2  
 PACE Analytical Services, Inc.  
 Greensburg, PA 15601

724-850-5600 Fax 724-850-5601

MWH Project # **344161** Report Due: **11/04/2010** Sub PO# **99-06566**

USE MWH Lab  
 Sample ID for ID

JLS EPA 900.0 **20ALPHA** 201009210231 Effluent

Date **10/20/2010**

**Submittal Form & Purchase Order 99-06566**

\*REPORTING REQUIREMENTS: Do Not Combine Report with any other samples submitted under different MWH project numbers!  
 Report & Invoice must have the MWH Project Number **344161** Sub PO# **99-06566** and Job # **1000014**

Report all quality control data according to Method. Include dates analyzed, date extracted (if extracted) and Method reference on the report.  
 Results must have Complete data & QC with Approval Signature. See reverse side for List of Terms and Conditions

Reports: Jackie Contreras Sub-Contracting Administrator  
 EMAIL TO: mwhlabs-subcontractreports@mwhglobal.com  
 MWH Laboratories 750 Royal Oaks Dr. Ste. 100, Monrovia, CA 91016  
 Phone (626) 386-1165 Fax (626) 386-1122  
 Invoices to: MWH LABORATORIES  
 Accounts Payable PO BOX 6610, Broomfield, CO 80021

Provide in each Report the Specified State  
 Certification # & Exp Date for requested tests  
 + matrix.

Samples from the State of NEVADA

2 week Rush

3035915

Analysis Requested Date & Time Matrix PWS Systemcode PWSID  
 Gross Alpha (Sub) 09/20/10 0830 Water

001

Sample Control Date 10/20/10 Time 1400 MUST HAVE NOTIFICATION IF TEMP IS GREATER THAN 6 OR LESS THAN CELSIUS

Relinquished by: \_\_\_\_\_  
 Received by: S. Bayliss Date 10/21/10 Time 1000 An Acknowledgement of Receipt is requested to attn: Christine Lewis





**Sample Condition Upon Receipt**

SMB

Client Name: MWH

Project # 3035915

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 429408722718

Optional
Proj. Due Date:
Proj. Name:

Custody Seal on Cooler/Box Present:  yes  no    Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 3 5    Type of Ice: Wet Blue None  Samples on ice, cooling process has begun

Cooler Temperature NA    Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: <u>SMB 10/21/10</u>
---

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>2wk</u>
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis    Matrix: <u>DW</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13. <u>10/21/10 @ 1046</u>
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>SMB</u> Lot # of added preservative <u>RF10-0282-2</u>
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:**

Field Data Required?    Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: \_\_\_\_\_

*[Signature]*

Date: 10/21/10

Note: Whenever there is a discrepancy affecting North Carolina compliance sampling, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

October 14, 2010

Ms. Jaclyn L. Contreras  
MWH Americas, Inc.  
Royal Oaks Dr.  
Suite 100  
Monrovia, CA 910163629

RE: Project: PACE-PA 344161  
Pace Project No.: 3034331

Dear Ms. Contreras:

Enclosed are the analytical results for sample(s) received by the laboratory on September 23, 2010. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jacquelyn Collins

jacquelyn.collins@pacelabs.com  
Project Manager

Enclosures

cc: Mr. Aleksandar D. Tomovich, MWH Americas, Inc.

**REPORT OF LABORATORY ANALYSIS**

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## CERTIFICATIONS

Project: PACE-PA 344161

Pace Project No.: 3034331

### Pennsylvania Certification IDs

1638 Roseytown Road Suites 2,3&4, Greensburg, PA 15601

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California/NELAC Certification #: 04222CA

Colorado Certification

Connecticut Certification #: PH 0694

Delaware Certification

Florida/NELAC Certification #: E87683

Guam/PADEP Certification

Hawaii/PADEP Certification

Idaho Certification

Illinois/PADEP Certification

Indiana/PADEP Certification

Iowa Certification #: 391

Kansas/NELAC Certification #: E-10358

Kentucky Certification #: 90133

Louisiana/NELAC Certification #: LA080002

Louisiana/NELAC Certification #: 4086

Maine Certification #: PA0091

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification

Missouri Certification #: 235

Montana Certification #: Cert 0082

Nevada Certification

New Hampshire/NELAC Certification #: 2976

New Jersey/NELAC Certification #: PA 051

New Mexico Certification

New York/NELAC Certification #: 10888

North Carolina Certification #: 42706

Oregon/NELAC Certification #: PA200002

Pennsylvania/NELAC Certification #: 65-00282

Puerto Rico Certification #: PA01457

South Dakota Certification

Tennessee Certification #: TN2867

Texas/NELAC Certification #: T104704188-09 TX

Utah/NELAC Certification #: ANTE

Virgin Island/PADEP Certification

Virginia Certification #: 00112

Washington Certification #: C1941

West Virginia Certification #: 143

Wisconsin/PADEP Certification

Wyoming Certification #: 8TMS-Q

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: PACE-PA 344161

Pace Project No.: 3034331

Lab ID	Sample ID	Matrix	Date Collected	Date Received
3034331001	201009210231	Water	09/20/10 08:30	09/23/10 10:15

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PACE-PA 344161

Pace Project No.: 3034331

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
3034331001	201009210231	EPA 903.1	RMD	1	PASI-PA
		EPA 904.0	DJL	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: PACE-PA 344161

Pace Project No.: 3034331

---

**Method:** EPA 903.1

**Description:** 903.1 Radium 226

**Client:** MWH Laboratories

**Date:** October 14, 2010

**General Information:**

1 sample was analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: PACE-PA 344161

Pace Project No.: 3034331

---

**Method:** EPA 904.0

**Description:** 904.0 Radium 228

**Client:** MWH Laboratories

**Date:** October 14, 2010

**General Information:**

1 sample was analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PACE-PA 344161

Pace Project No.: 3034331

**Sample: 201009210231**      **Lab ID: 3034331001**      Collected: 09/20/10 08:30      Received: 09/23/10 10:15      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC)	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	<b>0.000 ± 0.476 (1.07)</b>	pCi/L	10/01/10 13:34	13982-63-3	
Radium-228	EPA 904.0	<b>0.634 ± 0.431 (0.824)</b>	pCi/L	10/12/10 12:05	15262-20-1	



### QUALITY CONTROL DATA

Project: PACE-PA 344161

Pace Project No.: 3034331

QC Batch: RADC/6241

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Associated Lab Samples: 3034331001

METHOD BLANK: 218651

Matrix: Water

Associated Lab Samples: 3034331001

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.305 (0.723)	pCi/L	10/01/10 10:41	

### QUALITY CONTROL DATA

Project: PACE-PA 344161

Pace Project No.: 3034331

QC Batch: RADC/6246

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Associated Lab Samples: 3034331001

METHOD BLANK: 218656

Matrix: Water

Associated Lab Samples: 3034331001

Parameter	Act ± Unc (MDC)	Units	Analyzed	Qualifiers
Radium-228	0.363 ± 0.311 (0.619)	pCi/L	10/12/10 12:03	

## QUALIFIERS

Project: PACE-PA 344161

Pace Project No.: 3034331

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty

(MDC) - Minimum Detectable Concentration

Pace Analytical is NELAP accredited. Contact your Pace PM for the current list of accredited analytes.

### LABORATORIES

PASI-PA Pace Analytical Services - Greensburg



MWH Laboratories  
 A Division of MWH Americas, Inc.  
 750 Royal Oaks Drive Suite 100  
 Monrovia, CA 91016-3629  
 Ph (626) 386-1100 Fax (626) 386-1095

Ship To  
 1638 Roseytown Road, Suite 2  
 FACE Analytical Services, Inc.  
 Greensburg, PA 15601

724-850-5600 Fax 724-850-5601

MWH Project # **344161** Report Due: **10/14/2010** Sub PO# **99-06273**

Use MWH Lab Sample # (7/11/10)

JLS Client Sample ID for reference only  
 EPA 903.1 80R226EDD 201009210231 Effluent  
 EPA 904.0 80R228EDD 201009210231 Effluent

7001

Date 9/22/2010

Submittal Form & Purchase Order 99-06273

\*REPORTING REQUIREMENTS: Do Not Combine Report with any other samples submitted under different MWH project numbers!  
 Report & Invoice must have the MWH Project Number 344161 Sub PC# 99-06273 and Job # 1000014  
 Report all quality control data according to Method. Include dates analyzed, date extracted (if extracted) and Method reference on the report.  
 Results must have Complete data & QC with Approval Signature. See reverse side for List of Terms and Conditions

Reports: Jackie Contreras Sub-Contracting Administrator  
 EMAIL TO: mwhlabs-subcontractreports@mwhglobal.com  
 MWH Laboratories 750 Royal Oaks Dr. Ste. 100, Monrovia, CA 91016  
 Phone (626) 386-1165 Fax (626) 386-1122  
 Invoices to: MWH LABORATORIES  
 Accounts Payable PO BOX 6610, Broomfield, CO 80021

Provide in each Report the Specified State Certification # & Exp Date for requested tests + matrix.  
 Samples from the State of NEVADA

Sample Date & Time Matrix PWS Systemcode PWSID  
 09/20/10 0830 Water  
 09/20/10 0830 Water

Analysis Requested  
 Radium 226 (Sub)  
 Radium 228 (Sub)

Relinquished by: *Jackie Contreras*  
 Received by: *Christine Lewis*

Sample Control Date 9/22/10 Time 1400 MUST HAVE NOTIFICATION IF TEMP IS GREATER THAN 6 OR LESS THAN CELSIUS  
 Date 9/23/10 Time 1015 An Acknowledgement of Receipt is requested to attn: Christine Lewis

MB

**Sample Condition Upon Receipt**



Client Name: MWH Project # 3031331

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: N204 2871 9814

Optional
Proj. Due Date:
Proj. Name:

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used 3 5 Type of Ice: Wet Blue None  Samples on ice, cooling process has begun

Cooler Temperature N/A Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: <u>MB 9/23/10</u>
---

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>NT</u>		
All containers needing preservation have been checked.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed <u>MB</u> Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: \_\_\_\_\_ Field Data Required? Y / N

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Project Manager Review: [Signature] Date: 9/23/10

Note: Whenever there is a discrepancy affecting North Carolina compliance sampling, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-226  
Analyst: RMD  
Date: 9/24/2010  
Worklist: 6241  
Matrix: DW

Method Blank Assessment	
MB Sample ID	218651
MB Concentration:	0.000
MB Counting Uncertainty:	0.305
MB MDC:	0.723
MB Numerical Performance Indicator:	0.00
MB Status vs Numerical Indicator:	N/A
MB Status vs MDC:	Pass

Laboratory Control Sample Assessment	
LCSD (Y or N)?	Y
Count Date:	10/1/2010
Sample I.D.:	LCS6241
Spike Concentration (pCi/mL):	09-036
Volume Used (mL):	59.750
Aliquot Volume (L, g, F):	0.10
Target Conc. (pCi/L, g, F):	0.500
Uncertainty (Calculated):	11.950
Result (pCi/L, g, F):	0.287
LCSD Counting Uncertainty (pCi/L, g, F):	9.640
Numerical Performance Indicator:	-1.826
Percent Recovery:	82.33%
Status vs Numerical Indicator:	N/A
Status vs Recovery:	Pass

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Duplicate Sample Assessment	
Sample I.D.:	LCS6241
Duplicate Sample I.D.:	LCS6241
Sample Result (pCi/L, g, F):	9.839
Sample Duplicate Result (pCi/L, g, F):	1.777
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	9.640
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.826
Are sample and/or duplicate results below MDC?	NO
Duplicate Numerical Performance Indicator:	0.152
Duplicate RPD:	2.04%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass

## Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*On 10/14/10*

Sample Matrix Spike Control Assessment	
Sample Collection Date:	9/13/2010
Sample I.D.:	3034296002
Sample MS I.D.:	3034296002MS
Sample MSD I.D.:	
Spike I.D.:	09-036
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	59.752
Spike Volume Used in MS (mL):	0.20
Spike Volume Used in MSD (mL):	
MS Aliquot (L, g, F):	0.500
MS Target Conc. (pCi/L, g, F):	23.901
MSD Aliquot (L, g, F):	
MSD Target Conc. (pCi/L, g, F):	0.574
Spike uncertainty (calculated):	2.250
Sample Result:	0.880
Sample Result Counting Uncertainty (pCi/L, g, F):	26.624
Sample Matrix Spike Result:	3.058
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.287
MS Numerical Performance Indicator:	101.98%
MSD Numerical Performance Indicator:	
MS Percent Recovery:	N/A
MSD Percent Recovery:	
MS Status vs Numerical Indicator:	Pass
MSD Status vs Numerical Indicator:	
MS Status vs Recovery:	
MSD Status vs Recovery:	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	
Sample MS I.D.:	
Sample MSD I.D.:	
Sample Matrix Spike Result:	
Sample Matrix Spike Duplicate Result:	
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):	
Duplicate Numerical Performance Indicator:	
MS/MSD Duplicate RPD:	
MS/MSD Duplicate Status vs Numerical Indicator:	
MS/MSD Duplicate Status vs RPD:	

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-228  
 Analyst: DJL  
 Date: 9/14/2010  
 Worklist: 6246  
 Matrix: DW

**Method Blank Assessment**

MB Sample ID: 218656  
 MB concentration: 0.363  
 MB Counting Uncertainty: 0.303  
 MB MDC: 0.619  
 MB Numerical Performance Indicator: 2.35  
 MB Status vs Numerical Indicator: N/A  
 MB Status vs. MDC: Pass

**Laboratory Control Sample Assessment**

LCSD (Y or N)?	Y
LCSD6246	10/12/2010
Count Date:	09-037
Spike I.D.:	78.973
Spike Concentration (pCi/mL):	0.10
Volume Used (mL):	0.800
Aliquot Volume (L, g, F):	9.872
Target Conc. (pCi/L, g, F):	0.306
Uncertainty (Calculated):	11.603
Result (pCi/L, g, F):	0.994
LCSD/LCSD Counting Uncertainty (pCi/L, g, F):	3.26
Numerical Performance Indicator:	117.53%
Percent Recovery:	N/A
Status vs Numerical Indicator:	Pass
Status vs Recovery:	Pass

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**Duplicate Sample Assessment**

Sample I.D.: LCSD6246  
 Duplicate Sample I.D.: LCSD6246  
 Sample Result (pCi/L, g, F): 8.323  
 Sample Duplicate Result (pCi/L, g, F): 0.736  
 Sample Duplicate Counting Uncertainty (pCi/L, g, F): 11.603  
 Sample Duplicate Result Counting Uncertainty (pCi/L, g, F): 0.994  
 Are sample and/or duplicate results below MDC? NO  
 Duplicate Numerical Performance Indicator: -5.197  
 Duplicate RPD: 32.91%  
 Duplicate Status vs Numerical Indicator: N/A  
 Duplicate Status vs RPD: Pass

# Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*On 10/14/10*

**Sample Matrix Spike Control Assessment**

Sample Collection Date: 9/21/2010  
 Sample I.D.: 3034332001  
 Sample MS I.D.: 3034332001MS  
 Sample MSD I.D.: 09-037  
 MS/MSD Decay Corrected Spike Concentration (pCi/mL): 79.525  
 Spike Volume Used in MS (mL): 0.20  
 MS Aliquot (L, g, F): 0.800  
 MS Target Conc. (pCi/L, g, F): 19.881  
 MSD Aliquot (L, g, F): 0.616  
 MSD Target Conc. (pCi/L, g, F): 1.182  
 Spike uncertainty (calculated): 0.391  
 Sample Result Counting Uncertainty (pCi/L, g, F): 21.871  
 Sample Matrix Spike Result: 1.296  
 Matrix Spike Result Counting Uncertainty (pCi/L, g, F): 1.063  
 Sample Matrix Spike Duplicate Result: 104.06%  
 MS Numerical Performance Indicator: N/A  
 MS Percent Recovery: Pass  
 MS Status vs Numerical Indicator: Pass  
 MS Status vs Recovery: Pass

**Matrix Spike/Matrix Spike Duplicate Sample Assessment**

Sample I.D.:  
 Sample MS I.D.:  
 Sample MSD I.D.:  
 Matrix Spike Result Counting Uncertainty (pCi/L, g, F):  
 Sample Matrix Spike Duplicate Result:  
 Sample Matrix Spike Duplicate Counting Uncertainty (pCi/L, g, F):  
 Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):  
 Duplicate Numerical Performance Indicator:  
 MS/MSD Duplicate RPD:  
 MS/MSD Duplicate Status vs Numerical Indicator:  
 MS/MSD Duplicate Status vs RPD: