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Level IV Data Package

MWH Group 212147

Method: 160.1 TDS

Sample No.:

2708020317
2708020318
2708020319
2708020320
2708020321
2708020322
2708020323
2708020324
2708020325
2708020326
2708020327
2708020328
2708020329
2708020330
2708020331
2708020342
2708020343
2708020344

MWH Laboratories
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

TOTAL DISSOLVED SOLIDS (TDS) MW SOP REVISION 6
SM2540C

1600

Analysis start date: 08/06/07 End: 08/07/07
Analyst: YvcHc
Reviewed By: ORV 8/6/07 VR 8/10/07
LIMS Check By: JM 8/14/07
Was QC Criteria Met: (Y) N
Was QIR Needed: Y (N)

Oven Temp (180°±2°C): Start 180 C End: 180 C
Oven Mfr: "Precision STM135" Ser no.: "11AW-6"

Dry Time (hrs): ≥ 3

Standards:

		True Value	Exp. Date	% Rec.
NaCl MW#	YX807066H-1	175 mg/L	08/12/04/07	85-115
Na2SO4 MW#	YX807066B-1	700 mg/L	12/08/07	85-115
NaCl MW#	YX807062I-1	10 mg/L	12/21/07	50-150

Run #	Sample ID	Client Name	Date Collected	B Sample Volume (ml)	A Crucible Number	Crucible Weight (g)	C Crucible + residue 1st wt. (g)	Crucible + residue 2nd wt. (g)	Residue B-A (g)	TDS (mg/L)	pH	EC	EC*0.6	2nd Weighing/Comments
Blk	Blank	N/A	N/A	50	V3	55.6653	55.6650	55.6654	0.0003	<6 (ND)	N/A	N/A	N/A	
MRL	MRL 1 - 10 mg/L	N/A	N/A	100	S7	69.9701	69.9710	69.9713	0.0009	9	N/A	N/A	N/A	90%
MRL	MRL 1 - 10 mg/L DUP	N/A	N/A	100	X	68.2431	68.2438	68.2440	0.0008	8	N/A	N/A	N/A	80%
LCS	LCS 1 - 175 mg/L	N/A	N/A	50	E4	50.7386	50.7474	50.7473	0.0088	176	N/A	N/A	N/A	101%
LCS	LCS 2 - 700 mg/L	N/A	N/A	50	V8	53.3486	53.3833	53.3836	0.0347	694	N/A	N/A	N/A	99%
1	27080203 17	Kevin Mcgee	08/01/07	50	EV	66.3152	66.3459	66.4149	0.0997	1994	7	2440	1464	66.4129/66.4145
Dup	317			↓	LP	69.6705	69.7712	69.7711	0.1007	2014		2440	1464	1.0% RPD
2	318				ME	69.1407	69.3308	69.3293	0.1865	3730		4620	2772	69.3272/69.3272
3	319			10	4T	50.5973	50.6967	50.6933	0.0933	9330		9210	5526	50.6906/50.6896
4	320			5	005	67.2610	67.3348	67.3336	0.0704	14080		13730	8238	67.3314/67.3310
5	321			↓	B2	70.2797	70.3446	70.3427	0.0595	11900		10880	6528	70.3392/70.3393
6	322			25	V2	71.0584	71.2445	71.2436	0.1819	7276		7340	4404	71.2403/71.2407
7	323				DIM	50.4796	50.6002	50.5997	0.1206	4824		6510	3906	
(8)	324				638	49.9103	50.1034	50.1052	0.1021	7284		7500	4500	
9	325				CM	70.6927	70.8554	70.8545	0.1567	6348		7680	4608	50.0924/50.0921
10	326				G1	73.0274	73.1684	73.1673	0.1372	5500		6130	3678	70.8514/70.8510
11	327				T	50.7370	50.8807	50.8798	0.1413	5652		6340	3804	73.1649/73.1651
Dup	327				Z2	71.7031	71.8476	71.8464	0.1410	5640		6340	3804	50.8783/50.8783
12	328				TR	52.3564	52.4168	52.4129	0.1565	6260		6750	4050	71.8441/71.8439
13	329			↓	WX	50.4470	50.5414	50.5387	0.0917	9170		9290	5574	52.4128
14	330			10	Z3	64.7518	64.8341	64.8325	0.0779	7790		8160	4896	50.5383
15	331			↓	7X	56.5316	56.6023	56.5988	0.0672	13440		13020	7812	64.8297/64.8302
16	332			5	Y5	50.6920	50.7670	50.7646	0.0726	14520		12440	7464	56.5984
17	344			5	K5	68.2900	68.3708	68.3710	0.0808	8080		9830	5898	50.7625/50.7648
18	097	Blank Cans		10	MA	71.9129	71.9262	71.9266	0.0133	266		390	234	
19	27080100449	SAC Tech		50	EB	65.6130	65.6414	65.6418	0.0284	568		862	517	
20	373	[illegible]		↓	H7	53.6030	53.6373	53.6372	0.0343	686	↓	983	590	

HT= 50.6902

MRL: 10 mg/L
EC*(0.55 - 0.7): expected TDS value
Min/Max Residue: 0.5mg - 200 mg

Holding time: 7 day from sampling date

Drying Efficiency: % change = |Init - Fin| * 100 / Init
< 4% or 0.5 mg

Recoveries:
Blank - < 0.5mg
MRL - 50%-150%
LCS - 80%-114%
Duplicates - <10% RPD

Calculation:
TDS (mg/L) = |C-A| / B * 1,000,000

%RPD = |S1-S2| / (S1+S2)/2 * 100

A = Crucible wt (g)
B = Sample Vol (ml)
C = Crucible+residue (g)

S1 = TDS of sample
S2 = TDS of duplicate

*TDS > EC. Values accepted based on historical data. Confirmed w/PM. (JS) 8 Aug 07

totdissol.xls

(6)

MWH Laboratories
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

TOTAL DISSOLVED SOLIDS (TDS) MW SOP REVISION 6
SM2540C

Analysis start date: 08/08/07 1200 End: 08/09/07
Analyst: YxcHc
Reviewed By: [illegible] 8/13/07
LIMS Check By: [illegible] 8/16/07
Was QC Criteria Met: (Y) N
Was QIR Needed: (Y) N

Oven Temp (180°±2°C): Start 180 C End: 180 C
Oven Mfr: "Precision STM135" Ser no.: "11AW-6"

Dry Time (hrs): 73

Standards:

	True Value	Exp. Date	% Rec.
NaCl MW# YX807060A-1	175 mg/L	12/4/07	85-115
Na2SO4 MW# YX807060B-1	700 mg/L	11/8/07	85-115
NaCl MW# YX8070621-1	10 mg/L	12/21/07	50-150

Run #	Sample ID	Client Name	Date Collected	B Sample Volume (ml)	Crucible Number	A Crucible Weight (g)	C Crucible + residue 1st wt. (g)	Crucible + residue 2nd wt. (g)	Residue B-A (g)	TDS (mg/L)	pH	EC	EC*0.6	2nd Weighing/Comments
Blk	Blank	N/A	N/A	50	FF	50.4470	50.4468	50.4468	-0.0002	-4 (ND)	N/A	N/A	N/A	
MRL	MRL 1 - 10 mg/L	N/A	N/A	100	B3	76.1742	76.1755	76.1755	0.0013	13	N/A	N/A	N/A	
MRL	MRL 1 - 10 mg/L DUP	N/A	N/A	100	MT	66.9019	66.9029	66.9027	0.0008	8	N/A	N/A	N/A	33%
LCS	LCS 1 - 175 mg/L	N/A	N/A	50	KC	52.5539	52.5625	52.5627	0.0086	172	N/A	N/A	N/A	80%
LCS	LCS 2 - 700 mg/L	N/A	N/A	50	IN	67.6031	67.6382	67.6384	0.0351	702	N/A	N/A	N/A	98%
1	2708060279	[redacted]	07/24/07	2	IL	68.0849	68.1549	68.1535	0.0686	34300	7	49450	29670	H3 68.1530 0.3% RPD
Dup	279				DY	71.4978	71.5688	71.5666	0.0688	34400	7	49450	29670	H3 71.5668
2	280				SX	68.2730	68.3460	68.3454	0.0724	36200	7	50060	30036	H3 68.3452
3	281			50	B2	65.9985	66.0107	66.0105	0.0122	244	6	465	279	H3
4	282		07/27/07	2	AG	68.8200	68.8907	66.8883	0.0683	34150	7	49090	29454	H3 68.8879
5	283			2	X1	76.3626	76.4366	76.4328	0.0710	35500	7	50200	30120	H3 76.4336 / 76.4336
6	284			50	171	74.2710	74.2823	74.2822	0.0113	226	6	438	263	H3
7	276	[redacted]	07/31/07		L7	67.9946	68.0060	68.0061	0.0114	228	7	389	233	H1
8	2708020099	[redacted]	08/01/07		4A	67.1959	67.2040	67.2043	0.0081	162	7	257	154	
9	101				R11	72.8988	72.9118	72.9119	0.0130	260	7	375	225	
10	094				NY	67.0287	67.0400	67.0396	0.0113	226	7	322	193	
11	095				PE	67.7882	67.8033	67.8032	0.0151	302	7	408	245	
Dup	096				114	68.3193	68.3377	68.3376	0.0184	368	7	468	281	2.2% RPD
12	096				TR	69.4549	69.4729	69.4732	0.0180	360	7	468	281	
13	036				F17	73.5159	73.5872	73.5868	0.0713	1426	7	2117	1270	
14	342	Kurmelyn MP		10	1C	63.8195	63.8984	63.8989	0.0789	7890	7	8970	5382	
15	343			100	C3	73.4973	73.4999	73.4994	0.0026	26	7	5841	25	
16	2708030224		08/02/07	50	X2	71.6293	71.9596	71.7576	0.1303	2606	7	3211	1927	71.7591
17	225			25	AS	69.1594	69.3117	69.3105	0.1511	6044	7	7918	4751	69.8107
18	226			25	RP	69.2887	69.3981	69.3862	0.0957	3828	7	4477	2686	69.3844 / 69.3842
19	2708010320	[redacted]	08/01/07	50	KF1	66.1908	66.2252	66.2253	0.0344	688	7	967	580	
20	397			50	29	70.3283	70.3618	70.3620	0.0335	670	7	985	591	

MRL: 10 mg/L
EC*(0.55 - 0.7): expected TDS value
Min/Max Residue: 0.5mg - 200 mg

Holding time: 7 day from sampling date

Drying Efficiency: < 4% or 0.5 mg
% change = |Init - Fin| * 100 / Init

Recoveries:
Blank - < 0.5mg
MRL - 50%-150%
LCS - 80%-114%
Duplicates - <10% RPD

LT 8 Aug 07

Calculation:
TDS (mg/L) = [C-A] / B * 1,000,000

%RPD = |S1-S2| * 100 / (S1+S2)/2

A = Crucible wt (g)
B = Sample Vol (ml)
C = Crucible+residue (g)

S1 = TDS of sample
S2 = TDS of duplicate

Standard Preparation Worksheet & Certificate of Analysis

Reagent Preparation Documentation

Reagent: TDS MRL 10 ppm Solution
Date Received/Prepped: 05/31/07 / 06/21/07 / 06/26/07 / 06/29/07 / ~~06/04/07~~ 07/12/07
Date Expired: 11/31/07 / 12/21/07 / 12/26/07 / ~~12/29/07~~ 12/29/07 / 01/06/08 / 01/12/08
Manufacturer: —
Storage Condition: Room Temperature

MW #: YxP070531-1
By: ~~YP~~ YxP
Matrix: AQ
Amount: 1 L
Lot #: —

Component	Comment	Standard	Concentration
500ppm solution	20 mL and dilute to 1L using DI	YxP070531-2	
500ppm Solution	20 mL and dilute to 1L using DI	YxP070531-2	
500ppm Solution	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Solution	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Solution	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI	YP ~~YP~~ YxP070531-2	

Comment:

Reagent: TDS 500 ppm Intermediate Solution
Date Received/Prepped: 05/31/07 / / / / /
Date Expired: 11/31/07 / / / / /
Manufacturer: —
Storage Condition:

MW #: YxP070531-2
By: YxP
Matrix: AQ
Amount: 1 L
Lot #: —

Component	Comment	Standard	Concentration
10000 ppm NaCl (CPI)	Take 50 mL and dilute to 1 L using DI	R201617	

Comment:

Reagent: TDS 175 ppm
Date Received/Prepped: 06/08/07 / 06/22/07 / 07/11/07 / 07/23/07 / 08/02/07 / 09/01/07
Date Expired: 11/03/07 / 12/22/07 / ~~01/11/08~~ / 01/23/08 / 02/02/08 / 03/01/07
Manufacturer: —
Storage Condition: Room TEMP

MW #: YxP070603-1 ~~YxP070603~~ YP 06/08/07
By: YxP
Matrix: AQ
Amount: 1L
Lot #: —

Component	Comment	Standard	Concentration
10,000 ppm NaCl(CPI)	Take 17.5 mL and dilute to 1 L using DI	R201617	
10,000 ppm NaCl	Take 17.5 mL and dilute to 1L using DI	R201617	
10,000 ppm NaCl	Take 17.5 mL and dilute to 1L using DI	R201617	
10,000 ppm NaCl	Take 17.5 mL and dilute to 1L using DI	R201617	
10,000 ppm NaCl	Take 17.5 mL and dilute to 1L using DI	R201617	
10,000 ppm NaCl	Take 17.5 mL and dilute to 1 L using DI	R201617	

Comment:

Reagent Preparation Documentation

Reagent: TDS MRL 10 ppm Solution
Date Received/Prepped: 06/06/07 /07/17/07 /07/19/07 /07/25/07 /07/30/07 /08/01/07
Date Expired: 11/06/07 /11/17/07 /01/19/07 /01/25/07 /01/30/07 /02/01/08
Manufacturer: —
Storage Condition: Room Temp.

MW #: YxP070621-1 ~~YxP070606-1~~ YP
By: YxP
Matrix: AQ
Amount: 1 L
Lot #: —

Component	Comment	Standard	Concentration
500 ppm Sol'n	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1 L using DI	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1 L using DI	YxP070531-2	

Comment:

Reagent: TDS 700 ppm
Date Received/Prepped: 04/06/07 /06/26/07 /07/16/07 /07/31/07 /09/01/07 /9/18/07
Date Expired: 11/04/07 /12/26/07 /01/16/07 /01/31/07 /03/01/08 /03/18/07
Manufacturer: —
Storage Condition: Room Temp

MW #: YxP070608-1
By: YxP
Matrix: AQ
Amount: 1 L
Lot #: —

Component	Comment	Standard	Concentration
Sodium Sulfate	Weighed 0.7 g and diluted with DI to 1L	46282709	
Sodium Sulfate	Weighed 0.7013g and diluted with DI to 1L	46282709	
Sodium Sulfate	Weighed 0.7008 g and diluted with DI to 1L	46282709	
Sodium Sulfate	Weighed 0.7006g and diluted with DI to 1L	46282709	
Sodium Sulfate	Weigh 0.7003 g and diluted with DI to 1L	46282709	
Sodium Sulfate	Weigh 0.7017 g and diluted w/ DI to 1L	46282709	

Comment:

Reagent: TDS MRL 10 ppm Solution
Date Received/Prepped: 06/12/07 /08/06/07 /08/09/07 /08/23/07 /8/28/07 /08/31/07
Date Expired: 11/12/07 /02/06/07 /02/09/07 /02/23/07 /02/28/07 /08/31/07
Manufacturer: —
Storage Condition: Room Temp

MW #: YxP070621-1 ~~YxP070612-1~~ YP
By: YxP
Matrix: AQ
Amount: 1 L
Lot #: —

Component	Comment	Standard	Concentration
500 ppm Sol'n	20 mL and dilute to 1L using DI water	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI water	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI water	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1L using DI H2O	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1 L using DI H2O	YxP070531-2	
500 ppm Sol'n	20 mL and dilute to 1 L using DI H2O	YxP070531-2	

Comment:

R201617 Rec'd 4-24-07

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Innovative Solutions in Analytical Science and Technology

Expiry: 10/23/2008

Certificate of Analysis

Part Number: **4400-051014RH02**
Lot Number: **07D196**
Shelf Life: **18 months**

MWH
Custom NaCl
H2O

Concentrations in ug/mL ± 0.5%

NaCl	10000

This standard solution was prepared using high-purity starting materials, high-purity acid (if required) and 18-megaohm de-ionized water. The starting materials were weighed to five significant figures and diluted in volumetric glassware calibrated to five significant figures.

Starting materials were analyzed at 1000µg/mL by ICP-MS for trace impurities. The standard solution concentrations were certified instrumentally against the National Institute of Standards and Technology's SRM 3100 series, NIST approved second source and/or gravimetrically.

Accuracy and stability are guaranteed to within plus or minus 0.5% of the certified value for the stated shelf life from the date of shipment. The solution should be kept tightly capped and stored under normal laboratory conditions. See attached MSDS for proper handling information.

For questions or comments please call 1-800-878-7654 in the USA, +31 20 638 05 97 in Europe or visit our web-site at www.cpiinternational.com.