UIC- I - __008__

WDW-1

ANNUAL REPORTS

Chavez, Carl J, EMNRD

From: Schultz, Michele <Michele.Schultz@HollyFrontier.com>
Sent: Thursday, May 21, 2015 3:33 PM
To: Chavez, Carl J, EMNRD
Subject: Navajo 2014 Annual Injection Wells Report
Attachments: 2015-05-22 Subm' 2014 Annual Inj Rpt.pdf

Carl – The Original of this report was mailed to you today, and I thought you would like an electronic copy as well. Are there others in your organization who should receive an electronic copy? If so, please advise me.

Thanks!

Micki Schultz, P.E., CHMM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)
micki.schultz@hollyfrontier.com

HOLLYFRONTIER.

May 22, 2015

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt
7014 3490 0000 6858 7538

RE: 2014 Annual Class I Non-Hazardous Waste Injection Wells (WDW-1, WDW-2 and WDW-3) Report from Navajo Refining Company, L.L.C.

Dear Mr. Chavez,

Enclosed, please find the annual injection well report for fluids that the Navajo Refining Company, L.L.C. (permittee) injected into wells WDW-1, WDW-2 and WDW-3 during 2014 as required under permits UICI-008-1, UICI-008-2 and UICI-008-3, Permit Condition 2.I.2, Annual Reports, for all three wells. The API numbers for the wells are: 30-015-27592 (WDW-1), 30-015-20894 (WDW-2) and 30-015-26575 (WDW-3).

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions, please call me at 575-748-3311.

Respectfully,

Robert O'Brien
Vice-President & Refinery Manager
Navajo Refining Company L.L.C.

Electronic cc (w/enc.): S. Denton, R Combs, M Schultz
Environmental File: Injection Wells/Reports Annual/2014/ 2015-05-22 2014 Annual Inj Rpt letter

Annual Report Requirements per WDW-1, WDW-2, and WDW-3 Permit Condition 2.I.2:

Summary of WDW-1, WDW-2 and WDW-3 operations for 2014

The wells and their associated mechanical systems did not have any remedial or major work performed during 2014.

Monthly injection/disposal volume with cumulative totals

Quarterly flow, pressure and volume reports have been submitted to OCD and are resubmitted as Attachment A

Maximum and average injection pressures

Quarterly flow, pressure and volume reports have been submitted to OCD and are resubmitted as Attachment B. These reports include maximum, minimum and average pressures.

Quarterly chemical analyses with QA/QC, data summary tables

Quarterly chemical analyses, including QA/QC and summary tables, were submitted with the four 2014 quarterly reports, and are resubmitted as Attachment C. The three wells share a common transmission pipe up from the refinery wastewater treatment facility to the wellhead area where the flow is divided among the three wells. The single sample point for all three wells is on the main pipeline.

Copies of any mechanical integrity test charts

No mechanical integrity tests (MITs) were done during 2014. Previously, MITs were performed in the fall of 2012.

Copies of fall-off test charts

Fall-off Tests were performed during the fall of 2014 on all three wells. The test charts are included as Attachment D.

Brief explanation describing deviations from the normal injection operations

There were no deviations from normal injection operations, which include normal periodic maintenance on the three wells' mechanical equipment.

Results of any leaks and spill reports (Include C-141 reports)

There were no leaks or spills of effluent and no C-141 reports filed for any of the wells during 2014.

An Area of Review (AOR) annual update summary

27 new wells are located within one mile of WDW-1, WDW-2 and WDW-3. Attachment E indicates their locations.

A summary of MITs, fall-off tests, etc. with conclusions and recommendations

MITs were not performed on any of the wells during 2014. FOTs were performed on all three wells during the fall of 2014 and the reports were submitted to OCD on October 3, 2014. The results of the fall-off tests were satisfactory, with results falling within the expected range for all three wells.

Records of expansion tank monitoring level, fluid removals and/or additions indicating well MIT conditions

WAMS (Well Annulus Monitoring System) data for all 3 wells are submitted with the quarterly reports and are resubmitted as Attachment F.

A summary of all major facility activities or events which occurred during the year

There were no major facility activities or events at any of the three wells during 2014.

A summary of any new discoveries of groundwater contamination

There were no new discoveries of groundwater contamination at any of the three wells during 2014.

ATTACHMENT A

Monthly Injection Volume with Cumulative Totals

Navajo Refining Company, L.L.C.

2014 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	34,369,800
Jan-14	1,161	1,197	1,093	142	152	122	272	422	182	4,869	5,211	4,183	151,696	34,521,496
Feb-14	1,200	1,225	1,131	147	154	135	443	610	211	5,040	5,280	4,629	141,482	34,662,978
Mar-14	1,206	1,247	1,077	142	150	129	576	843	218	4,869	5,143	4,423	151,394	34,814,372
WDW-2													**Previous Quarter**	21,592,917
Jan-14	1,166	1,208	1,105	152	161	141	394	685	105	5,211	5,520	4,834	162,143	21,755,060
Feb-14	1,202	1,225	1,134	152	160	128	385	599	132	5,211	5,486	4,389	145,969	21,901,029
Mar-14	1,205	1,248	1,081	144	157	125	539	824	219	4,937	5,383	4,286	153,497	22,054,526
WDW-3													**Previous Quarter**	11,583,990
Jan-14	1,120	1,193	938	106	130	23	499	686	306	3,634	4,457	789	112,425	11,696,415
Feb-14	1,199	1,225	1,143	128	138	99	737	920	444	4,389	4,731	3,394	122,680	11,819,095
Mar-14	1,183	1,248	983	122	145	40	622	983	231	4,183	4,971	1,371	130,039	11,949,135
													Total Injected fluids:	68,818,033

Navajo Refining Company, L.L.C.

2014 SECOND QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	34,814,372
Apr-14	1,198	1,226	1,138	136	140	129	335	483	202	4,663	4,800	4,423	140,351	34,954,723
May-14	1,173	1,250	947	133	147	115	508	874	189	4,560	5,040	3,943	141,827	35,096,550
Jun-14	1,194	1,261	972	135	144	121	746	993	232	4,629	4,937	4,149	138,958	35,235,507
WDW-2													**Previous Quarter**	22,054,526
Apr-14	1,192	1,226	1,109	211	347	109	477	630	241	7,234	11,897	3,737	216,878	22,271,404
May-14	1,163	1,248	958	98	121	34	662	1,251	198	3,360	4,149	1,166	103,840	22,375,244
Jun-14	1,206	1,265	1,155	89	116	32	537	1,018	146	3,051	3,977	1,097	92,025	22,467,269
WDW-3													**Previous Quarter**	11,949,135
Apr-14	1,176	1,225	1,100	119	133	96	462	698	268	4,080	4,560	3,291	122,621	12,071,756
May-14	1,139	1,250	961	100	140	11	519	999	226	3,429	4,800	377	106,412	12,178,167
Jun-14	1,184	1,248	989	114	133	27	572	876	267	3,909	4,560	926	116,913	12,295,081
													Total Injected fluids:	69,997,857

Navajo Refining Company, L.L.C.

2014 THIRD QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	35,238,254
Jul-14	1,241	1,275	970	153	393	140	722	819	179	5,246	13,474	4,800	163,199	35,401,453
Aug-14	1,235	1,275	996	138	144	112	550	769	79	4,731	4,937	3,840	146,646	35,548,099
Sep-14	1,305	1,350	1,273	111	143	76	110	361	0	3,806	4,903	2,606	114,037	35,662,136
WDW-2													**Previous Quarter**	22,198,479
Jul-14	1,241	1,275	983	35	37	11	573	943	265	1,200	1,269	377	37,182	22,235,661
Aug-14	1,235	1,275	1,011	33	37	10	320	402	271	1,131	1,269	343	34,872	22,270,533
Sep-14	1,303	1,350	1,265	70	129	33	285	304	268	2,400	4,423	1,131	71,900	22,342,432
WDW-3													**Previous Quarter**	12,357,942
Jul-14	1,238	1,275	987	128	140	15	914	1,023	260	4,389	4,800	514	136,278	12,494,220
Aug-14	1,239	1,275	1,012	123	137	13	811	935	308	4,217	4,697	446	130,920	12,625,140
Sep-14	1,301	1,350	1,143	138	150	80	782	976	560	4,731	5,143	2,743	141,609	12,766,749
													Total Injected fluids:	70,771,318

Navajo Refining Company, L.L.C.

2014 FOURTH QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure Av (psig)	Maximum Annular Pressure Mx (psig)	Minimum Annular Pressure Mn (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	35,589,080
Oct-14	1,341	1,350	1,310	93	125	67	360	569	203	3,189	4,286	2,297	99,503	35,688,583
Nov-14	1,356	1,375	1,300	122	128	112	305	380	193	4,183	4,389	3,840	125,348	35,813,931
Dec-14	1,346	1,380	1,244	118	269	94	285	402	156	4,046	9,223	3,223	125,975	35,939,906
WDW-2													**Previous Quarter**	22,558,499
Oct-14	1,341	1,350	1,306	119	126	110	298	366	256	4,080	4,320	3,771	127,175	22,685,674
Nov-14	1,353	1,375	1,300	115	123	105	515	1,617	253	3,943	4,217	3,600	118,739	22,804,413
Dec-14	1,347	1,380	1,255	107	117	83	808	1,492	256	3,669	4,011	2,846	114,106	22,918,519
WDW-3													**Previous Quarter**	12,735,189
Oct-14	1,341	1,350	1,063	122	144	0	784	938	331	4,183	4,937	0	129,877	12,865,066
Nov-14	1,342	1,375	1,205	124	139	54	847	1,002	676	4,251	4,766	1,851	127,146	12,992,212
Dec-14	1,340	1,373	1,258	138	127	82	706	799	616	4,731	4,354	2,811	120,224	13,112,436
													Total Injected fluids:	71,970,861

ATTACHMENT B

Maximum and Average Injection Pressures

Navajo Refining Company, L.L.C.

2014 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
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Feb-14	1,202	1,225	1,134	152	160	128	385	599	132	5,211	5,486	4,389	145,969	21,901,029
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													Total Injected fluids:	71,970,861

ATTACHMENT C

Quarterly Chemical Analyses

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

April 09, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: WDW-1, 2 & 3 Qtrly Inj Well

OrderNo.: 1403871

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 3/20/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1403871**
Date Reported: **4/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**JRR**
Fluoride	5.5	1.0	*	mg/L	10	3/21/2014 12:08:26 AM	R17472
Chloride	410	50		mg/L	100	3/21/2014 12:20:50 AM	R17472
Nitrogen, Nitrite (As N)	ND	1.0		mg/L	10	3/21/2014 12:08:26 AM	R17472
Bromide	1.6	1.0		mg/L	10	3/21/2014 12:08:26 AM	R17472
Nitrogen, Nitrate (As N)	ND	1.0		mg/L	10	3/21/2014 12:08:26 AM	R17472
Phosphorus, Orthophosphate (As P)	ND	5.0		mg/L	10	3/21/2014 12:08:26 AM	R17472
Sulfate	3900	50		mg/L	100	3/21/2014 12:20:50 AM	R17472
EPA METHOD 7470: MERCURY						Analyst:	**JML**
Mercury	ND	0.00020		mg/L	1	3/24/2014 5:57:04 PM	12328
MERCURY, TCLP						Analyst:	**JML**
Mercury	ND	0.020		mg/L	1	3/21/2014 4:08:02 PM	12307
EPA METHOD 6010B: TCLP METALS						Analyst:	**ELS**
Arsenic	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
Barium	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
Cadmium	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
Chromium	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
Lead	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
Selenium	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
Silver	ND	0.10		mg/L	1	3/21/2014 10:39:40 AM	12293
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Aluminum	2.3	0.10		mg/L	5	3/21/2014 10:29:25 AM	12293
Antimony	ND	0.050		mg/L	1	3/21/2014 10:25:56 AM	12293
Arsenic	ND	0.020		mg/L	1	3/21/2014 10:25:56 AM	12293
Barium	0.049	0.020		mg/L	1	3/21/2014 10:25:56 AM	12293
Beryllium	ND	0.0030		mg/L	1	3/21/2014 10:25:56 AM	12293
Cadmium	ND	0.0020		mg/L	1	3/21/2014 10:25:56 AM	12293
Calcium	93	1.0		mg/L	1	3/21/2014 10:25:56 AM	12293
Chromium	ND	0.0060		mg/L	1	3/21/2014 10:25:56 AM	12293
Cobalt	ND	0.0060		mg/L	1	3/21/2014 10:25:56 AM	12293
Copper	0.0092	0.0060		mg/L	1	3/21/2014 10:25:56 AM	12293
Iron	3.3	0.25		mg/L	5	3/21/2014 10:29:25 AM	12293
Lead	ND	0.0050		mg/L	1	3/21/2014 10:25:56 AM	12293
Magnesium	30	1.0		mg/L	1	3/21/2014 10:25:56 AM	12293
Manganese	0.12	0.0020		mg/L	1	3/21/2014 10:25:56 AM	12293
Nickel	0.016	0.010		mg/L	1	3/21/2014 10:25:56 AM	12293
Potassium	37	1.0		mg/L	1	3/21/2014 10:25:56 AM	12293
Selenium	0.13	0.050		mg/L	1	3/21/2014 10:25:56 AM	12293

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Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst:	ELS
Silver	ND	0.0050		mg/L	1	3/21/2014 10:25:56 AM	12293
Sodium	1400	20		mg/L	20	3/21/2014 10:31:26 AM	12293
Thallium	ND	0.050		mg/L	1	3/21/2014 10:25:56 AM	12293
Vanadium	ND	0.050		mg/L	1	3/21/2014 10:25:56 AM	12293
Zinc	0.15	0.020		mg/L	1	3/21/2014 10:25:56 AM	12293
EPA METHOD 8260B: VOLATILES						Analyst:	SUB
Acetonitrile	ND	10		µg/L	1	3/26/2014	R17842
Allyl chloride	ND	0.50		µg/L	1	3/26/2014	R17842
Chloroprene	ND	0.50		µg/L	1	3/26/2014	R17842
Cyclohexane	1.6	0.50		µg/L	1	3/26/2014	R17842
Diethyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
Diisopropyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
Epichlorohydrin	ND	5.0		µg/L	1	3/26/2014	R17842
Ethyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
Ethyl methacrylate	ND	0.50		µg/L	1	3/26/2014	R17842
Ethyl tert-butyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
Freon-113	ND	0.50		µg/L	1	3/26/2014	R17842
Isobutanol	ND	20		µg/L	1	3/26/2014	R17842
Isopropyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
Methacrylonitrile	ND	0.50		µg/L	1	3/26/2014	R17842
Methyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
Methyl ethyl ketone	5.6	2.5		µg/L	1	3/26/2014	R17842
Methyl isobutyl ketone	ND	2.5		µg/L	1	3/26/2014	R17842
Methyl methacrylate	ND	0.50		µg/L	1	3/26/2014	R17842
Methylcyclohexane	1.2	1.0		µg/L	1	3/26/2014	R17842
n-Amyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
n-Hexane	ND	0.50		µg/L	1	3/26/2014	R17842
Nitrobenzene	ND	5.0		µg/L	1	3/26/2014	R17842
Pentachloroethane	ND	5.0		µg/L	1	3/26/2014	R17842
p-isopropyltoluene	ND	0.50		µg/L	1	3/26/2014	R17842
Propionitrile	ND	0.50		µg/L	1	3/26/2014	R17842
Tetrahydrofuran	ND	0.50		µg/L	1	3/26/2014	R17842
Benzene	0.63	0.50		µg/L	1	3/26/2014	R17842
Toluene	ND	0.50		µg/L	1	3/26/2014	R17842
Ethylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	3/26/2014	R17842
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	3/26/2014	R17842

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	3/26/2014	R17842
Naphthalene	ND	0.50		µg/L	1	3/26/2014	R17842
Acetone	42	2.5		µg/L	1	3/26/2014	R17842
Bromobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Bromodichloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
Bromoform	ND	0.50		µg/L	1	3/26/2014	R17842
Bromomethane	ND	0.50		µg/L	1	3/26/2014	R17842
Carbon disulfide	5.6	0.50		µg/L	1	3/26/2014	R17842
Carbon Tetrachloride	ND	0.50		µg/L	1	3/26/2014	R17842
Chlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Chloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
Chloroform	0.64	0.50		µg/L	1	3/26/2014	R17842
Chloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
2-Chlorotoluene	ND	0.50		µg/L	1	3/26/2014	R17842
4-Chlorotoluene	ND	0.50		µg/L	1	3/26/2014	R17842
cis-1,2-DCE	ND	0.50		µg/L	1	3/26/2014	R17842
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
Dibromochloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
Dibromomethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,3-Dichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Dichlorodifluoromethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1-Dichloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1-Dichloroethene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
1,3-Dichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
2,2-Dichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1-Dichloropropene	ND	0.50		µg/L	1	3/26/2014	R17842
Hexachlorobutadiene	ND	0.50		µg/L	1	3/26/2014	R17842
2-Hexanone	ND	0.50		µg/L	1	3/26/2014	R17842
Isopropylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
4-Isopropyltoluene	ND	0.50		µg/L	1	3/26/2014	R17842
Methylene Chloride	ND	2.5		µg/L	1	3/26/2014	R17842
n-Butylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
n-Propylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
sec-Butylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Styrene	ND	0.50		µg/L	1	3/26/2014	R17842

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
tert-Butylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	3/26/2014	R17842
trans-1,2-DCE	ND	0.50		µg/L	1	3/26/2014	R17842
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
Trichloroethene (TCE)	ND	0.50		µg/L	1	3/26/2014	R17842
Trichlorofluoromethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,2,3-Trichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
Vinyl chloride	ND	0.50		µg/L	1	3/26/2014	R17842
mp-Xylenes	ND	1.0		µg/L	1	3/26/2014	R17842
o-Xylene	ND	0.50		µg/L	1	3/26/2014	R17842
tert-Amyl methyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
tert-Butyl alcohol	ND	20		µg/L	1	3/26/2014	R17842
Acrolein	ND	10		µg/L	1	3/26/2014	R17842
Acrylonitrile	ND	10		µg/L	1	3/26/2014	R17842
Bromochloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
2-Chloroethyl vinyl ether	ND	1.0		µg/L	1	3/26/2014	R17842
Iodomethane	ND	0.50		µg/L	1	3/26/2014	R17842
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	3/26/2014	R17842
Vinyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
1,4-Dioxane	ND	20		µg/L	1	3/26/2014	R17842
Surr: 1,2-Dichloroethane-d4	116	70-130		%REC	1	3/26/2014	R17842
Surr: 4-Bromofluorobenzene	104	70-130		%REC	1	3/26/2014	R17842
Surr: Toluene-d8	101	70-130		%REC	1	3/26/2014	R17842
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
1,1-Biphenyl	ND	1.0		µg/L	1	3/28/2014	R17842
Caprolactam	ND	0.10		µg/L	1	3/28/2014	R17842
N-Nitroso-di-n-butylamine	ND	1.0		µg/L	1	3/28/2014	R17842
Acetophenone	ND	10		µg/L	1	3/28/2014	R17842
1-Methylnaphthalene	ND	10		µg/L	1	3/28/2014	R17842
2,3,4,6-Tetrachlorophenol	ND	10		µg/L	1	3/28/2014	R17842
2,4,5-Trichlorophenol	ND	10		µg/L	1	3/28/2014	R17842
2,4,6-Trichlorophenol	ND	10		µg/L	1	3/28/2014	R17842
2,4-Dichlorophenol	ND	10		µg/L	1	3/28/2014	R17842

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
2,4-Dimethylphenol	ND	10		µg/L	1	3/28/2014	R17842
2,4-Dinitrophenol	ND	10		µg/L	1	3/28/2014	R17842
2,4-Dinitrotoluene	ND	10		µg/L	1	3/28/2014	R17842
2,6-Dinitrotoluene	ND	10		µg/L	1	3/28/2014	R17842
2-Chloronaphthalene	ND	10		µg/L	1	3/28/2014	R17842
2-Chlorophenol	ND	10		µg/L	1	3/28/2014	R17842
2-Methylnaphthalene	ND	10		µg/L	1	3/28/2014	R17842
2-Methylphenol	ND	10		µg/L	1	3/28/2014	R17842
2-Nitroaniline	ND	10		µg/L	1	3/28/2014	R17842
2-Nitrophenol	ND	10		µg/L	1	3/28/2014	R17842
3,3'-Dichlorobenzidine	ND	10		µg/L	1	3/28/2014	R17842
3-Nitroaniline	ND	10		µg/L	1	3/28/2014	R17842
4,6-Dinitro-2-methylphenol	ND	10		µg/L	1	3/28/2014	R17842
4-Bromophenyl phenyl ether	ND	10		µg/L	1	3/28/2014	R17842
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	3/28/2014	R17842
4-Chloroaniline	ND	10		µg/L	1	3/28/2014	R17842
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	3/28/2014	R17842
4-Nitroaniline	ND	10		µg/L	1	3/28/2014	R17842
4-Nitrophenol	ND	10		µg/L	1	3/28/2014	R17842
Acenaphthene	ND	10		µg/L	1	3/28/2014	R17842
Acenaphthylene	ND	10		µg/L	1	3/28/2014	R17842
Anthracene	ND	10		µg/L	1	3/28/2014	R17842
Benzo(g,h,i)perylene	ND	1.0		µg/L	1	3/28/2014	R17842
Benz(a)anthracene	ND	1.0		µg/L	1	3/28/2014	R17842
Benzo(a)pyrene	ND	1.0		µg/L	1	3/28/2014	R17842
Benzo(b)fluoranthene	ND	1.0		µg/L	1	3/28/2014	R17842
Benzo(k)fluoranthene	ND	1.0		µg/L	1	3/28/2014	R17842
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	3/28/2014	R17842
Bis(2-chloroethyl)ether	ND	10		µg/L	1	3/28/2014	R17842
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	3/28/2014	R17842
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	3/28/2014	R17842
Butyl benzyl phthalate	ND	10		µg/L	1	3/28/2014	R17842
Carbazole	ND	10		µg/L	1	3/28/2014	R17842
Chrysene	ND	0.10		µg/L	1	3/28/2014	R17842
Dibenz(a,h)anthracene	ND	1.0		µg/L	1	3/28/2014	R17842
Dibenzofuran	ND	10		µg/L	1	3/28/2014	R17842
Diethyl phthalate	ND	10		µg/L	1	3/28/2014	R17842
Dimethyl phthalate	ND	10		µg/L	1	3/28/2014	R17842
Di-n-butyl phthalate	ND	10		µg/L	1	3/28/2014	R17842

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Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
Di-n-octyl phthalate	ND	10		µg/L	1	3/28/2014	R17842
Fluoranthene	ND	10		µg/L	1	3/28/2014	R17842
Fluorene	ND	10		µg/L	1	3/28/2014	R17842
Hexachlorobenzene	ND	1.0		µg/L	1	3/28/2014	R17842
Hexachlorobutadiene	ND	10		µg/L	1	3/28/2014	R17842
Hexachlorocyclopentadiene	ND	10		µg/L	1	3/28/2014	R17842
Hexachloroethane	ND	10		µg/L	1	3/28/2014	R17842
Indeno(1,2,3-cd)pyrene	ND	1.0		µg/L	1	3/28/2014	R17842
Isophorone	ND	10		µg/L	1	3/28/2014	R17842
Naphthalene	ND	10		µg/L	1	3/28/2014	R17842
Nitrobenzene	ND	10		µg/L	1	3/28/2014	R17842
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	3/28/2014	R17842
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	3/28/2014	R17842
Pentachlorophenol	ND	10		µg/L	1	3/28/2014	R17842
Phenanthrene	ND	10		µg/L	1	3/28/2014	R17842
Phenol	ND	5.0		µg/L	1	3/28/2014	R17842
Pyrene	ND	10		µg/L	1	3/28/2014	R17842
o-Toluidine	ND	1.0		µg/L	1	3/28/2014	R17842
Pyridine	ND	1.0		µg/L	1	3/28/2014	R17842
1,2,4,5-Tetrachlorobenzene	ND	10		µg/L	1	3/28/2014	R17842
Surr: 2,4,6-Tribromophenol	90.5	10-123		%REC	1	3/28/2014	R17842
Surr: 2-Fluorobiphenyl	84.5	19-130		%REC	1	3/28/2014	R17842
Surr: 2-Fluorophenol	79.4	21-110		%REC	1	3/28/2014	R17842
Surr: Nitrobenzene-d5	84.7	25-130		%REC	1	3/28/2014	R17842
Surr: Phenol-d5	80.6	10-125		%REC	1	3/28/2014	R17842
Surr: Terphenyl-d14	101	33-141		%REC	1	3/28/2014	R17842
CORROSIVITY						Analyst:	**SUB**
pH	7.45	0.100		pH Units	1	3/25/2014	R17842
IGNITABILITY METHOD 1010						Analyst:	**SUB**
Ignitability	>200	0		°F	1	4/2/2014	R17842
CYANIDE, REACTIVE						Analyst:	**SUB**
Reactive Cyanide	ND	1.00		mg/Kg	1	4/2/2014	R17842
SULFIDE, REACTIVE						Analyst:	**SUB**
Reactive Sulfide	5.1	1.0		mg/Kg	1	3/25/2014	R17842
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JML**
Conductivity	7000	0.010		µmhos/cm	1	3/20/2014 3:57:42 PM	R17458

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2 & 3 Effluent
Collection Date: 3/20/2014 9:00:00 AM
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM4500-H+B: PH						Analyst:	**JML**
pH	7.45	1.68	H	pH units	1	3/20/2014 3:57:42 PM	R17458
SM2320B: ALKALINITY						Analyst:	**JML**
Bicarbonate (As CaCO3)	270	20		mg/L CaCO3	1	3/20/2014 3:57:42 PM	R17458
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	3/20/2014 3:57:42 PM	R17458
Total Alkalinity (as CaCO3)	270	20		mg/L CaCO3	1	3/20/2014 3:57:42 PM	R17458
SPECIFIC GRAVITY						Analyst:	**SRM**
Specific Gravity	1.006	0			1	3/24/2014 11:49:00 AM	R17512
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	6180	100	*	mg/L	1	3/25/2014 5:22:00 PM	12342

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-002
Matrix: TRIP BLANK
Client Sample ID: Trip Blank
Collection Date:
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: SUB
Acetonitrile	ND	10		µg/L	1	3/26/2014	R17842
Allyl chloride	ND	0.50		µg/L	1	3/26/2014	R17842
Chloroprene	ND	0.50		µg/L	1	3/26/2014	R17842
Cyclohexane	ND	0.50		µg/L	1	3/26/2014	R17842
Diethyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
Diisopropyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
Epichlorohydrin	ND	5.0		µg/L	1	3/26/2014	R17842
Ethyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
Ethyl methacrylate	ND	0.50		µg/L	1	3/26/2014	R17842
Ethyl tert-butyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
Freon-113	ND	0.50		µg/L	1	3/26/2014	R17842
Isobutanol	ND	20		µg/L	1	3/26/2014	R17842
Isopropyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
Methacrylonitrile	ND	0.50		µg/L	1	3/26/2014	R17842
Methyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
Methyl ethyl ketone	ND	2.5		µg/L	1	3/26/2014	R17842
Methyl isobutyl ketone	ND	2.5		µg/L	1	3/26/2014	R17842
Methyl methacrylate	ND	0.50		µg/L	1	3/26/2014	R17842
Methylcyclohexane	ND	1.0		µg/L	1	3/26/2014	R17842
n-Amyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
n-Hexane	ND	0.50		µg/L	1	3/26/2014	R17842
Nitrobenzene	ND	5.0		µg/L	1	3/26/2014	R17842
Pentachloroethane	ND	5.0		µg/L	1	3/26/2014	R17842
p-Isopropyltoluene	ND	0.50		µg/L	1	3/26/2014	R17842
Propionitrile	ND	0.50		µg/L	1	3/26/2014	R17842
Tetrahydrofuran	ND	0.50		µg/L	1	3/26/2014	R17842
Benzene	ND	0.50		µg/L	1	3/26/2014	R17842
Toluene	ND	0.50		µg/L	1	3/26/2014	R17842
Ethylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	3/26/2014	R17842
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	3/26/2014	R17842
Naphthalene	ND	0.50		µg/L	1	3/26/2014	R17842
Acetone	ND	2.5		µg/L	1	3/26/2014	R17842
Bromobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Bromodichloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
Bromoform	ND	0.50		µg/L	1	3/26/2014	R17842

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-002
Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
Bromomethane	ND	0.50		µg/L	1	3/26/2014	R17842
Carbon disulfide	ND	0.50		µg/L	1	3/26/2014	R17842
Carbon Tetrachloride	ND	0.50		µg/L	1	3/26/2014	R17842
Chlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Chloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
Chloroform	ND	0.50		µg/L	1	3/26/2014	R17842
Chloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
2-Chlorotoluene	ND	0.50		µg/L	1	3/26/2014	R17842
4-Chlorotoluene	ND	0.50		µg/L	1	3/26/2014	R17842
cis-1,2-DCE	ND	0.50		µg/L	1	3/26/2014	R17842
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
Dibromochloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
Dibromomethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,3-Dichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,4-Dichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Dichlorodifluoromethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1-Dichloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1-Dichloroethene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2-Dichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
1,3-Dichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
2,2-Dichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1-Dichloropropene	ND	0.50		µg/L	1	3/26/2014	R17842
Hexachlorobutadiene	ND	0.50		µg/L	1	3/26/2014	R17842
2-Hexanone	ND	0.50		µg/L	1	3/26/2014	R17842
Isopropylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
4-Isopropyltoluene	ND	0.50		µg/L	1	3/26/2014	R17842
Methylene Chloride	ND	2.5		µg/L	1	3/26/2014	R17842
n-Butylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
n-Propylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
sec-Butylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
Styrene	ND	0.50		µg/L	1	3/26/2014	R17842
tert-Butylbenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	3/26/2014	R17842
trans-1,2-DCE	ND	0.50		µg/L	1	3/26/2014	R17842
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	3/26/2014	R17842

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well
Lab ID: 1403871-002
Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK
Received Date: 3/20/2014 1:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,1-Trichloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,1,2-Trichloroethane	ND	0.50		µg/L	1	3/26/2014	R17842
Trichloroethene (TCE)	ND	0.50		µg/L	1	3/26/2014	R17842
Trichlorofluoromethane	ND	0.50		µg/L	1	3/26/2014	R17842
1,2,3-Trichloropropane	ND	0.50		µg/L	1	3/26/2014	R17842
Vinyl chloride	ND	0.50		µg/L	1	3/26/2014	R17842
mp-Xylenes	ND	1.0		µg/L	1	3/26/2014	R17842
o-Xylene	ND	0.50		µg/L	1	3/26/2014	R17842
tert-Amyl methyl ether	ND	0.50		µg/L	1	3/26/2014	R17842
tert-Butyl alcohol	ND	20		µg/L	1	3/26/2014	R17842
Acrolein	ND	10		µg/L	1	3/26/2014	R17842
Acrylonitrile	ND	10		µg/L	1	3/26/2014	R17842
Bromochloromethane	ND	0.50		µg/L	1	3/26/2014	R17842
2-Chloroethyl vinyl ether	ND	1.0		µg/L	1	3/26/2014	R17842
Iodomethane	ND	0.50		µg/L	1	3/26/2014	R17842
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	3/26/2014	R17842
Vinyl acetate	ND	0.50		µg/L	1	3/26/2014	R17842
1,4-Dioxane	ND	20		µg/L	1	3/26/2014	R17842
Surr: 1,2-Dichloroethane-d4	111	70-130		%REC	1	3/26/2014	R17842
Surr: 4-Bromofluorobenzene	103	70-130		%REC	1	3/26/2014	R17842
Surr: Toluene-d8	100	70-130		%REC	1	3/26/2014	R17842

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID MB	SampType: MBLK	TestCode: EPA Method 300.0: Anions	
Client ID: PBW	Batch ID: R17472	RunNo: 17472	
Prep Date:	Analysis Date: 3/20/2014	SeqNo: 503279	Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								

Sample ID LCS	SampType: LCS	TestCode: EPA Method 300.0: Anions	
Client ID: LCSW	Batch ID: R17472	RunNo: 17472	
Prep Date:	Analysis Date: 3/20/2014	SeqNo: 503281	Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	102	90	110			
Chloride	4.8	0.50	5.000	0	95.7	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	95.3	90	110			
Bromide	2.5	0.10	2.500	0	99.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	97.9	90	110			
Sulfate	9.7	0.50	10.00	0	96.7	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-R17842**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **R17842**	RunNo: **17842**	
Prep Date:	Analysis Date: **3/26/2014**	SeqNo: **514551**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.50								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Ethyl methacrylate	ND	0.50								
Isobutanol	ND	0.50								
Methacrylonitrile	ND	0.50								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	0.50								
Propionitrile	ND	0.50								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Acetone	ND	2.5								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								
Bromomethane	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								
1,1-Dichloropropene	ND	0.50								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-R17842** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **PBW** Batch ID: **R17842** RunNo: **17842**

Prep Date: Analysis Date: **3/26/2014** SeqNo: **514551** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Hexanone	ND	0.50								
Methylene Chloride	ND	2.5								
Styrene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
Acrolein	ND	0.50								
Acrylonitrile	ND	0.50								
Bromochloromethane	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								

Sample ID **LCS-R17842** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **R17842** RunNo: **17842**

Prep Date: Analysis Date: **3/26/2014** SeqNo: **514552** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	4.9	0.50	5.000	0	97.2	80	120			
Toluene	4.9	0.50	5.000	0	98.2	80	120			
Ethylbenzene	5.0	0.50	5.000	0	99.0	80	120			
Chlorobenzene	4.9	0.50	5.000	0	98.2	80	120			
1,1-Dichloroethene	4.5	0.50	5.000	0	89.4	80	120			
Tetrachloroethene (PCE)	4.4	0.50	5.000	0	87.8	80	120			
Trichloroethene (TCE)	4.6	0.50	5.000	0	93.0	80	120			
o-Xylene	5.2	0.50	5.000	0	105	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-R17842**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**	
Client ID: **PBW**	Batch ID: **R17842**	RunNo: **17842**	
Prep Date:	Analysis Date: **3/28/2014**	SeqNo: **516354**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1-Methylnaphthalene	ND	0.50								
2,3,4,6-Tetrachlorophenol	ND	0.50								
2,4,5-Trichlorophenol	ND	0.50								
2,4,6-Trichlorophenol	ND	0.50								
2,4-Dichlorophenol	ND	0.50								
2,4-Dimethylphenol	ND	0.50								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
2-Chloronaphthalene	ND	0.50								
2-Chlorophenol	ND	0.50								
2-Methylnaphthalene	ND	0.50								
2-Methylphenol	ND	0.50								
2-Nitroaniline	ND	0.50								
2-Nitrophenol	ND	0.50								
3,3'-Dichlorobenzidine	ND	0.50								
3-Nitroaniline	ND	0.50								
4,6-Dinitro-2-methylphenol	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.50								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
4-Chlorophenyl phenyl ether	ND	0.50								
4-Nitroaniline	ND	0.50								
4-Nitrophenol	ND	0.50								
Acenaphthene	ND	0.50								
Acenaphthylene	ND	0.50								
Anthracene	ND	0.50								
Benzo(g,h,i)perylene	ND	0.50								
Benz(a)anthracene	ND	0.50								
Benzo(a)pyrene	ND	0.50								
Benzo(b)fluoranthene	ND	0.50								
Benzo(k)fluoranthene	ND	0.50								
Bis(2-chloroethoxy)methane	ND	0.50								
Bis(2-chloroethyl)ether	ND	0.50								
Bis(2-chloroisopropyl)ether	ND	0.50								
Bis(2-ethylhexyl)phthalate	ND	0.50								
Butyl benzyl phthalate	ND	0.50								
Carbazole	ND	0.50								
Chrysene	ND	0.50								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403871**

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-R17842** SampType: **MBLK** TestCode: **EPA 8270C: Semivolatiles/Mod**

Client ID: **PBW** Batch ID: **R17842** RunNo: **17842**

Prep Date: Analysis Date: **3/28/2014** SeqNo: **515354** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dibenz(a,h)anthracene	ND	0.50								
Dibenzofuran	ND	0.50								
Diethyl phthalate	ND	0.50								
Dimethyl phthalate	ND	0.50								
Di-n-butyl phthalate	ND	0.50								
Di-n-octyl phthalate	ND	0.50								
Fluoranthene	ND	0.50								
Fluorene	ND	0.50								
Hexachlorobenzene	ND	0.50								
Hexachlorobutadiene	ND	0.50								
Hexachlorocyclopentadiene	ND	0.50								
Hexachloroethane	ND	0.50								
Isophorone	ND	0.50								
Naphthalene	ND	0.50								
Nitrobenzene	ND	0.50								
N-Nitrosodi-n-propylamine	ND	0.50								
N-Nitrosodiphenylamine	ND	0.50								
Pentachlorophenol	ND	0.50								
Phenanthrene	ND	0.50								
Phenol	ND	0.50								
Pyrene	ND	0.50								

Sample ID **LCS-R17842** SampType: **LCS** TestCode: **EPA 8270C: Semivolatiles/Mod**

Client ID: **LCSW** Batch ID: **R17842** RunNo: **17842**

Prep Date: Analysis Date: **3/28/2014** SeqNo: **515355** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	6.6	1.0	5.000	0	131	42	143			
2-Chlorophenol	5.8	1.0	5.000	0	116	50	131			
4-Chloro-3-methylphenol	5.5	1.0	5.000	0	110	42	139			
4-Nitrophenol	4.7	1.0	5.000	0	94.6	19	137			
Acenaphthene	5.9	1.0	5.000	0	118	45	129			
Bis(2-ethylhexyl)phthalate	6.6	1.0	5.000	0	131	43	142			
N-Nitrosodi-n-propylamine	6.0	1.0	5.000	0	120	46	135			
Pentachlorophenol	5.2	1.0	5.000	0	104	22	138			
Phenol	5.3	1.0	5.000	0	106	45	134			
Pyrene	6.3	1.0	5.000	0	126	45	139			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403871**

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID	**MB-12328**	SampType:	**MBLK**		TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**12328**		RunNo:	**17527**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/24/2014**		SeqNo:	**505323**		Units:	**mg/L**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.00020								

Sample ID	**LCS-12328**	SampType:	**LCS**		TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**12328**		RunNo:	**17527**					
Prep Date:	**3/24/2014**	Analysis Date:	**3/24/2014**		SeqNo:	**505324**		Units:	**mg/L**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0050	0.00020	0.005000	0	100	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID	MB-12307	SampType:	MBLK		TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	12307		RunNo:	17489					
Prep Date:	3/21/2014	Analysis Date:	3/21/2014		SeqNo:	503698		Units:	mg/L		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

Sample ID	LCS-12307	SampType:	LCS		TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	12307		RunNo:	17489					
Prep Date:	3/21/2014	Analysis Date:	3/21/2014		SeqNo:	503699		Units:	mg/L		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020	0.005000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403871**

09-Apr-14

Client: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-12293** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **12293** RunNo: **17477**
Prep Date: **3/20/2014** Analysis Date: **3/21/2014** SeqNo: **503513** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-12293** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **12293** RunNo: **17477**
Prep Date: **3/20/2014** Analysis Date: **3/21/2014** SeqNo: **503514** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	104	80	120			
Barium	ND	100	0.5000	0	102	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	102	80	120			
Lead	ND	5.0	0.5000	0	100	80	120			
Selenium	ND	1.0	0.5000	0	101	80	120			
Silver	ND	5.0	0.1000	0	105	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403871**

09-Apr-14

Client: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-12293** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW** Batch ID: **12293** RunNo: **17477**
Prep Date: **3/20/2014** Analysis Date: **3/21/2014** SeqNo: **503563** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-12293** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **12293** RunNo: **17477**
Prep Date: **3/20/2014** Analysis Date: **3/21/2014** SeqNo: **503564** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.55	0.020	0.5000	0	111	80	120			
Antimony	0.50	0.050	0.5000	0	99.3	80	120			
Arsenic	0.52	0.020	0.5000	0	104	80	120			
Barium	0.51	0.020	0.5000	0	102	80	120			
Beryllium	0.54	0.0030	0.5000	0	107	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Calcium	53	1.0	50.00	0	106	80	120			
Chromium	0.51	0.0060	0.5000	0	102	80	120			
Cobalt	0.50	0.0060	0.5000	0	100	80	120			
Copper	0.52	0.0060	0.5000	0	104	80	120			
Iron	0.52	0.050	0.5000	0	103	80	120			
Lead	0.50	0.0050	0.5000	0	100	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **LCS-12293**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**	
Client ID: **LCSW**	Batch ID: **12293**	RunNo: **17477**	
Prep Date: **3/20/2014**	Analysis Date: **3/21/2014**	SeqNo: **503564**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	52	1.0	50.00	0	104	80	120			
Manganese	0.51	0.0020	0.5000	0	103	80	120			
Nickel	0.50	0.010	0.5000	0	99.5	80	120			
Potassium	50	1.0	50.00	0	101	80	120			
Selenium	0.50	0.050	0.5000	0	101	80	120			
Silver	0.11	0.0050	0.1000	0	106	80	120			
Thallium	0.51	0.050	0.5000	0	102	80	120			
Vanadium	0.53	0.050	0.5000	0	106	80	120			
Zinc	0.51	0.020	0.5000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403871**

09-Apr-14

Client: Navajo Refining Company
Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **LCS-R17842**	SampType: **LCS**			TestCode: **CYANIDE, Reactive**						
Client ID: **LCSS**	Batch ID: **R17842**			RunNo: **17842**						
Prep Date:	Analysis Date: **4/2/2014**			SeqNo: **515168**			Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Cyanide	0.533	0.100	0.5000	0	107	80	120			

Sample ID **MB-R17842**	SampType: **MBLK**			TestCode: **CYANIDE, Reactive**						
Client ID: **PBS**	Batch ID: **R17842**			RunNo: **17842**						
Prep Date:	Analysis Date: **4/2/2014**			SeqNo: **515169**			Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Cyanide	ND	1.00								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1403871**

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-R17842**	SampType: **MBLK**			TestCode: **SULFIDE, Reactive**							
Client ID: **PBS**	Batch ID: **R17842**			RunNo: **17842**							
Prep Date:	Analysis Date: **3/25/2014**			SeqNo: **515170**			Units: **mg/Kg**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Reactive Sulfide	ND	1.0									

Sample ID **LCS-R17842**	SampType: **LCS**			TestCode: **SULFIDE, Reactive**							
Client ID: **LCSS**	Batch ID: **R17842**			RunNo: **17842**							
Prep Date:	Analysis Date: **3/25/2014**			SeqNo: **515171**			Units: **mg/Kg**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Reactive Sulfide	0.16	0.10	0.2000	0	80.0	80	120				

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID	mb-1	SampType:	mblk		TestCode:	SM2320B: Alkalinity					
Client ID:	PBW	Batch ID:	R17458		RunNo:	17458					
Prep Date:		Analysis Date:	3/20/2014		SeqNo:	502901	Units:	mg/L CaCO3			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)		ND	20								

Sample ID	lcs-1	SampType:	lcs		TestCode:	SM2320B: Alkalinity					
Client ID:	LCSW	Batch ID:	R17458		RunNo:	17458					
Prep Date:		Analysis Date:	3/20/2014		SeqNo:	502902	Units:	mg/L CaCO3			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)		81	20	80.00	0	101	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1403871

09-Apr-14

Client: Navajo Refining Company

Project: WDW-1, 2 & 3 Qtrly Inj Well

Sample ID **MB-12342**	SampType: **MBLK**			TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **PBW**	Batch ID: **12342**			RunNo: **17558**							
Prep Date: **3/24/2014**	Analysis Date: **3/25/2014**			SeqNo: **505731**			Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids	ND	20.0									

Sample ID **LCS-12342**	SampType: **LCS**			TestCode: **SM2540C MOD: Total Dissolved Solids**							
Client ID: **LCSW**	Batch ID: **12342**			RunNo: **17558**							
Prep Date: **3/24/2014**	Analysis Date: **3/25/2014**			SeqNo: **505732**			Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Total Dissolved Solids	1030	20.0	1000	0	103	80	120				

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1403871 RcptNo: 1

Received by/date: AT 03/20/14

Logged By: Michelle Garcia 3/20/2014 1:50:00 PM Michelle Garcia

Completed By: Michelle Garcia 3/20/2014 2:03:05 PM Michelle Garcia

Reviewed By: 03/20/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2 12 (<2 or >12 unless noted)
Adjusted? No
Checked by: MJ

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			

Client: Navajo Refining Co.

☐ Stander ☐ Rush

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Project Name:

WDW-1, 2, & 3 Qtrly Inj Well

Project #:

Project Manager:

Mike Holder

Sampler: Jerry Sosa

[redacted]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R.C./40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311								
3/20/14	9:00	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X								
3/20/14	9:00	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	-001					X	X									
3/20/14	9:00	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	-001		X													
3/20/14	9:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001			X												
3/20/14	9:00	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001		X													
3/20/14	9:00	Liquid	Trip Blank	2	Neat	-002		X													
3/20/14	9:00	Liquid	Temperature Blank	1	Neat																

Date:	Time:	Relinquished by:	Received by:	Date	Time
3/20/14	10:00	Robert Pena	[signature]	03/20/14	1350
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Report these results separately from all other Chain of Custody kits provided.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Strange, Aaron

From: Strange, Aaron
Sent: Thursday, May 22, 2014 11:21 AM
To: Schultz, Michele
Subject: Injection Wells

Micki,

The temperature was 90.3F and the pH was 7.71 for the Injection well samples on 3-20-14.

Thank you,
Aaron

Aaron Strange
Environmental Specialist
Environmental Department
Navajo Refining Co, LLC
Artesia NM
Cell: (575) 703-5057
Off: (575) 746-5468

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

July 17, 2014

Dan Crawford
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: WDW-1, 2, & 3 Qtrly Inj Well OrderNo.: 1406935

Dear Dan Crawford:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/19/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1406935**
Date: **7/17/2014**

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

The following compounds were also scanned for by NIST library search and not detected. The detection level for these compounds would be ~10ppb:
Allyl alcohol
t-amyl ethyl ether
Bis(2-chloroethyl)sulfide
Bromoacetone
Chloral hydrate
1-chlorobutane
1-chlorohexane
2-chloroethanol
Crotonaldehyde
Cis-1,4-Dichloro-2butene
1,3-Dichloro-2-propanol
1,2,3,4-Depoxybutane
Ethanol
Ethylene oxide
Malonitrile
Methanol
Methyl acrylate
2-Nitropropane
Paraldehyde
Pentafluorobenzene
2-Pentanone
2-picoline
1-propanol
2-propanol
Propargyl alcohol
Beta-propiolactone
n-propylamine

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**JRR**
Fluoride	28	2.0	*	mg/L	20	6/19/2014 5:43:17 PM	R19410
Chloride	290	10		mg/L	20	6/19/2014 5:43:17 PM	R19410
Nitrogen, Nitrite (As N)	1.5	0.50		mg/L	5	6/19/2014 5:30:53 PM	R19410
Bromide	0.72	0.50		mg/L	5	6/19/2014 5:30:53 PM	R19410
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	6/19/2014 5:30:53 PM	R19410
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	6/19/2014 5:30:53 PM	R19410
Sulfate	2600	50		mg/L	100	7/7/2014 4:18:15 PM	R19725
EPA METHOD 7470: MERCURY						Analyst:	**MMD**
Mercury	ND	0.00020		mg/L	1	6/26/2014 9:07:50 AM	13883
MERCURY, TCLP						Analyst:	**MMD**
Mercury	ND	0.020		mg/L	1	7/8/2014 12:50:03 PM	14082
EPA METHOD 6010B: TCLP METALS						Analyst:	**ELS**
Arsenic	ND	5.0		mg/L	1	7/8/2014 12:02:28 PM	14080
Barium	ND	100		mg/L	1	7/8/2014 12:02:28 PM	14080
Cadmium	ND	1.0		mg/L	1	7/8/2014 12:02:28 PM	14080
Chromium	ND	5.0		mg/L	1	7/8/2014 12:02:28 PM	14080
Lead	ND	5.0		mg/L	1	7/8/2014 12:02:28 PM	14080
Selenium	ND	1.0		mg/L	1	7/8/2014 12:02:28 PM	14080
Silver	ND	5.0		mg/L	1	7/8/2014 12:02:28 PM	14080
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Aluminum	1.2	0.020		mg/L	1	7/11/2014 10:29:51 AM	14172
Antimony	ND	0.050		mg/L	1	7/7/2014 12:25:17 PM	14075
Arsenic	0.027	0.020		mg/L	1	7/7/2014 12:25:17 PM	14075
Barium	ND	0.020		mg/L	1	7/7/2014 12:25:17 PM	14075
Beryllium	ND	0.0030		mg/L	1	7/7/2014 12:25:17 PM	14075
Cadmium	ND	0.0020		mg/L	1	7/7/2014 12:25:17 PM	14075
Calcium	27	1.0		mg/L	1	7/7/2014 12:25:17 PM	14075
Chromium	ND	0.0060		mg/L	1	7/7/2014 12:25:17 PM	14075
Cobalt	ND	0.0060		mg/L	1	7/7/2014 12:25:17 PM	14075
Copper	ND	0.0060		mg/L	1	7/7/2014 12:25:17 PM	14075
Iron	0.21	0.050		mg/L	1	7/7/2014 12:25:17 PM	14075
Lead	ND	0.0050		mg/L	1	7/7/2014 12:25:17 PM	14075
Magnesium	9.2	1.0		mg/L	1	7/7/2014 12:25:17 PM	14075
Manganese	0.032	0.0020		mg/L	1	7/7/2014 12:25:17 PM	14075
Nickel	ND	0.010		mg/L	1	7/7/2014 12:25:17 PM	14075
Potassium	69	1.0		mg/L	1	7/7/2014 12:25:17 PM	14075
Selenium	0.069	0.050		mg/L	1	7/7/2014 12:25:17 PM	14075

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Silver	ND	0.0050		mg/L	1	7/7/2014 12:25:17 PM	14075
Sodium	1200	20		mg/L	20	7/7/2014 12:31:46 PM	14075
Thallium	ND	0.050		mg/L	1	7/7/2014 12:25:17 PM	14075
Vanadium	ND	0.050		mg/L	1	7/7/2014 12:25:17 PM	14075
Zinc	ND	0.020		mg/L	1	7/7/2014 12:25:17 PM	14075
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Ethyl tert-butyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Acetonitrile	ND	0.50		µg/L	1	6/26/2014	R19890
Allyl chloride	ND	0.50		µg/L	1	6/26/2014	R19890
Chloroprene	ND	0.50		µg/L	1	6/26/2014	R19890
Cyclohexane	ND	2.5		µg/L	1	6/26/2014	R19890
Diethyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Diisopropyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Epichlorohydrin	ND	5.0		µg/L	1	6/26/2014	R19890
Ethyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
Ethyl methacrylate	ND	2.5		µg/L	1	6/26/2014	R19890
Freon-113	ND	0.50		µg/L	1	6/26/2014	R19890
Isobutanol	ND	50		µg/L	1	6/26/2014	R19890
Isopropyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
Methacrylonitrile	ND	2.5		µg/L	1	6/26/2014	R19890
Methyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
Methyl ethyl ketone	ND	2.5		µg/L	1	6/26/2014	R19890
Methyl isobutyl ketone	ND	2.5		µg/L	1	6/26/2014	R19890
Methyl methacrylate	ND	2.5		µg/L	1	6/26/2014	R19890
Methylcyclohexane	ND	1.0		µg/L	1	6/26/2014	R19890
n-Amyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
n-Hexane	ND	0.50		µg/L	1	6/26/2014	R19890
Nitrobenzene	ND	5.0		µg/L	1	6/26/2014	R19890
Pentachloroethane	ND	5.0		µg/L	1	6/26/2014	R19890
p-isopropyltoluene	ND	0.50		µg/L	1	6/26/2014	R19890
Propionitrile	ND	2.5		µg/L	1	6/26/2014	R19890
Tetrahydrofuran	ND	0.50		µg/L	1	6/26/2014	R19890
Benzene	0.64	0.50		µg/L	1	6/26/2014	R19890
Toluene	ND	0.50		µg/L	1	6/26/2014	R19890
Ethylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	6/26/2014	R19890
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	6/26/2014	R19890

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	6/26/2014	R19890
Naphthalene	ND	0.50		µg/L	1	6/26/2014	R19890
Acetone	15	2.5		µg/L	1	6/26/2014	R19890
Bromobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Bromodichloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
Bromoform	ND	0.50		µg/L	1	6/26/2014	R19890
Bromomethane	ND	0.50		µg/L	1	6/26/2014	R19890
Carbon disulfide	ND	0.50		µg/L	1	6/26/2014	R19890
Carbon Tetrachloride	ND	0.50		µg/L	1	6/26/2014	R19890
Chlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Chloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
Chloroform	ND	0.50		µg/L	1	6/26/2014	R19890
Chloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
2-Chlorotoluene	ND	0.50		µg/L	1	6/26/2014	R19890
4-Chlorotoluene	ND	0.50		µg/L	1	6/26/2014	R19890
cis-1,2-DCE	ND	0.50		µg/L	1	6/26/2014	R19890
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
Dibromochloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
Dibromomethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,3-Dichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,4-Dichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Dichlorodifluoromethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1-Dichloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1-Dichloroethene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
1,3-Dichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
2,2-Dichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1-Dichloropropene	ND	0.50		µg/L	1	6/26/2014	R19890
Hexachlorobutadiene	ND	0.50		µg/L	1	6/26/2014	R19890
2-Hexanone	ND	0.50		µg/L	1	6/26/2014	R19890
Isopropylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Methylene Chloride	ND	2.5		µg/L	1	6/26/2014	R19890
n-Butylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
n-Propylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
sec-Butylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Styrene	ND	0.50		µg/L	1	6/26/2014	R19890
tert-Butylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	6/26/2014	R19890
trans-1,2-DCE	ND	0.50		µg/L	1	6/26/2014	R19890
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,1-Trichloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,2-Trichloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
Trichloroethene (TCE)	ND	0.50		µg/L	1	6/26/2014	R19890
Trichlorofluoromethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,2,3-Trichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
Vinyl chloride	ND	0.50		µg/L	1	6/26/2014	R19890
mp-Xylenes	ND	1.0		µg/L	1	6/26/2014	R19890
o-Xylene	ND	0.50		µg/L	1	6/26/2014	R19890
tert-Amyl methyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
tert-Butyl alcohol	ND	10		µg/L	1	6/26/2014	R19890
Acrolein	ND	2.5		µg/L	1	6/26/2014	R19890
Acrylonitrile	ND	10		µg/L	1	6/26/2014	R19890
Bromochloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
2-Chloroethyl vinyl ether	ND	2.5		µg/L	1	6/26/2014	R19890
Iodomethane	ND	0.50		µg/L	1	6/26/2014	R19890
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	6/26/2014	R19890
Vinyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
1,4-Dioxane	ND	20		µg/L	1	6/26/2014	R19890
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	6/26/2014	R19890
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	6/26/2014	R19890
Surr: Toluene-d8	101	70-130		%REC	1	6/26/2014	R19890
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
1,1-Biphenyl	ND	0.10		µg/L	1	6/26/2014	R19935
Atrazine	ND	0.10		µg/L	1	6/26/2014	R19935
Benzaldehyde	ND	0.10		µg/L	1	6/26/2014	R19935
Caprolactam	ND	0.10		µg/L	1	6/26/2014	R19935
N-Nitroso-di-n-butylamine	ND	0.10		µg/L	1	6/26/2014	R19935
Acetophenone	ND	10		µg/L	1	6/26/2014	R19935
1-Methylnaphthalene	ND	10		µg/L	1	6/26/2014	R19935
2,3,4,6-Tetrachlorophenol	ND	10		µg/L	1	6/26/2014	R19935
2,4,5-Trichlorophenol	ND	10		µg/L	1	6/26/2014	R19935
2,4,6-Trichlorophenol	ND	10		µg/L	1	6/26/2014	R19935

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CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
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Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
2,4-Dichlorophenol	ND	10		µg/L	1	6/26/2014	R19935
2,4-Dimethylphenol	ND	10		µg/L	1	6/26/2014	R19935
2,4-Dinitrophenol	ND	10		µg/L	1	6/26/2014	R19935
2,4-Dinitrotoluene	ND	10		µg/L	1	6/26/2014	R19935
2,6-Dinitrotoluene	ND	10		µg/L	1	6/26/2014	R19935
2-Chloronaphthalene	ND	10		µg/L	1	6/26/2014	R19935
2-Chlorophenol	ND	10		µg/L	1	6/26/2014	R19935
2-Methylnaphthalene	ND	10		µg/L	1	6/26/2014	R19935
2-Methylphenol	ND	10		µg/L	1	6/26/2014	R19935
2-Nitroaniline	ND	10		µg/L	1	6/26/2014	R19935
2-Nitrophenol	ND	10		µg/L	1	6/26/2014	R19935
3,3'-Dichlorobenzidine	ND	10		µg/L	1	6/26/2014	R19935
3-Nitroaniline	ND	10		µg/L	1	6/26/2014	R19935
4,6-Dinitro-2-methylphenol	ND	10		µg/L	1	6/26/2014	R19935
4-Bromophenyl phenyl ether	ND	10		µg/L	1	6/26/2014	R19935
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	6/26/2014	R19935
4-Chloroaniline	ND	10		µg/L	1	6/26/2014	R19935
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	6/26/2014	R19935
4-Nitroaniline	ND	10		µg/L	1	6/26/2014	R19935
4-Nitrophenol	ND	10		µg/L	1	6/26/2014	R19935
Acenaphthene	ND	10		µg/L	1	6/26/2014	R19935
Acenaphthylene	ND	10		µg/L	1	6/26/2014	R19935
Anthracene	ND	10		µg/L	1	6/26/2014	R19935
Benzo(g,h,i)perylene	ND	10		µg/L	1	6/26/2014	R19935
Benz(a)anthracene	ND	0.10		µg/L	1	6/26/2014	R19935
Benzo(a)pyrene	ND	0.10		µg/L	1	6/26/2014	R19935
Benzo(b)fluoranthene	ND	0.10		µg/L	1	6/26/2014	R19935
Benzo(k)fluoranthene	ND	0.10		µg/L	1	6/26/2014	R19935
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	6/26/2014	R19935
Bis(2-chloroethyl)ether	ND	10		µg/L	1	6/26/2014	R19935
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	6/26/2014	R19935
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	6/26/2014	R19935
Butyl benzyl phthalate	ND	10		µg/L	1	6/26/2014	R19935
Carbazole	ND	10		µg/L	1	6/26/2014	R19935
Chrysene	ND	0.10		µg/L	1	6/26/2014	R19935
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	6/26/2014	R19935
Dibenzofuran	ND	10		µg/L	1	6/26/2014	R19935
Diethyl phthalate	ND	10		µg/L	1	6/26/2014	R19935
Dimethyl phthalate	ND	10		µg/L	1	6/26/2014	R19935

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
Di-n-butyl phthalate	ND	10		µg/L	1	6/26/2014	R19935
Di-n-octyl phthalate	ND	10		µg/L	1	6/26/2014	R19935
Fluoranthene	ND	10		µg/L	1	6/26/2014	R19935
Fluorene	ND	10		µg/L	1	6/26/2014	R19935
Hexachlorobenzene	ND	1.0		µg/L	1	6/26/2014	R19935
Hexachlorobutadiene	ND	10		µg/L	1	6/26/2014	R19935
Hexachlorocyclopentadiene	ND	10		µg/L	1	6/26/2014	R19935
Hexachloroethane	ND	10		µg/L	1	6/26/2014	R19935
Indeno(1,2,3-cd)pyrene	ND	0.10		µg/L	1	6/26/2014	R19935
Isophorone	ND	10		µg/L	1	6/26/2014	R19935
Naphthalene	ND	10		µg/L	1	6/26/2014	R19935
Nitrobenzene	ND	10		µg/L	1	6/26/2014	R19935
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	6/26/2014	R19935
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	6/26/2014	R19935
Pentachlorophenol	ND	10		µg/L	1	6/26/2014	R19935
Phenanthrene	ND	10		µg/L	1	6/26/2014	R19935
Phenol	ND	5.0		µg/L	1	6/26/2014	R19935
Pyrene	ND	10		µg/L	1	6/26/2014	R19935
o-Toluidine	ND	0.10		µg/L	1	6/26/2014	R19935
Pyridine	ND	0.10		µg/L	1	6/26/2014	R19935
1,2,4,5-Tetrachlorobenzene	ND	10		µg/L	1	6/26/2014	R19935
Surr: 2,4,6-Tribromophenol	101	10-123		%REC	1	6/26/2014	R19935
Surr: 2-Fluorobiphenyl	102	19-130		%REC	1	6/26/2014	R19935
Surr: 2-Fluorophenol	76.2	21-110		%REC	1	6/26/2014	R19935
Surr: Nitrobenzene-d5	91.1	25-130		%REC	1	6/26/2014	R19935
Surr: Phenol-d5	79.3	10-125		%REC	1	6/26/2014	R19935
Surr: Terphenyl-d14	92.2	33-141		%REC	1	6/26/2014	R19935
CORROSIVITY						Analyst:	**SUB**
pH	7.90		H	pH Units	1	7/2/2014	R19940
IGNITABILITY METHOD 1010						Analyst:	**SUB**
Ignitability	>200	0		°F	1	7/7/2014	R19940
CYANIDE, REACTIVE						Analyst:	**SUB**
Cyanide, Reactive	ND	1.00		mg/L	1	7/2/2014	R19940
SULFIDE, REACTIVE						Analyst:	**SUB**
Reactive Sulfide	ND	1.0		mg/L	1	6/26/2014	R19940
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	6000	0.010		µmhos/cm	1	6/23/2014 3:26:39 PM	R19484

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 6/19/2014 9:30:00 AM
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM4500-H+B: PH						Analyst:	**JRR**
pH	7.91	1.68	H	pH units	1	6/23/2014 3:26:39 PM	R19484
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	290	20		mg/L CaCO3	1	6/23/2014 3:26:39 PM	R19484
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	6/23/2014 3:26:39 PM	R19484
Total Alkalinity (as CaCO3)	290	20		mg/L CaCO3	1	6/23/2014 3:26:39 PM	R19484
SPECIFIC GRAVITY						Analyst:	**SRM**
Specific Gravity	1.003	0			1	6/30/2014 10:37:00 AM	R19574
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	4440	40.0	*	mg/L	1	6/23/2014 11:26:00 AM	13798

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Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-002

Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK **Received Date:** 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Ethyl tert-butyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Acetonitrile	ND	2.5		µg/L	1	6/26/2014	R19890
Allyl chloride	ND	0.50		µg/L	1	6/26/2014	R19890
Chloroprene	ND	0.50		µg/L	1	6/26/2014	R19890
Cyclohexane	ND	0.50		µg/L	1	6/26/2014	R19890
Diethyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Diisopropyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Epichlorohydrin	ND	5.0		µg/L	1	6/26/2014	R19890
Ethyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
Ethyl methacrylate	ND	2.5		µg/L	1	6/26/2014	R19890
Freon-113	ND	0.50		µg/L	1	6/26/2014	R19890
Isobutanol	ND	50		µg/L	1	6/26/2014	R19890
Isopropyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
Methacrylonitrile	ND	2.5		µg/L	1	6/26/2014	R19890
Methyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
Methyl ethyl ketone	ND	2.5		µg/L	1	6/26/2014	R19890
Methyl isobutyl ketone	ND	2.5		µg/L	1	6/26/2014	R19890
Methyl methacrylate	ND	2.5		µg/L	1	6/26/2014	R19890
Methylcyclohexane	ND	1.0		µg/L	1	6/26/2014	R19890
n-Amyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
n-Hexane	ND	0.50		µg/L	1	6/26/2014	R19890
Nitrobenzene	ND	5.0		µg/L	1	6/26/2014	R19890
Pentachloroethane	ND	5.0		µg/L	1	6/26/2014	R19890
p-isopropyltoluene	ND	0.50		µg/L	1	6/26/2014	R19890
Propionitrile	ND	2.5		µg/L	1	6/26/2014	R19890
Tetrahydrofuran	ND	0.50		µg/L	1	6/26/2014	R19890
Benzene	ND	0.50		µg/L	1	6/26/2014	R19890
Toluene	ND	0.50		µg/L	1	6/26/2014	R19890
Ethylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	6/26/2014	R19890
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	6/26/2014	R19890
Naphthalene	ND	0.50		µg/L	1	6/26/2014	R19890
Acetone	ND	2.5		µg/L	1	6/26/2014	R19890
Bromobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Bromodichloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
Bromoform	ND	0.50		µg/L	1	6/26/2014	R19890

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-002
Matrix: TRIP BLANK
Client Sample ID: Trip Blank
Collection Date:
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Bromomethane	ND	0.50		µg/L	1	6/26/2014	R19890
Carbon disulfide	ND	0.50		µg/L	1	6/26/2014	R19890
Carbon Tetrachloride	ND	0.50		µg/L	1	6/26/2014	R19890
Chlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Chloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
Chloroform	ND	0.50		µg/L	1	6/26/2014	R19890
Chloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
2-Chlorotoluene	ND	0.50		µg/L	1	6/26/2014	R19890
4-Chlorotoluene	ND	0.50		µg/L	1	6/26/2014	R19890
cis-1,2-DCE	ND	0.50		µg/L	1	6/26/2014	R19890
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
Dibromochloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
Dibromomethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,3-Dichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,4-Dichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Dichlorodifluoromethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1-Dichloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1-Dichloroethene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2-Dichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
1,3-Dichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
2,2-Dichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1-Dichloropropene	ND	0.50		µg/L	1	6/26/2014	R19890
Hexachlorobutadiene	ND	0.50		µg/L	1	6/26/2014	R19890
2-Hexanone	ND	0.50		µg/L	1	6/26/2014	R19890
Isopropylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Methylene Chloride	ND	2.5		µg/L	1	6/26/2014	R19890
n-Butylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
n-Propylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
sec-Butylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
Styrene	ND	0.50		µg/L	1	6/26/2014	R19890
tert-Butylbenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	6/26/2014	R19890
trans-1,2-DCE	ND	0.50		µg/L	1	6/26/2014	R19890
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	6/26/2014	R19890
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890

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Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1406935-002
Matrix: TRIP BLANK
Client Sample ID: Trip Blank
Collection Date:
Received Date: 6/19/2014 2:35:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,1-Trichloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,1,2-Trichloroethane	ND	0.50		µg/L	1	6/26/2014	R19890
Trichloroethene (TCE)	ND	0.50		µg/L	1	6/26/2014	R19890
Trichlorofluoromethane	ND	0.50		µg/L	1	6/26/2014	R19890
1,2,3-Trichloropropane	ND	0.50		µg/L	1	6/26/2014	R19890
Vinyl chloride	ND	0.50		µg/L	1	6/26/2014	R19890
mp-Xylenes	ND	1.0		µg/L	1	6/26/2014	R19890
o-Xylene	ND	0.50		µg/L	1	6/26/2014	R19890
tert-Amyl methyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
tert-Butyl alcohol	ND	0.50		µg/L	1	6/26/2014	R19890
Acrolein	ND	0.50		µg/L	1	6/26/2014	R19890
Acrylonitrile	ND	10		µg/L	1	6/26/2014	R19890
Bromochloromethane	ND	0.50		µg/L	1	6/26/2014	R19890
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	6/26/2014	R19890
Iodomethane	ND	0.50		µg/L	1	6/26/2014	R19890
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	6/26/2014	R19890
Vinyl acetate	ND	0.50		µg/L	1	6/26/2014	R19890
1,4-Dioxane	ND	20		µg/L	1	6/26/2014	R19890
Surr: 1,2-Dichloroethane-d4	100	70-130		%REC	1	6/26/2014	R19890
Surr: 4-Bromofluorobenzene	102	70-130		%REC	1	6/26/2014	R19890
Surr: Toluene-d8	99.6	70-130		%REC	1	6/26/2014	R19890

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A5** SampType: **ccv_5** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**

Prep Date: Analysis Date: **6/19/2014** SeqNo: **561477** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.4	0.10	1.600	0	90.3	90	110			
Chloride	7.8	0.50	8.000	0	96.9	90	110			
Nitrogen, Nitrite (As N)	3.2	0.10	3.200	0	99.5	90	110			
Bromide	7.9	0.10	8.000	0	98.4	90	110			
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	102	90	110			
Phosphorus, Orthophosphate (As P	7.8	0.50	8.000	0	97.4	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R19410** RunNo: **19410**

Prep Date: Analysis Date: **6/19/2014** SeqNo: **561479** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R19410** RunNo: **19410**

Prep Date: Analysis Date: **6/19/2014** SeqNo: **561480** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	94.3	90	110			
Chloride	4.7	0.50	5.000	0	94.8	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	93.7	90	110			
Bromide	2.4	0.10	2.500	0	96.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.8	90	110			
Phosphorus, Orthophosphate (As P	4.9	0.50	5.000	0	97.6	90	110			

Sample ID **A6** SampType: **ccv_6** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**

Prep Date: Analysis Date: **6/19/2014** SeqNo: **561489** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.3	0.10	2.400	0	95.4	90	110			
Chloride	12	0.50	12.00	0	102	90	110			
Nitrogen, Nitrite (As N)	4.9	0.10	4.800	0	102	90	110			
Bromide	12	0.10	12.00	0	100	90	110			

Qualifiers:

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- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A6** SampType: **ccv_6** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/19/2014** SeqNo: **561489** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	7.8	0.10	7.200	0	108	90	110			
Phosphorus, Orthophosphate (As P	12	0.50	12.00	0	101	90	110			

Sample ID **A4** SampType: **ccv_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/19/2014** SeqNo: **561501** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.94	0.10	1.000	0	93.7	90	110			
Chloride	4.6	0.50	5.000	0	92.9	90	110			
Nitrogen, Nitrite (As N)	2.0	0.10	2.000	0	97.9	90	110			
Bromide	4.8	0.10	5.000	0	96.0	90	110			
Nitrogen, Nitrate (As N)	3.0	0.10	3.000	0	98.7	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	95.8	90	110			

Sample ID **A5** SampType: **ccv_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/19/2014** SeqNo: **561513** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.10	1.600	0	96.1	90	110			
Chloride	7.8	0.50	8.000	0	97.0	90	110			
Nitrogen, Nitrite (As N)	3.1	0.10	3.200	0	98.3	90	110			
Bromide	7.6	0.10	8.000	0	95.3	90	110			
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	102	90	110			
Phosphorus, Orthophosphate (As P	7.7	0.50	8.000	0	96.6	90	110			

Sample ID **A6** SampType: **ccv_6** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/19/2014** SeqNo: **561525** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.3	0.10	2.400	0	97.8	90	110			
Chloride	12	0.50	12.00	0	101	90	110			
Nitrogen, Nitrite (As N)	4.8	0.10	4.800	0	101	90	110			
Bromide	12	0.10	12.00	0	100	90	110			
Nitrogen, Nitrate (As N)	7.7	0.10	7.200	0	107	90	110			
Phosphorus, Orthophosphate (As P	12	0.50	12.00	0	101	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/19/2014** SeqNo: **561529** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/19/2014** SeqNo: **561530** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	101	90	110			
Chloride	4.8	0.50	5.000	0	96.1	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	97.0	90	110			
Bromide	2.5	0.10	2.500	0	99.2	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P	5.0	0.50	5.000	0	99.0	90	110			

Sample ID **A4** SampType: **ccv_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/20/2014** SeqNo: **561537** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.96	0.10	1.000	0	95.6	90	110			
Chloride	4.7	0.50	5.000	0	93.1	90	110			
Nitrogen, Nitrite (As N)	2.0	0.10	2.000	0	98.8	90	110			
Bromide	4.8	0.10	5.000	0	96.5	90	110			
Nitrogen, Nitrate (As N)	2.9	0.10	3.000	0	97.9	90	110			
Phosphorus, Orthophosphate (As P	4.8	0.50	5.000	0	96.0	90	110			

Sample ID **A5** SampType: **ccv_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/20/2014** SeqNo: **561549** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.10	1.600	0	96.4	90	110			
Chloride	7.8	0.50	8.000	0	97.5	90	110			
Nitrogen, Nitrite (As N)	3.2	0.10	3.200	0	100	90	110			
Bromide	7.8	0.10	8.000	0	98.0	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A5** SampType: **ccv_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/20/2014** SeqNo: **561549** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	103	90	110			
Phosphorus, Orthophosphate (As P	7.9	0.50	8.000	0	98.2	90	110			

Sample ID **A6** SampType: **ccv_6** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19410** RunNo: **19410**
Prep Date: Analysis Date: **6/20/2014** SeqNo: **561555** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	2.3	0.10	2.400	0	97.5	90	110			
Chloride	12	0.50	12.00	0	101	90	110			
Nitrogen, Nitrite (As N)	4.9	0.10	4.800	0	102	90	110			
Bromide	12	0.10	12.00	0	99.7	90	110			
Nitrogen, Nitrate (As N)	7.7	0.10	7.200	0	107	90	110			
Phosphorus, Orthophosphate (As P	12	0.50	12.00	0	101	90	110			

Sample ID **A6** SampType: **CCV_6** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572917** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30	0.50	30.00	0	101	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572919** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572920** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.3	0.50	10.00	0	93.5	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572929** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	12	0.50	12.50	0	94.3	90	110			

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572941** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	20	0.50	20.00	0	98.2	90	110			

Sample ID **A6** SampType: **CCV_6** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572953** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	31	0.50	30.00	0	102	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572968** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	12	0.50	12.50	0	95.2	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572970** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572971** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.5	0.50	10.00	0	95.0	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

WO#: **1406935**

Hall Environmental Analysis Laboratory, Inc.

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/7/2014** SeqNo: **572980** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	20	0.50	20.00	0	98.6	90	110			

Sample ID **A6** SampType: **CCV_6** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/8/2014** SeqNo: **572992** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	30	0.50	30.00	0	102	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/8/2014** SeqNo: **573004** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	12	0.50	12.50	0	94.7	90	110			

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R19725** RunNo: **19725**
Prep Date: Analysis Date: **7/8/2014** SeqNo: **573016** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	20	0.50	20.00	0	98.9	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-R19890**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **R19890**	RunNo: **19890**	
Prep Date:	Analysis Date: **6/26/2014**	SeqNo: **578052**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.50								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Ethyl methacrylate	ND	0.50								
Methacrylonitrile	ND	0.50								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	0.50								
Propionitrile	ND	0.50								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Acetone	ND	2.5								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								
Bromomethane	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								
1,1-Dichloropropene	ND	0.50								
2-Hexanone	ND	0.50								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
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- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-R19890** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R19890** RunNo: **19890**
Prep Date: Analysis Date: **6/26/2014** SeqNo: **578052** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Methylene Chloride	ND	0.50								
Styrene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								
trans-1,3-Dichloropropene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
mp-Xylenes	ND	0.50								
o-Xylene	ND	0.50								
Acrolein	ND	10								
Bromochloromethane	ND	0.50								
Iodomethane	ND	0.50								
Vinyl acetate	ND	0.50								

Sample ID **LCS-R19890** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R19890** RunNo: **19890**
Prep Date: Analysis Date: **6/26/2014** SeqNo: **578053** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.6	0.50	10.00	0	95.5	80	120			
Toluene	9.8	0.50	10.00	0	98.2	80	120			
Ethylbenzene	10	0.50	10.00	0	99.9	80	120			
Chlorobenzene	9.8	0.50	10.00	0	97.5	80	120			
1,1-Dichloroethene	9.5	0.50	10.00	0	94.9	80	120			
Tetrachloroethene (PCE)	9.9	0.50	10.00	0	98.9	80	120			
Trichloroethene (TCE)	9.9	0.50	10.00	0	98.8	80	120			
o-Xylene	10	0.50	10.00	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
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- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-R19935**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**	
Client ID: **PBW**	Batch ID: **R19935**	RunNo: **19935**	
Prep Date:	Analysis Date: **6/26/2014**	SeqNo: **579511**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
N-Nitroso-di-n-butylamine	ND	1.0								
1-Methylnaphthalene	ND	10								
2,3,4,6-Tetrachlorophenol	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2,4-Dichlorophenol	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	10								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3,3'-Dichlorobenzidine	ND	10								
3-Nitroaniline	ND	10								
4,6-Dinitro-2-methylphenol	ND	10								
4-Bromophenyl phenyl ether	ND	10								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Anthracene	ND	10								
Benzo(g,h,i)perylene	ND	1.0								
Benz(a)anthracene	ND	1.0								
Benzo(a)pyrene	ND	1.0								
Benzo(b)fluoranthene	ND	1.0								
Benzo(k)fluoranthene	ND	1.0								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-R19935** SampType: **MBLK** TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **PBW** Batch ID: **R19935** RunNo: **19935**
Prep Date: Analysis Date: **6/26/2014** SeqNo: **579511** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	1.0								
Dibenzofuran	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Isophorone	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
Pentachlorophenol	ND	10								
Phenanthrene	ND	10								
Phenol	ND	5.0								
Pyrene	ND	10								

Sample ID **LCS-R19935** SampType: **LCS** TestCode: **EPA 8270C: Semivolatiles/Mod**
Client ID: **LCSW** Batch ID: **R19935** RunNo: **19935**
Prep Date: Analysis Date: **6/26/2014** SeqNo: **579512** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.3		5.000	0	106	49	134			
2-Chlorophenol	4.4		5.000	0	87.0	50	131			
4-Chloro-3-methylphenol	5.4		5.000	0	108	42	139			
4-Nitrophenol	4.6		5.000	0	92.8	19	137			
Acenaphthene	4.6		5.000	0	93.0	36	122			
Bis(2-ethylhexyl)phthalate	4.9		5.000	0	97.8	43	142			
N-Nitrosodi-n-propylamine	4.5		5.000	0	89.6	46	135			
Pentachlorophenol	4.1		5.000	0	82.6	22	138			
Phenol	6.3		5.000	0	126	45	134			
Pyrene	4.7		5.000	0	93.6	45	138			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-13883** SampType: **MBLK** TestCode: **EPA Method 7470: Mercury**

Client ID: **PBW** Batch ID: **13883** RunNo: **19515**

Prep Date: **6/25/2014** Analysis Date: **6/26/2014** SeqNo: **564933** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-13883** SampType: **LCS** TestCode: **EPA Method 7470: Mercury**

Client ID: **LCSW** Batch ID: **13883** RunNo: **19515**

Prep Date: **6/25/2014** Analysis Date: **6/26/2014** SeqNo: **564934** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.4	80	120			

Sample ID **1406935-001BMS** SampType: **MS** TestCode: **EPA Method 7470: Mercury**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **13883** RunNo: **19515**

Prep Date: **6/25/2014** Analysis Date: **6/26/2014** SeqNo: **564941** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	95.9	75	125			

Sample ID **1406935-001BMSD** SampType: **MSD** TestCode: **EPA Method 7470: Mercury**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **13883** RunNo: **19515**

Prep Date: **6/25/2014** Analysis Date: **6/26/2014** SeqNo: **564944** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	0	95.6	75	125	0.263	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-14082**	SampType: **MBLK**			TestCode: **MERCURY, TCLP**						
Client ID: **PBW**	Batch ID: **14082**			RunNo: **19737**						
Prep Date: **7/7/2014**	Analysis Date: **7/8/2014**			SeqNo: **573374**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-14082**	SampType: **LCS**			TestCode: **MERCURY, TCLP**						
Client ID: **LCSW**	Batch ID: **14082**			RunNo: **19737**						
Prep Date: **7/7/2014**	Analysis Date: **7/8/2014**			SeqNo: **573375**		Units: **mg/L**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-14080** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **14080** RunNo: **19736**
Prep Date: **7/7/2014** Analysis Date: **7/8/2014** SeqNo: **573325** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-14080** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **14080** RunNo: **19736**
Prep Date: **7/7/2014** Analysis Date: **7/8/2014** SeqNo: **573326** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	99.9	80	120			
Barium	ND	100	0.5000	0	96.7	80	120			
Cadmium	ND	1.0	0.5000	0	97.9	80	120			
Chromium	ND	5.0	0.5000	0	96.1	80	120			
Lead	ND	5.0	0.5000	0	94.4	80	120			
Selenium	ND	1.0	0.5000	0	97.1	80	120			
Silver	ND	5.0	0.1000	0	101	80	120			

Sample ID **1406935-001CMS** SampType: **MS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **14080** RunNo: **19736**
Prep Date: **7/7/2014** Analysis Date: **7/8/2014** SeqNo: **573329** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0.02968	108	75	125			
Barium	ND	100	0.5000	0.04484	98.2	75	125			
Cadmium	ND	1.0	0.5000	0	103	75	125			
Chromium	ND	5.0	0.5000	0.001840	98.1	75	125			
Lead	ND	5.0	0.5000	0	95.5	75	125			
Selenium	ND	1.0	0.5000	0.09485	103	75	125			
Silver	ND	5.0	0.1000	0	107	75	125			

Sample ID **1406935-001CMSD** SampType: **MSD** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **14080** RunNo: **19736**
Prep Date: **7/7/2014** Analysis Date: **7/8/2014** SeqNo: **573330** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0.02968	109	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **1406935-001CMSD** SampType: **MSD** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **14080** RunNo: **19736**

Prep Date: **7/7/2014** Analysis Date: **7/8/2014** SeqNo: **573330** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100	0.5000	0.04484	98.1	75	125	0	20	
Cadmium	ND	1.0	0.5000	0	102	75	125	0	20	
Chromium	ND	5.0	0.5000	0.001840	97.8	75	125	0	20	
Lead	ND	5.0	0.5000	0	95.1	75	125	0	20	
Selenium	ND	1.0	0.5000	0.09485	108	75	125	0	20	
Silver	ND	5.0	0.1000	0	107	75	125	0	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-14075** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW** Batch ID: **14075** RunNo: **19704**
Prep Date: **7/5/2014** Analysis Date: **7/7/2014** SeqNo: **572184** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-14075** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **14075** RunNo: **19704**
Prep Date: **7/5/2014** Analysis Date: **7/7/2014** SeqNo: **572185** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.55	0.050	0.5000	0	110	80	120			
Arsenic	0.55	0.020	0.5000	0	110	80	120			
Barium	0.54	0.020	0.5000	0	109	80	120			
Beryllium	0.57	0.0030	0.5000	0	115	80	120			
Cadmium	0.54	0.0020	0.5000	0	109	80	120			
Calcium	57	1.0	50.00	0	114	80	120			
Chromium	0.54	0.0060	0.5000	0	108	80	120			
Cobalt	0.52	0.0060	0.5000	0	104	80	120			
Copper	0.56	0.0060	0.5000	0	112	80	120			
Iron	0.55	0.050	0.5000	0	110	80	120			
Lead	0.53	0.0050	0.5000	0	107	80	120			
Magnesium	57	1.0	50.00	0	113	80	120			
Manganese	0.54	0.0020	0.5000	0	108	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **LCS-14075** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **14075** RunNo: **19704**
Prep Date: **7/5/2014** Analysis Date: **7/7/2014** SeqNo: **572185** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.52	0.010	0.5000	0	105	80	120			
Potassium	54	1.0	50.00	0	109	80	120			
Selenium	0.53	0.050	0.5000	0	106	80	120			
Silver	0.11	0.0050	0.1000	0	112	80	120			
Thallium	0.53	0.050	0.5000	0	106	80	120			
Vanadium	0.57	0.050	0.5000	0	113	80	120			
Zinc	0.53	0.020	0.5000	0	106	80	120			

Sample ID **MB-14172** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW** Batch ID: **14172** RunNo: **19829**
Prep Date: **7/10/2014** Analysis Date: **7/11/2014** SeqNo: **576105** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								

Sample ID **LCS-14172** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **14172** RunNo: **19829**
Prep Date: **7/10/2014** Analysis Date: **7/11/2014** SeqNo: **576106** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.48	0.020	0.5000	0	96.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-R19940**	SampType: **MBLK**			TestCode: **CYANIDE, Reactive**						
Client ID: **PBW**	Batch ID: **R19940**			RunNo: **19940**						
Prep Date:	Analysis Date: **7/2/2014**			SeqNo: **579570**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID **LCS-R19940**	SampType: **LCS**			TestCode: **CYANIDE, Reactive**						
Client ID: **LCSW**	Batch ID: **R19940**			RunNo: **19940**						
Prep Date:	Analysis Date: **7/2/2014**			SeqNo: **579571**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.512		0.5000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-R19940**	SampType: **MBLK**			TestCode: **SULFIDE, Reactive**						
Client ID: **PBW**	Batch ID: **R19940**			RunNo: **19940**						
Prep Date:	Analysis Date: **6/26/2014**			SeqNo: **579573**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID **LCS-R19940**	SampType: **LCS**			TestCode: **SULFIDE, Reactive**						
Client ID: **LCSW**	Batch ID: **R19940**			RunNo: **19940**						
Prep Date:	Analysis Date: **6/26/2014**			SeqNo: **579574**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.20		0.2000	0	100	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1406935**

18-Jul-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **mb-1** SampType: **MBLK** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R19484** RunNo: **19484**
Prep Date: Analysis Date: **6/23/2014** SeqNo: **563920** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1** SampType: **LCS** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R19484** RunNo: **19484**
Prep Date: Analysis Date: **6/23/2014** SeqNo: **563921** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79	20	80.00	0	98.7	90	110			

Sample ID **mb-2** SampType: **MBLK** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R19484** RunNo: **19484**
Prep Date: Analysis Date: **6/23/2014** SeqNo: **563943** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2** SampType: **LCS** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R19484** RunNo: **19484**
Prep Date: Analysis Date: **6/23/2014** SeqNo: **563944** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	100	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1406935

18-Jul-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-13798** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **PBW** Batch ID: **13798** RunNo: **19431**

Prep Date: **6/19/2014** Analysis Date: **6/23/2014** SeqNo: **561986** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-13798** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **LCSW** Batch ID: **13798** RunNo: **19431**

Prep Date: **6/19/2014** Analysis Date: **6/23/2014** SeqNo: **561987** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Sample ID **1406935-001AMS** SampType: **MS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **13798** RunNo: **19431**

Prep Date: **6/19/2014** Analysis Date: **6/23/2014** SeqNo: **562008** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	6460	40.0	2000	4442	101	80	120			

Sample ID **1406935-001AMSD** SampType: **MSD** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **13798** RunNo: **19431**

Prep Date: **6/19/2014** Analysis Date: **6/23/2014** SeqNo: **562009** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	6460	40.0	2000	4442	101	80	120	0.124	5	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING CO Work Order Number: 1406935 RcptNo: 1

Received by/date: AT 06/19/14

Logged By: Anne Thorne 6/19/2014 2:35:00 PM Anne Thorne

Completed By: Anne Thorne 6/19/2014 Anne Thorne

Reviewed By: AT 06/19/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.6	Good	Yes			

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ **Rush**

Project Name:

WDW-1, 2, & 3 Qtrly Inj Well

Project #: P.O. # 167796

Project Manager:

Dan Crawford

Sampler: Jerry Sosa

[redacted]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
6/19/14	9:~~00~~ 30	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
6/19/14	9:~~00~~ 30	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	-001					X	X	
6/19/14	9:~~00~~ 30	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	-001		X					
6/19/14	9:~~00~~ 30	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001			X				
6/19/14	9:~~00~~ 30	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001				X			
6/19/14	9:~~00~~ 30	Liquid	Trip Blank	2	Neat	-002		X					
6/19/14	9:~~00~~ 30	Liquid	Temperature Blank	1	Neat								

Date:	Time:	Relinquished by:	Received by:	Date	Time
6/19/14	10:00	Jerry Sosa	[signature]	06/19/14	14:35
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Report these results separately from all other Chain of Custody kits provided.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Classification	Analyte name	Method	Units	RL
Volatile organics	Acetone	SW-846 Method 8260C	µg/L	10
Volatile organics	Acetonitrile	SW-846 Method 8260C	µg/L	
Volatile organics	Acrolein	SW-846 Method 8260C	µg/L	
Volatile organics	Allyl alcohol	SW-846 Method 8260C	µg/L	
Volatile organics	Allyl chloride	SW-846 Method 8260C	µg/L	
Volatile organics	t-Amyl ethyl ether (TAEE)	SW-846 Method 8260C	µg/L	
Volatile organics	t-Amyl methyl ether (TAME)	SW-846 Method 8260C	µg/L	
Volatile organics	Benzene	SW-846 Method 8260C	µg/L	1
Volatile organics	Benzyl chloride	SW-846 Method 8260C	µg/L	
Volatile organics	Bis(2-chloroethyl)sulfide	SW-846 Method 8260C	µg/L	
Volatile organics	Bromoacetone	SW-846 Method 8260C	µg/L	
Volatile organics	Bromobenzene	SW-846 Method 8260C	µg/L	
Volatile organics	Bromochloromethane	SW-846 Method 8260C	µg/L	5
Volatile organics	Bromodichloromethane	SW-846 Method 8260C	µg/L	1
Volatile organics	4-Bromofluorobenzene (surr)	SW-846 Method 8260C	µg/L	
Volatile organics	Bromoform	SW-846 Method 8260C	µg/L	4
Volatile organics	Bromomethane	SW-846 Method 8260C	µg/L	2
Volatile organics	n-Butanol	SW-846 Method 8260C	µg/L	
Volatile organics	2-Butanone (MEK)	SW-846 Method 8260C	µg/L	10
Volatile organics	n-Butylbenzene	SW-846 Method 8260C	µg/L	
Volatile organics	sec-Butylbenzene	SW-846 Method 8260C	µg/L	
Volatile organics	tert-Butylbenzene	SW-846 Method 8260C	µg/L	
Volatile organics	t-Butyl alcohol	SW-846 Method 8260C	µg/L	
Volatile organics	Carbon disulfide	SW-846 Method 8260C	µg/L	2
Volatile organics	Carbon tetrachloride	SW-846 Method 8260C	µg/L	1
Volatile organics	Chloral hydrate	SW-846 Method 8260C	µg/L	
Volatile organics	Chlorobenzene	SW-846 Method 8260C	µg/L	1
Volatile organics	Chlorobenzene-d5 (IS)	SW-846 Method 8260C	µg/L	
Volatile organics	1-Chlorobutane	SW-846 Method 8260C	µg/L	
Volatile organics	Chlorodibromomethane	SW-846 Method 8260C	µg/L	
Volatile organics	1-Chlorohexane	SW-846 Method 8260C	µg/L	
Volatile organics	Chloroethane	SW-846 Method 8260C	µg/L	1
Volatile organics	2-Chloroethanol	SW-846 Method 8260C	µg/L	
Volatile organics	2-Chloroethyl vinyl ether	SW-846 Method 8260C	µg/L	
Volatile organics	Chloroform	SW-846 Method 8260C	µg/L	1
Volatile organics	Chloromethane	SW-846 Method 8260C	µg/L	1
Volatile organics	Chloroprene	SW-846 Method 8260C	µg/L	
Volatile organics	4-Chlorotoluene	SW-846 Method 8260C	µg/L	
Volatile organics	Crotonaldehyde	SW-846 Method 8260C	µg/L	
Volatile organics	Cyclohexane	SW-846 Method 8260C	µg/L	5
Volatile organics	1,2-Dibromo-3-chloropropane	SW-846 Method 8260C	µg/L	10
Volatile organics	1,2-Dibromoethane	SW-846 Method 8260C	µg/L	2
Volatile organics	Dibromochloromethane	SW-846 Method 8260C	µg/L	1
Volatile organics	Dibromomethane	SW-846 Method 8260C	µg/L	
Volatile organics	1,2-Dichlorobenzene	SW-846 Method 8260C	µg/L	1
Volatile organics	1,3-Dichlorobenzene	SW-846 Method 8260C	µg/L	1

Volatile organics	1,4-Dichlorobenzene	SW-846 Method 8260C	µg/L	1
Volatile organics	1,4-Dichlorobenzene-d4 (IS)	SW-846 Method 8260C	µg/L	
Volatile organics	cis-1,4-Dichloro-2-butene	SW-846 Method 8260C	µg/L	
Volatile organics	trans-1,4-Dichloro-2-butene	SW-846 Method 8260C	µg/L	
Volatile organics	Dichlorodifluoromethane	SW-846 Method 8260C	µg/L	5
Volatile organics	1,1-Dichloroethane	SW-846 Method 8260C	µg/L	1
Volatile organics	1,2-Dichloroethane	SW-846 Method 8260C	µg/L	1
Volatile organics	1,2-Dichloroethane-d4 (surr)	SW-846 Method 8260C	µg/L	
Volatile organics	1,1-Dichloroethene	SW-846 Method 8260C	µg/L	1
Volatile organics	cis-1,2-Dichloroethene	SW-846 Method 8260C	µg/L	1
Volatile organics	trans-1,2-Dichloroethene	SW-846 Method 8260C	µg/L	1
Volatile organics	1,2-Dichloropropane	SW-846 Method 8260C	µg/L	1
Volatile organics	1,3-Dichloropropane	SW-846 Method 8260C	µg/L	
Volatile organics	2,2-Dichloropropane	SW-846 Method 8260C	µg/L	
Volatile organics	1,1-Dichloropropene	SW-846 Method 8260C	µg/L	
Volatile organics	1,3-Dichloro-2-propanol	SW-846 Method 8260C	µg/L	
Volatile organics	cis-1,3-Dichloropropene	SW-846 Method 8260C	µg/L	1
Volatile organics	trans-1,3-Dichloropropene	SW-846 Method 8260C	µg/L	1
Volatile organics	1,2,3,4-Depoxybutane	SW-846 Method 8260C	µg/L	
Volatile organics	Diethyl ether	SW-846 Method 8260C	µg/L	
Volatile organics	Diisopropyl either (DIPE)	SW-846 Method 8260C	µg/L	
Volatile organics	1,4-Difluorobenzene (IS)	SW-846 Method 8260C	µg/L	
Volatile organics	1,4-Dioxane	SW-846 Method 8260C	µg/L	130
Volatile organics	Epichlorohydrin	SW-846 Method 8260C	µg/L	
Volatile organics	Ethanol	SW-846 Method 8260C	µg/L	
Volatile organics	Ethyl acetate	SW-846 Method 8260C	µg/L	
Volatile organics	Ethylbenzene	SW-846 Method 8260C	µg/L	1
Volatile organics	Ethylene oxide	SW-846 Method 8260C	µg/L	
Volatile organics	Ethyl methacrylate	SW-846 Method 8260C	µg/L	
Volatile organics	Fluorobenzene (IS)	SW-846 Method 8260C	µg/L	
Volatile organics	Freon 113	SW-846 Method 8260C	µg/L	5
Volatile organics	Ethyl tert-butyl ether (ETBE)	SW-846 Method 8260C	µg/L	
Volatile organics	Hexachlorobutadiene	SW-846 Method 8260C	µg/L	
Volatile organics	Hexachloroethane	SW-846 Method 8260C	µg/L	
Volatile organics	2-Hexanone	SW-846 Method 8260C	µg/L	5
Volatile organics	Iodomethane	SW-846 Method 8260C	µg/L	
Volatile organics	Isobutyl alcohol	SW-846 Method 8260C	µg/L	
Volatile organics	Isopropylbenzene	SW-846 Method 8260C	µg/L	2
Volatile organics	p-Isopropyltoluene	SW-846 Method 8260C	µg/L	
Volatile organics	Malononitrile	SW-846 Method 8260C	µg/L	
Volatile organics	Methacrylonitrile	SW-846 Method 8260C	µg/L	
Volatile organics	Methanol	SW-846 Method 8260C	µg/L	
Volatile organics	Methyl acetate	SW-846 Method 8260C	µg/L	5
Volatile organics	Methylcyclohexane	SW-846 Method 8260C	µg/L	5
Volatile organics	Methyl acrylate	SW-846 Method 8260C	µg/L	
Volatile organics	Methylene chloride	SW-846 Method 8260C	µg/L	2
Volatile organics	Methyl methacrylate	SW-846 Method 8260C	µg/L	

Volatile organics	4-Methyl-2-pentanone (MIBK)	SW-846 Method 8260C	µg/L	5
Volatile organics	Methyl tert-butyl ether (MTBE)	SW-846 Method 8260C	µg/L	1
Volatile organics	Naphthalene	SW-846 Method 8260C	µg/L	
Volatile organics	Nitrobenzene	SW-846 Method 8260C	µg/L	
Volatile organics	2-Nitropropane	SW-846 Method 8260C	µg/L	
Volatile organics	N-Nitroso-di-n-butylamine	SW-846 Method 8260C	µg/L	
Volatile organics	Paraldehyde	SW-846 Method 8260C	µg/L	
Volatile organics	Pentachloroethane	SW-846 Method 8260C	µg/L	
Volatile organics	Pentafluorobenzene	SW-846 Method 8260C	µg/L	
Volatile organics	2-Pentanone	SW-846 Method 8260C	µg/L	
Volatile organics	2-Picoline	SW-846 Method 8260C	µg/L	
Volatile organics	1-Propanol	SW-846 Method 8260C	µg/L	
Volatile organics	2-Propanol	SW-846 Method 8260C	µg/L	
Volatile organics	Propargyl alcohol	SW-846 Method 8260C	µg/L	
Volatile organics	beta-Propiolactone	SW-846 Method 8260C	µg/L	
Volatile organics	Propionitrile	SW-846 Method 8260C	µg/L	
Volatile organics	n-Propylamine	SW-846 Method 8260C	µg/L	
Volatile organics	n-Propylbenzene	SW-846 Method 8260C	µg/L	
Volatile organics	Pyridine	SW-846 Method 8260C	µg/L	
Volatile organics	Styrene	SW-846 Method 8260C	µg/L	5
Volatile organics	1,1,1,2-Tetrachloroethane	SW-846 Method 8260C	µg/L	
Volatile organics	1,1,2,2-Tetrachloroethane	SW-846 Method 8260C	µg/L	1
Volatile organics	Tetrachloroethene (PCE)	SW-846 Method 8260C	µg/L	1
Volatile organics	Toluene	SW-846 Method 8260C	µg/L	1
Volatile organics	Toluene-d8 (surr)	SW-846 Method 8260C	µg/L	
Volatile organics	o-Toluidine	SW-846 Method 8260C	µg/L	
Volatile organics	1,2,3-Trichlorobenzene	SW-846 Method 8260C	µg/L	5
Volatile organics	1,2,4-Trichlorobenzene	SW-846 Method 8260C	µg/L	5
Volatile organics	1,1,1-Trichloroethane	SW-846 Method 8260C	µg/L	1
Volatile organics	1,1,2-Trichloroethane	SW-846 Method 8260C	µg/L	1
Volatile organics	Trichloroethene (TCE)	SW-846 Method 8260C	µg/L	1
Volatile organics	Trichlorofluoromethane	SW-846 Method 8260C	µg/L	5
Volatile organics	1,2,3-Trichloropropane	SW-846 Method 8260C	µg/L	
Volatile organics	1,2,4-Trimethylbenzene	SW-846 Method 8260C	µg/L	
Volatile organics	1,3,5-Trimethylbenzene	SW-846 Method 8260C	µg/L	
Volatile organics	Vinyl acetate	SW-846 Method 8260C	µg/L	
Volatile organics	Vinyl chloride	SW-846 Method 8260C	µg/L	1
Volatile organics	o-Xylene	SW-846 Method 8260C	µg/L	1
Volatile organics	m-Xylene	SW-846 Method 8260C	µg/L	1
Volatile organics	p-Xylene	SW-846 Method 8260C	µg/L	1
Volatile organics	Xylene, total	SW-846 Method 8260C	µg/L	1

(surr) - Surrogate
(IS) - Internal Standard
Method 8260C Volatile Organic Compounds by Gas Chromatograhy/Mass Spectrometry (GC/MS) (EPA, Revision 3, August 2006)
Constituents with RLs are on the VOC Target Compound List (TCL) (SOMO 1.1)

Classification	Analyte name	Method	Units	RL
Semivolatile organics	1,1'-Biphenyl	SW-864 Method 8270B	µg/L	1
Semivolatile organics	1,2,4,5-Tetrachlorobenzene	SW-864 Method 8270B	µg/L	2
Semivolatile organics	2-Chloronaphthalene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2-Chlorophenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2-Methylphenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2-Nitroaniline	SW-864 Method 8270B	µg/L	10
Semivolatile organics	2-Nitrophenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2,3,4,6-Tetrachlorophenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2,4-Dichlorophenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2,4-Dimethylphenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2,4-Dinitrophenol	SW-864 Method 8270B	µg/L	10
Semivolatile organics	2,4-Dinitrotoluene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2,4,5-Trichlorophenol	SW-864 Method 8270B	µg/L	10
Semivolatile organics	2,4,6-Trichlorophenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2,6-Dinitrotoluene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	3-Nitroaniline	SW-864 Method 8270B	µg/L	10
Semivolatile organics	3,3'-Dichlrobenzidine	SW-864 Method 8270B	µg/L	5
Semivolatile organics	4-Bromophenyl-phenylether	SW-864 Method 8270B	µg/L	5
Semivolatile organics	4-Chloro-3-methylphenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	4-Chloroaniline	SW-864 Method 8270B	µg/L	5
Semivolatile organics	4-Chlorophenyl-phenyl ether	SW-864 Method 8270B	µg/L	5
Semivolatile organics	4-Nitroaniline	SW-864 Method 8270B	µg/L	10
Semivolatile organics	4-Nitrophenol	SW-864 Method 8270B	µg/L	10
Semivolatile organics	4,6-Dinitro-2-methylphenol	SW-864 Method 8270B	µg/L	10
Semivolatile organics	Acetophenone	SW-864 Method 8270B	µg/L	2
Semivolatile organics	Acenaphthene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Acenaphthylene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Anthracene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Atrazine	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Benzaldehyde	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Benzo(a)anthracene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Benzo(a)pyrene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Benzo(b)fluoranthene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Benzo(g,h,i)perylene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Benzo(k)fluoranthene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	bis(2-Chloroethoxy)-methane	SW-864 Method 8270B	µg/L	2
Semivolatile organics	bis(2-Chloroethyl) ether	SW-864 Method 8270B	µg/L	2
Semivolatile organics	bis(2-Chloroisopropyl) ether	SW-864 Method 8270B	µg/L	2
Semivolatile organics	bis(2-Ethylhexyl)phthalate	SW-864 Method 8270B	µg/L	2
Semivolatile organics	Butylbenzylphthalate	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Carbazole	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Caprolactam	SW-864 Method 8270B	µg/L	2
Semivolatile organics	Chrysene	SW-864 Method 8270B	µg/L	0.1
Semivolatile organics	Di-n-butylphthalate	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Di-n-octylphthalate	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Dibenz(a,h)anthracene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Dibenzofuran	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Diethylphthalate	SW-864 Method 8270B	µg/L	5

Semivolatile organics	Dimethylphthalate	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Fluroanthene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Fluorene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Hexachlorobenzene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Hexachlorobutadiene	SW-864 Method 8270B	µg/L	1
Semivolatile organics	Hexachlorocyclopentadiene	SW-864 Method 8270B	µg/L	10
Semivolatile organics	Hexachloroethane	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Indeno(1,2,3-cd)peryline	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Isophorone	SW-864 Method 8270B	µg/L	5
Semivolatile organics	1-Methylnaphthalene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	2-Methylnaphthalene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	N-Nitroso-di-n-propylamine	SW-864 Method 8270B	µg/L	5
Semivolatile organics	N-Nitrosodiphenylamine	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Napthtalene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Nitrobenzene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Pentachlorophenol	SW-864 Method 8270B	µg/L	10
Semivolatile organics	Phenanthrene	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Phenol	SW-864 Method 8270B	µg/L	5
Semivolatile organics	Pyrene	SW-864 Method 8270B	µg/L	5

Target Compound List 1.5 for SVOCs by SW-846 Method 8270

Classification	Analyte name[1]	Method	Units	RL
Inorganics	Mercury	SW-846 Method 7470		
Inorganics	Arsenic	SW-846 Method 6010		
Inorganics	Silver	SW-846 Method 6010		
Inorganics	Aluminum	SW-846 Method 6010		
Inorganics	Barium	SW-846 Method 6010		
Inorganics	Beryllium	SW-846 Method 6010		
Inorganics	Calcium	SW-846 Method 6010		
Inorganics	Cadmium	SW-846 Method 6010		
Inorganics	Cobalt	SW-846 Method 6010		
Inorganics	Chromium	SW-846 Method 6010		
Inorganics	Copper	SW-846 Method 6010		
Inorganics	Iron	SW-846 Method 6010		
Inorganics	Mercury	SW-846 Method 6010		
Inorganics	Potassium	SW-846 Method 6010		
Inorganics	Magnesium	SW-846 Method 6010		
Inorganics	Manganese	SW-846 Method 6010		
Inorganics	Sodium	SW-846 Method 6010		
Inorganics	Nickel	SW-846 Method 6010		
Inorganics	Lead	SW-846 Method 6010		
Inorganics	Antimony	SW-846 Method 6010		
Inorganics	Selenium	SW-846 Method 6010		
Inorganics	Thallium	SW-846 Method 6010		
Inorganics	Vanadium	SW-846 Method 6010		
Inorganics	Zinc	SW-846 Method 6010		

** dilute elements only if necessary

(1) 23 TAL Metals

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	WDW-1,2, & 3 Qrtly Inj Well
Samplers Name	Aaron Strange
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	6/19/2014 @ 09:25
End Date and Time	6/19/2014 @ 09:35

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Interval	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall Sample Location: Waste water effluent pumps to injection wells.

- ☐ P-849 sample point (first from east)
- ☑ P-854 sample point (second from east)
- ☐ P-856 sample point (third from east)
- ☐ P-857 sample point (fourth from east)

Container	Size	Material	# of Containers	Preservatives: Neat (None)	HCl	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1			3	X			X					Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40 CFR 136.3
2			1			X						VOCs/SW-846 Method 8260C (see attached list 'VOCs')
3			3		X							SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')
4			2	X								R,C,I/40 CFR part 261
5			2	X								Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
6			2	X								Ca, K, Mg, Na/40 CFR 136.3
7			1	X								TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
8												
9												
10												

Field Date / Weather / Observations, Etc. Date and Time: 6/19/2014 09:35 Tmp. 77.0, Humidity 61%, Wind Dir. N, Wind Speed 10.4 mph, Conditions Clear

Field Temp. 116.6°F Field pH 7.37

Storage Method	
Ice	☑
Refrigerator	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 09, 2014

Dan Crawford
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P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Quarterly WDW-1, 2, &3 Inj Well OrderNo.: 1409594

Dear Dan Crawford:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/12/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1409594**
Date: **10/9/2014**

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

The following compounds were also scanned for by NIST library search and not detected. The detection level for these compounds would be ~10ppb:
Allyl alcohol
t-amyl ethyl ether
Bis(2-chloroethyl)sulfide
Bromoacetone
Chloral hydrate
1-chlorobutane
1-chlorohexane
2-chloroethanol
Crotonaldehyde
Cis-1,4-Dichloro-2butene
1,3-Dichloro-2-propanol
1,2,3,4-Depoxybutane
Ethanol
Ethylene oxide
Malonitrile
Methanol
Methyl acrylate
2-Nitropropane
Paraldehyde
Pentafluorobenzene
2-Pentanone
2-picoline
1-propanol
2-propanol
Propargyl alcohol
Beta-propiolactone
n-propylamine

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**LGP**
Fluoride	7.0	2.0	*	mg/L	20	9/13/2014 4:23:10 AM	R21201
Chloride	350	10		mg/L	20	9/13/2014 4:23:10 AM	R21201
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	9/13/2014 4:10:46 AM	R21201
Bromide	ND	0.50		mg/L	5	9/13/2014 4:10:46 AM	R21201
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	9/13/2014 4:10:46 AM	R21201
Phosphorus, Orthophosphate (As P)	ND	10		mg/L	20	9/13/2014 4:23:10 AM	R21201
Sulfate	2500	50		mg/L	100	9/19/2014 12:23:58 AM	R21321
EPA METHOD 7470: MERCURY						Analyst:	**MMD**
Mercury	ND	0.00020		mg/L	1	9/18/2014 1:55:03 PM	15362
MERCURY, TCLP						Analyst:	**JLF**
Mercury	ND	0.020		mg/L	1	9/23/2014 11:17:20 AM	15428
EPA METHOD 6010B: TCLP METALS						Analyst:	**ELS**
Arsenic	ND	5.0		mg/L	1	9/20/2014 10:20:57 AM	15405
Barium	ND	100		mg/L	1	9/20/2014 10:20:57 AM	15405
Cadmium	ND	1.0		mg/L	1	9/20/2014 10:20:57 AM	15405
Chromium	ND	5.0		mg/L	1	9/20/2014 10:20:57 AM	15405
Lead	ND	5.0		mg/L	1	9/20/2014 10:20:57 AM	15405
Selenium	ND	1.0		mg/L	1	9/20/2014 10:20:57 AM	15405
Silver	ND	5.0		mg/L	1	9/25/2014 12:34:33 PM	15405
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Aluminum	0.18	0.020		mg/L	1	9/20/2014 9:40:32 AM	15405
Antimony	ND	0.050		mg/L	1	9/20/2014 9:40:32 AM	15405
Arsenic	0.061	0.020		mg/L	1	9/20/2014 9:40:32 AM	15405
Barium	0.022	0.020		mg/L	1	9/20/2014 9:40:32 AM	15405
Beryllium	ND	0.0030		mg/L	1	9/20/2014 9:40:32 AM	15405
Cadmium	ND	0.0020		mg/L	1	9/20/2014 9:40:32 AM	15405
Calcium	80	1.0		mg/L	1	9/20/2014 9:40:32 AM	15405
Chromium	ND	0.0060		mg/L	1	9/20/2014 9:40:32 AM	15405
Cobalt	ND	0.0060		mg/L	1	9/20/2014 9:40:32 AM	15405
Copper	ND	0.0060		mg/L	1	9/20/2014 9:40:32 AM	15405
Iron	0.50	0.050		mg/L	1	9/20/2014 9:40:32 AM	15405
Lead	ND	0.0050		mg/L	1	9/20/2014 9:40:32 AM	15405
Magnesium	28	1.0		mg/L	1	9/20/2014 9:40:32 AM	15405
Manganese	0.21	0.0020		mg/L	1	9/20/2014 9:40:32 AM	15405
Nickel	0.012	0.010		mg/L	1	9/20/2014 9:40:32 AM	15405
Potassium	58	1.0		mg/L	1	9/20/2014 9:40:32 AM	15405
Selenium	ND	0.050		mg/L	1	9/20/2014 9:40:32 AM	15405

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Silver	ND	0.0050		mg/L	1	9/23/2014 1:35:48 PM	15405
Thallium	ND	0.050		mg/L	1	9/20/2014 9:40:32 AM	15405
Titanium	ND	0.0050		mg/L	1	9/20/2014 9:40:32 AM	15405
Silica	9.8	1.1		mg/L	1	9/20/2014 9:40:32 AM	15405
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Acetonitrile	73	0.50		µg/L	1	9/24/2014	R21755
Allyl chloride	ND	0.50		µg/L	1	9/24/2014	R21755
Chloroprene	ND	0.50		µg/L	1	9/24/2014	R21755
Cyclohexane	ND	0.50		µg/L	1	9/24/2014	R21755
Diethyl ether	ND	0.50		µg/L	1	9/24/2014	R21755
Diisopropyl ether	ND	0.50		µg/L	1	9/24/2014	R21755
Epichlorohydrin	ND	5.0		µg/L	1	9/24/2014	R21755
Ethyl acetate	ND	0.50		µg/L	1	9/24/2014	R21755
Ethyl methacrylate	ND	0.50		µg/L	1	9/24/2014	R21755
Ethyl tert-butyl ether	ND	0.50		µg/L	1	9/24/2014	R21755
Freon-113	ND	0.50		µg/L	1	9/24/2014	R21755
Isobutanol	ND	50		µg/L	1	9/24/2014	R21755
Isopropyl acetate	ND	0.50		µg/L	1	9/24/2014	R21755
Methacrylonitrile	ND	0.50		µg/L	1	9/24/2014	R21755
Methyl acetate	ND	0.50		µg/L	1	9/24/2014	R21755
Methyl ethyl ketone	ND	2.5		µg/L	1	9/24/2014	R21755
Methyl isobutyl ketone	ND	2.5		µg/L	1	9/24/2014	R21755
Methyl methacrylate	ND	0.50		µg/L	1	9/24/2014	R21755
Methylcyclohexane	ND	1.0		µg/L	1	9/24/2014	R21755
n-Amyl acetate	ND	0.50		µg/L	1	9/24/2014	R21755
n-Hexane	ND	0.50		µg/L	1	9/24/2014	R21755
Nitrobenzene	ND	5.0		µg/L	1	9/24/2014	R21755
Pentachloroethane	ND	5.0		µg/L	1	9/24/2014	R21755
p-isopropyltoluene	ND	0.50		µg/L	1	9/24/2014	R21755
Propionitrile	0.97	0.50		µg/L	1	9/24/2014	R21755
Tetrahydrofuran	ND	0.50		µg/L	1	9/24/2014	R21755
Benzene	ND	0.50		µg/L	1	9/24/2014	R21755
Toluene	ND	0.50		µg/L	1	9/24/2014	R21755
Ethylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
Methyl tert-butyl ether (MTBE)	ND	10		µg/L	1	9/24/2014	R21755
1,2,4-Trimethylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,3,5-Trimethylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,2-Dichloroethane (EDC)	ND	0.50		µg/L	1	9/24/2014	R21755
1,2-Dibromoethane (EDB)	ND	0.50		µg/L	1	9/24/2014	R21755

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R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Naphthalene	ND	0.50		µg/L	1	9/24/2014	R21755
Acetone	18	2.5		µg/L	1	9/24/2014	R21755
Bromobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
Bromodichloromethane	ND	0.50		µg/L	1	9/24/2014	R21755
Bromoform	ND	0.50		µg/L	1	9/24/2014	R21755
Bromomethane	ND	0.50		µg/L	1	9/24/2014	R21755
Carbon disulfide	0.56	0.50		µg/L	1	9/24/2014	R21755
Carbon Tetrachloride	ND	0.50		µg/L	1	9/24/2014	R21755
Chlorobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
Chloroethane	ND	0.50		µg/L	1	9/24/2014	R21755
Chloroform	ND	0.50		µg/L	1	9/24/2014	R21755
Chloromethane	ND	0.50		µg/L	1	9/24/2014	R21755
2-Chlorotoluene	ND	0.50		µg/L	1	9/24/2014	R21755
4-Chlorotoluene	ND	0.50		µg/L	1	9/24/2014	R21755
cis-1,2-DCE	ND	0.50		µg/L	1	9/24/2014	R21755
cis-1,3-Dichloropropene	ND	0.50		µg/L	1	9/24/2014	R21755
1,2-Dibromo-3-chloropropane	ND	0.50		µg/L	1	9/24/2014	R21755
Dibromochloromethane	ND	0.50		µg/L	1	9/24/2014	R21755
Dibromomethane	ND	0.50		µg/L	1	9/24/2014	R21755
1,2-Dichlorobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,3-Dichlorobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,4-Dichlorobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
Dichlorodifluoromethane	ND	0.50		µg/L	1	9/24/2014	R21755
1,1-Dichloroethane	ND	0.50		µg/L	1	9/24/2014	R21755
1,1-Dichloroethene	ND	0.50		µg/L	1	9/24/2014	R21755
1,2-Dichloropropane	ND	0.50		µg/L	1	9/24/2014	R21755
1,3-Dichloropropane	ND	0.50		µg/L	1	9/24/2014	R21755
2,2-Dichloropropane	ND	0.50		µg/L	1	9/24/2014	R21755
1,1-Dichloropropene	ND	0.50		µg/L	1	9/24/2014	R21755
Hexachlorobutadiene	ND	0.50		µg/L	1	9/24/2014	R21755
2-Hexanone	ND	0.50		µg/L	1	9/24/2014	R21755
Isopropylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
4-Isopropyltoluene	ND	0.50		µg/L	1	9/24/2014	R21755
4-Methyl-2-pentanone	ND	0.50		µg/L	1	9/24/2014	R21755
Methylene Chloride	ND	2.5		µg/L	1	9/24/2014	R21755
n-Butylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
n-Propylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
sec-Butylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
Styrene	ND	0.50		µg/L	1	9/24/2014	R21755

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Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
tert-Butylbenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,1,1,2-Tetrachloroethane	ND	0.50		µg/L	1	9/24/2014	R21755
1,1,2,2-Tetrachloroethane	ND	0.50		µg/L	1	9/24/2014	R21755
Tetrachloroethene (PCE)	ND	0.50		µg/L	1	9/24/2014	R21755
trans-1,2-DCE	ND	0.50		µg/L	1	9/24/2014	R21755
trans-1,3-Dichloropropene	ND	0.50		µg/L	1	9/24/2014	R21755
1,2,3-Trichlorobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,2,4-Trichlorobenzene	ND	0.50		µg/L	1	9/24/2014	R21755
1,1,1-Trichloroethane	ND	0.50		µg/L	1	9/24/2014	R21755
1,1,2-Trichloroethane	ND	0.50		µg/L	1	9/24/2014	R21755
Trichloroethene (TCE)	ND	0.50		µg/L	1	9/24/2014	R21755
Trichlorofluoromethane	ND	0.50		µg/L	1	9/24/2014	R21755
1,2,3-Trichloropropane	ND	0.50		µg/L	1	9/24/2014	R21755
Vinyl chloride	ND	0.50		µg/L	1	9/24/2014	R21755
Xylenes, Total	ND	1.0		µg/L	1	9/24/2014	R21755
mp-Xylenes	ND	1.0		µg/L	1	9/24/2014	R21755
o-Xylene	ND	0.50		µg/L	1	9/24/2014	R21755
tert-Amyl methyl ether	ND	0.50		µg/L	1	9/24/2014	R21755
tert-Butyl alcohol	23	0.50		µg/L	1	9/24/2014	R21755
Acrolein	ND	0.50		µg/L	1	9/24/2014	R21755
Acrylonitrile	ND	10		µg/L	1	9/24/2014	R21755
Bromochloromethane	ND	0.50		µg/L	1	9/24/2014	R21755
2-Chloroethyl vinyl ether	ND	0.50		µg/L	1	9/24/2014	R21755
Iodomethane	ND	0.50		µg/L	1	9/24/2014	R21755
trans-1,4-Dichloro-2-butene	ND	0.50		µg/L	1	9/24/2014	R21755
Vinyl acetate	ND	0.50		µg/L	1	9/24/2014	R21755
1,4-Dioxane	ND	20		µg/L	1	9/24/2014	R21755
Surr: 1,2-Dichloroethane-d4	110	70-130		%REC	1	9/24/2014	R21755
Surr: 4-Bromofluorobenzene	99.6	70-130		%REC	1	9/24/2014	R21755
Surr: Toluene-d8	104	70-130		%REC	1	9/24/2014	R21755
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
1,1-Biphenyl	ND	5.0		µg/L	1	9/23/2014	R21755
Atrazine	ND	5.0		µg/L	1	9/23/2014	R21755
Benzaldehyde	ND	5.0		µg/L	1	9/23/2014	R21755
Caprolactam	ND	5.0		µg/L	1	9/23/2014	R21755
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	9/23/2014	R21755
Acetophenone	ND	10		µg/L	1	9/23/2014	R21755
1-Methylnaphthalene	ND	10		µg/L	1	9/23/2014	R21755
2,3,4,6-Tetrachlorophenol	ND	10		µg/L	1	9/23/2014	R21755

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CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
2,4,5-Trichlorophenol	ND	10		µg/L	1	9/23/2014	R21755
2,4,6-Trichlorophenol	ND	10		µg/L	1	9/23/2014	R21755
2,4-Dichlorophenol	ND	10		µg/L	1	9/23/2014	R21755
2,4-Dimethylphenol	ND	10		µg/L	1	9/23/2014	R21755
2,4-Dinitrophenol	ND	10		µg/L	1	9/23/2014	R21755
2,4-Dinitrotoluene	ND	10		µg/L	1	9/23/2014	R21755
2,6-Dinitrotoluene	ND	10		µg/L	1	9/23/2014	R21755
2-Chloronaphthalene	ND	10		µg/L	1	9/23/2014	R21755
2-Chlorophenol	ND	10		µg/L	1	9/23/2014	R21755
2-Methylnaphthalene	ND	10		µg/L	1	9/23/2014	R21755
2-Methylphenol	ND	10		µg/L	1	9/23/2014	R21755
2-Nitroaniline	ND	10		µg/L	1	9/23/2014	R21755
2-Nitrophenol	ND	10		µg/L	1	9/23/2014	R21755
3,3'-Dichlorobenzidine	ND	10		µg/L	1	9/23/2014	R21755
3-Nitroaniline	ND	10		µg/L	1	9/23/2014	R21755
4,6-Dinitro-2-methylphenol	ND	10		µg/L	1	9/23/2014	R21755
4-Bromophenyl phenyl ether	ND	10		µg/L	1	9/23/2014	R21755
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	9/23/2014	R21755
4-Chloroaniline	ND	10		µg/L	1	9/23/2014	R21755
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	9/23/2014	R21755
4-Nitroaniline	ND	10		µg/L	1	9/23/2014	R21755
4-Nitrophenol	ND	10		µg/L	1	9/23/2014	R21755
Acenaphthene	ND	10		µg/L	1	9/23/2014	R21755
Acenaphthylene	ND	10		µg/L	1	9/23/2014	R21755
Anthracene	ND	10		µg/L	1	9/23/2014	R21755
Benzo(g,h,i)perylene	ND	10		µg/L	1	9/23/2014	R21755
Benz(a)anthracene	ND	0.10		µg/L	1	9/23/2014	R21755
Benzo(a)pyrene	ND	0.10		µg/L	1	9/23/2014	R21755
Benzo(b)fluoranthene	ND	0.10		µg/L	1	9/23/2014	R21755
Benzo(k)fluoranthene	ND	0.10		µg/L	1	9/23/2014	R21755
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	9/23/2014	R21755
Bis(2-chloroethyl)ether	ND	10		µg/L	1	9/23/2014	R21755
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	9/23/2014	R21755
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	9/23/2014	R21755
Butyl benzyl phthalate	ND	10		µg/L	1	9/23/2014	R21755
Carbazole	ND	10		µg/L	1	9/23/2014	R21755
Chrysene	ND	0.10		µg/L	1	9/23/2014	R21755
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	9/23/2014	R21755
Dibenzofuran	ND	10		µg/L	1	9/23/2014	R21755

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
Diethyl phthalate	ND	10		µg/L	1	9/23/2014	R21755
Dimethyl phthalate	ND	10		µg/L	1	9/23/2014	R21755
Di-n-butyl phthalate	ND	10		µg/L	1	9/23/2014	R21755
Di-n-octyl phthalate	ND	10		µg/L	1	9/23/2014	R21755
Fluoranthene	ND	10		µg/L	1	9/23/2014	R21755
Fluorene	ND	10		µg/L	1	9/23/2014	R21755
Hexachlorobenzene	ND	1.0		µg/L	1	9/23/2014	R21755
Hexachlorobutadiene	ND	10		µg/L	1	9/23/2014	R21755
Hexachlorocyclopentadiene	ND	10		µg/L	1	9/23/2014	R21755
Hexachloroethane	ND	10		µg/L	1	9/23/2014	R21755
Indeno(1,2,3-cd)pyrene	ND	5.0		µg/L	1	9/23/2014	R21755
Isophorone	ND	10		µg/L	1	9/23/2014	R21755
Naphthalene	ND	10		µg/L	1	9/23/2014	R21755
Nitrobenzene	ND	10		µg/L	1	9/23/2014	R21755
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	9/23/2014	R21755
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	9/23/2014	R21755
Pentachlorophenol	ND	10		µg/L	1	9/23/2014	R21755
Phenanthrene	ND	10		µg/L	1	9/23/2014	R21755
Phenol	ND	5.0		µg/L	1	9/23/2014	R21755
Pyrene	ND	10		µg/L	1	9/23/2014	R21755
o-Toluidine	ND	5.0		µg/L	1	9/23/2014	R21755
Pyridine	ND	5.0		µg/L	1	9/23/2014	R21755
1,2,4,5-Tetrachlorobenzene	ND	10		µg/L	1	9/23/2014	R21755
Surr: 2,4,6-Tribromophenol	80.2	10-123		%REC	1	9/23/2014	R21755
Surr: 2-Fluorobiphenyl	100	19-130		%REC	1	9/23/2014	R21755
Surr: 2-Fluorophenol	77.0	21-110		%REC	1	9/23/2014	R21755
Surr: Nitrobenzene-d5	91.2	25-130		%REC	1	9/23/2014	R21755
Surr: Phenol-d5	94.4	10-125		%REC	1	9/23/2014	R21755
Surr: Terphenyl-d14	39.9	33-141		%REC	1	9/23/2014	R21755
CORROSIVITY						Analyst:	**SUB**
pH	6.61			pH Units	1	9/18/2014	R21755
IGNITABILITY METHOD 1010						Analyst:	**SUB**
Ignitability	>200	0		°F	1	9/24/2014	R21755
CYANIDE, REACTIVE						Analyst:	**SUB**
Cyanide, Reactive	ND	1.00		mg/L	1	9/25/2014	R21755
SULFIDE, REACTIVE						Analyst:	**SUB**
Reactive Sulfide	ND	1.0		mg/L	1	9/30/2014	R21755

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1409594-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 9/11/2014 9:30:00 AM
Received Date: 9/12/2014 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	5400	0.010		µmhos/cm	1	9/19/2014 8:48:13 PM	R21338
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	120	20		mg/L CaCO3	1	9/19/2014 8:48:13 PM	R21338
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	9/19/2014 8:48:13 PM	R21338
Total Alkalinity (as CaCO3)	120	20		mg/L CaCO3	1	9/19/2014 8:48:13 PM	R21338
SPECIFIC GRAVITY						Analyst:	**SRM**
Specific Gravity	1.001	0			1	9/23/2014 4:39:00 PM	R21384
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	4700	20.0	*	mg/L	1	9/17/2014 10:23:00 AM	15289

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**
09-Oct-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R21201** RunNo: **21201**
Prep Date: Analysis Date: **9/12/2014** SeqNo: **617354** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R21201** RunNo: **21201**
Prep Date: Analysis Date: **9/12/2014** SeqNo: **617355** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	104	90	110			
Chloride	4.9	0.50	5.000	0	97.9	90	110			
Nitrogen, Nitrite (As N)	0.97	0.10	1.000	0	97.0	90	110			
Bromide	2.4	0.10	2.500	0	96.4	90	110			
Nitrogen, Nitrate (As N)	2.6	0.10	2.500	0	103	90	110			
Phosphorus, Orthophosphate (As P	5.0	0.50	5.000	0	101	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R21201** RunNo: **21201**
Prep Date: Analysis Date: **9/12/2014** SeqNo: **617410** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R21201** RunNo: **21201**
Prep Date: Analysis Date: **9/12/2014** SeqNo: **617411** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.52	0.10	0.5000	0	103	90	110			
Chloride	4.7	0.50	5.000	0	94.7	90	110			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	93.9	90	110			
Bromide	2.4	0.10	2.500	0	96.7	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R21201** RunNo: **21201**

Prep Date: Analysis Date: **9/12/2014** SeqNo: **617411** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	99.1	90	110			
Phosphorus, Orthophosphate (As P	5.0	0.50	5.000	0	99.5	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R21321** RunNo: **21321**

Prep Date: Analysis Date: **9/18/2014** SeqNo: **622134** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R21321** RunNo: **21321**

Prep Date: Analysis Date: **9/18/2014** SeqNo: **622135** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	9.6	0.50	10.00	0	96.2	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **R21755**	RunNo: **21755**	
Prep Date:	Analysis Date: **9/24/2014**	SeqNo: **638768**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.50								
Allyl chloride	ND	0.50								
Chloroprene	ND	0.50								
Cyclohexane	ND	0.50								
Diethyl ether	ND	0.50								
Diisopropyl ether	ND	0.50								
Epichlorohydrin	ND	0.50								
Ethyl acetate	ND	0.50								
Ethyl methacrylate	ND	0.50								
Ethyl tert-butyl ether	ND	0.50								
Freon-113	ND	0.50								
Isobutanol	ND	50								
Isopropyl acetate	ND	0.50								
Methacrylonitrile	ND	0.50								
Methyl acetate	ND	0.50								
Methyl ethyl ketone	ND	2.5								
Methyl isobutyl ketone	ND	2.5								
Methyl methacrylate	ND	0.50								
Methylcyclohexane	ND	1.0								
n-Amyl acetate	ND	0.50								
n-Hexane	ND	0.50								
Nitrobenzene	ND	0.50								
Pentachloroethane	ND	5.0								
p-isopropyltoluene	ND	0.50								
Propionitrile	ND	0.50								
Tetrahydrofuran	ND	0.50								
Benzene	ND	0.50								
Toluene	ND	0.50								
Ethylbenzene	ND	0.50								
Methyl tert-butyl ether (MTBE)	ND	10								
1,2,4-Trimethylbenzene	ND	0.50								
1,3,5-Trimethylbenzene	ND	0.50								
1,2-Dichloroethane (EDC)	ND	0.50								
1,2-Dibromoethane (EDB)	ND	0.50								
Naphthalene	ND	0.50								
Acetone	ND	2.5								
Bromobenzene	ND	0.50								
Bromodichloromethane	ND	0.50								
Bromoform	ND	0.50								

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

WO#: 1409594

Hall Environmental Analysis Laboratory, Inc.

09-Oct-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R21755** RunNo: **21755**
Prep Date: Analysis Date: **9/24/2014** SeqNo: **638768** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromomethane	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	0.50								
Chloroethane	ND	0.50								
Chloroform	ND	0.50								
Chloromethane	ND	0.50								
2-Chlorotoluene	ND	0.50								
4-Chlorotoluene	ND	0.50								
cis-1,2-DCE	ND	0.50								
cis-1,3-Dichloropropene	ND	0.50								
1,2-Dibromo-3-chloropropane	ND	0.50								
Dibromochloromethane	ND	0.50								
Dibromomethane	ND	0.50								
1,2-Dichlorobenzene	ND	0.50								
1,3-Dichlorobenzene	ND	0.50								
1,4-Dichlorobenzene	ND	0.50								
Dichlorodifluoromethane	ND	0.50								
1,1-Dichloroethane	ND	0.50								
1,1-Dichloroethene	ND	0.50								
1,2-Dichloropropane	ND	0.50								
1,3-Dichloropropane	ND	0.50								
2,2-Dichloropropane	ND	0.50								
1,1-Dichloropropene	ND	0.50								
Hexachlorobutadiene	ND	0.50								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.50								
4-Isopropyltoluene	ND	0.50								
4-Methyl-2-pentanone	ND	0.50								
Methylene Chloride	ND	2.5								
n-Butylbenzene	ND	0.50								
n-Propylbenzene	ND	0.50								
sec-Butylbenzene	ND	0.50								
Styrene	ND	0.50								
tert-Butylbenzene	ND	0.50								
1,1,1,2-Tetrachloroethane	ND	0.50								
1,1,2,2-Tetrachloroethane	ND	0.50								
Tetrachloroethene (PCE)	ND	0.50								
trans-1,2-DCE	ND	0.50								

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **PBW** Batch ID: **R21755** RunNo: **21755**

Prep Date: Analysis Date: **9/24/2014** SeqNo: **638768** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropene	ND	0.50								
1,2,3-Trichlorobenzene	ND	0.50								
1,2,4-Trichlorobenzene	ND	0.50								
1,1,1-Trichloroethane	ND	0.50								
1,1,2-Trichloroethane	ND	0.50								
Trichloroethene (TCE)	ND	0.50								
Trichlorofluoromethane	ND	0.50								
1,2,3-Trichloropropane	ND	0.50								
Vinyl chloride	ND	0.50								
Xylenes, Total	ND	1.0								
mp-Xylenes	ND	1.0								
o-Xylene	ND	0.50								
tert-Amyl methyl ether	ND	0.50								
tert-Butyl alcohol	ND	0.50								
Acrolein	ND	0.50								
Acrylonitrile	ND	10								
Bromochloromethane	ND	0.50								
2-Chloroethyl vinyl ether	ND	0.50								
Iodomethane	ND	0.50								
trans-1,4-Dichloro-2-butene	ND	0.50								
Vinyl acetate	ND	0.50								
1,4-Dioxane	ND	20								

Sample ID **LCS-R21755** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**

Client ID: **LCSW** Batch ID: **R21755** RunNo: **21755**

Prep Date: Analysis Date: **9/24/2014** SeqNo: **638769** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.9		10.00	0	99.2	80	120			
Toluene	10		10.00	0	102	80	120			
Ethylbenzene	10		10.00	0	99.6	80	120			
Chlorobenzene	9.9		10.00	0	99.3	80	120			
1,1-Dichloroethene	9.2		10.00	0	91.9	80	120			
Tetrachloroethene (PCE)	9.8		10.00	0	98.4	80	120			
Trichloroethene (TCE)	9.5		10.00	0	95.2	80	120			
o-Xylene	10		10.00	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**	
Client ID: **PBW**	Batch ID: **R21755**	RunNo: **21755**	
Prep Date:	Analysis Date: **9/23/2014**	SeqNo: **638842**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Biphenyl	ND	10								
Atrazine	ND	10								
Caprolactam	ND	10								
N-Nitroso-di-n-butylamine	ND	10								
Acetophenone	ND	10								
1-Methylnaphthalene	ND	10								
2,3,4,6-Tetrachlorophenol	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2,4-Dichlorophenol	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	10								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3,3'-Dichlorobenzidine	ND	10								
3-Nitroaniline	ND	10								
4,6-Dinitro-2-methylphenol	ND	10								
4-Bromophenyl phenyl ether	ND	10								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Anthracene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benz(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755** SampType: **MBLK** TestCode: **EPA 8270C: Semivolatiles/Mod**

Client ID: **PBW** Batch ID: **R21755** RunNo: **21755**

Prep Date: Analysis Date: **9/23/2014** SeqNo: **638842** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	10								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	10								
o-Toluidine	ND	10								
Pyridine	ND	10								
1,2,4,5-Tetrachlorobenzene	ND	10								

Sample ID **LCS-R21755** SampType: **LCS** TestCode: **EPA 8270C: Semivolatiles/Mod**

Client ID: **LCSW** Batch ID: **R21755** RunNo: **21755**

Prep Date: Analysis Date: **9/23/2014** SeqNo: **638843** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	3.1		5.000	0	61.2	49	134			
2-Chlorophenol	3.4		5.000	0	67.6	50	131			
4-Chloro-3-methylphenol	3.3		5.000	0	66.4	42	139			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **LCS-R21755**	SampType: **LCS**	TestCode: **EPA 8270C: Semivolatiles/Mod**	
Client ID: **LCSW**	Batch ID: **R21755**	RunNo: **21755**	
Prep Date:	Analysis Date: **9/23/2014**	SeqNo: **638843**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Nitrophenol	2.6		5.000	0	53.0	19	137			
Acenaphthene	4.0		5.000	0	79.6	36	122			
Bis(2-ethylhexyl)phthalate	3.9		5.000	0	78.2	43	142			
N-Nitrosodi-n-propylamine	4.1		5.000	0	82.0	46	135			
Pentachlorophenol	2.5		5.000	0	49.6	22	138			
Phenol	3.7		5.000	0	73.4	45	134			
Pyrene	3.6		5.000	0	73.0	45	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-15362** SampType: **MBLK** TestCode: **EPA Method 7470: Mercury**

Client ID: **PBW** Batch ID: **15362** RunNo: **21286**

Prep Date: **9/18/2014** Analysis Date: **9/18/2014** SeqNo: **621116** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-15362** SampType: **LCS** TestCode: **EPA Method 7470: Mercury**

Client ID: **LCSW** Batch ID: **15362** RunNo: **21286**

Prep Date: **9/18/2014** Analysis Date: **9/18/2014** SeqNo: **621117** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0053	0.00020	0.005000	0	105	80	120			

Sample ID **1409594-001BMS** SampType: **MS** TestCode: **EPA Method 7470: Mercury**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **15362** RunNo: **21286**

Prep Date: **9/18/2014** Analysis Date: **9/18/2014** SeqNo: **621119** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	100	75	125			

Sample ID **1409594-001BMSD** SampType: **MSD** TestCode: **EPA Method 7470: Mercury**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **15362** RunNo: **21286**

Prep Date: **9/18/2014** Analysis Date: **9/18/2014** SeqNo: **621120** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	101	75	125	0.392	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID	**MB-15428**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**15428**		RunNo:	**21367**					
Prep Date:	**9/22/2014**	Analysis Date:	**9/23/2014**		SeqNo:	**623963**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

Sample ID	**LCS-15428**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**15428**		RunNo:	**21367**					
Prep Date:	**9/22/2014**	Analysis Date:	**9/23/2014**		SeqNo:	**623964**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020	0.005000	0	98.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-15405** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **PBW** Batch ID: **15405** RunNo: **21324**

Prep Date: **9/19/2014** Analysis Date: **9/20/2014** SeqNo: **626611** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								

Sample ID **LCS-15405** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **LCSW** Batch ID: **15405** RunNo: **21324**

Prep Date: **9/19/2014** Analysis Date: **9/20/2014** SeqNo: **626612** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	106	80	120			
Barium	ND	100	0.5000	0	101	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	100	80	120			
Lead	ND	5.0	0.5000	0	98.6	80	120			
Selenium	ND	1.0	0.5000	0	104	80	120			

Sample ID **MB-15405** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **PBW** Batch ID: **15405** RunNo: **21385**

Prep Date: **9/19/2014** Analysis Date: **9/23/2014** SeqNo: **626633** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	5.0								

Sample ID **LCS-15405** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **LCSW** Batch ID: **15405** RunNo: **21385**

Prep Date: **9/19/2014** Analysis Date: **9/23/2014** SeqNo: **626634** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	5.0	0.1000	0	104	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-15405** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **15405** RunNo: **21324**

Prep Date: **9/19/2014** Analysis Date: **9/20/2014** SeqNo: **622303** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Thallium	ND	0.050								
Titanium	ND	0.0050								
Silica	ND	1.1								

Sample ID **LCS-15405** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **15405** RunNo: **21324**

Prep Date: **9/19/2014** Analysis Date: **9/20/2014** SeqNo: **622304** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.57	0.020	0.5000	0	114	80	120			
Antimony	0.50	0.050	0.5000	0	100	80	120			
Arsenic	0.53	0.020	0.5000	0	106	80	120			
Barium	0.50	0.020	0.5000	0	101	80	120			
Beryllium	0.53	0.0030	0.5000	0	106	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Calcium	52	1.0	50.00	0	105	80	120			
Chromium	0.50	0.0060	0.5000	0	100	80	120			
Cobalt	0.49	0.0060	0.5000	0	97.9	80	120			
Copper	0.51	0.0060	0.5000	0	102	80	120			
Iron	0.51	0.050	0.5000	0	101	80	120			
Lead	0.49	0.0050	0.5000	0	98.6	80	120			
Magnesium	52	1.0	50.00	0	103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **LCS-15405** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **15405** RunNo: **21324**

Prep Date: **9/19/2014** Analysis Date: **9/20/2014** SeqNo: **622304** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Manganese	0.50	0.0020	0.5000	0	100	80	120			
Nickel	0.49	0.010	0.5000	0	98.7	80	120			
Potassium	49	1.0	50.00	0	98.1	80	120			
Selenium	0.52	0.050	0.5000	0	104	80	120			
Thallium	0.49	0.050	0.5000	0	97.7	80	120			
Titanium	0.52	0.0050	0.5000	0	104	80	120			
Silica	5.6	1.1	5.350	0	104	80	120			

Sample ID **MB-15405** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **15405** RunNo: **21385**

Prep Date: **9/19/2014** Analysis Date: **9/23/2014** SeqNo: **624518** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	ND	0.0050								

Sample ID **LCS-15405** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **15405** RunNo: **21385**

Prep Date: **9/19/2014** Analysis Date: **9/23/2014** SeqNo: **624519** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Silver	0.10	0.0050	0.1000	0	104	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755**	SampType: **MBLK**		TestCode: **CYANIDE, Reactive**		
Client ID: **PBW**	Batch ID: **R21755**		RunNo: **21755**		
Prep Date:	Analysis Date: **9/25/2014**		SeqNo: **639462**	Units: **mg/L**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID **LCS-R21755**	SampType: **LCS**		TestCode: **CYANIDE, Reactive**		
Client ID: **LCSW**	Batch ID: **R21755**		RunNo: **21755**		
Prep Date:	Analysis Date: **9/25/2014**		SeqNo: **639463**	Units: **mg/L**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.487		0.5000	0	97.4	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R21755**	SampType: **MBLK**			TestCode: **SULFIDE, Reactive**						
Client ID: **PBW**	Batch ID: **R21755**			RunNo: **21755**						
Prep Date:	Analysis Date: **9/30/2014**			SeqNo: **639465**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID **LCS-R21755**	SampType: **LCS**			TestCode: **SULFIDE, Reactive**						
Client ID: **LCSW**	Batch ID: **R21755**			RunNo: **21755**						
Prep Date:	Analysis Date: **9/30/2014**			SeqNo: **639466**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.16		0.2000	0	80.0	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **mb-1** SampType: **MBLK** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R21338** RunNo: **21338**
Prep Date: Analysis Date: **9/19/2014** SeqNo: **622910** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1** SampType: **LCS** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R21338** RunNo: **21338**
Prep Date: Analysis Date: **9/19/2014** SeqNo: **622911** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	99.6	90	110			

Sample ID **mb-2** SampType: **MBLK** TestCode: **SM2320B: Alkalinity**
Client ID: **PBW** Batch ID: **R21338** RunNo: **21338**
Prep Date: Analysis Date: **9/19/2014** SeqNo: **622914** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-2** SampType: **LCS** TestCode: **SM2320B: Alkalinity**
Client ID: **LCSW** Batch ID: **R21338** RunNo: **21338**
Prep Date: Analysis Date: **9/19/2014** SeqNo: **622915** Units: **mg/L CaCO3**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	81	20	80.00	0	102	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **1409594-001ADUP** SampType: **DUP** TestCode: **Specific Gravity**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R21384** RunNo: **21384**

Prep Date: Analysis Date: **9/23/2014** SeqNo: **624495** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.000	0						0.110	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1409594**

09-Oct-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-15289**	SampType: **MBLK**			TestCode: **SM2540C MOD: Total Dissolved Solids**						
Client ID: **PBW**	Batch ID: **15289**			RunNo: **21253**						
Prep Date: **9/15/2014**	Analysis Date: **9/17/2014**			SeqNo: **619558**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-15289**	SampType: **LCS**			TestCode: **SM2540C MOD: Total Dissolved Solids**						
Client ID: **LCSW**	Batch ID: **15289**			RunNo: **21253**						
Prep Date: **9/15/2014**	Analysis Date: **9/17/2014**			SeqNo: **619559**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1020	20.0	1000	0	102	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1409594 RcptNo: 1

Received by/date: 09/12/14

Logged By: Lindsay Mangin 9/12/2014 9:45:00 AM

Completed By: Lindsay Mangin 9/12/2014 10:09:46 AM

Reviewed By: 09/12/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2, 2 (<2 or >12 unless noted)
Adjusted? no
Checked by: CS

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.3	Good	Yes			

Chain of Custody Record

Client: Navajo Refining Co.	☐ Standar ☐ Rush
	Project Name:
Mailing Address: P.O. Box 159 Artesia,	Quarterly WDW-1, 2, & 3 Inj Well
NM 88211-0159	Project #: P.O. # 167796
Phone #: 575-748-3311	
email or Fax#: 575-746-5451	Project Manager:
QA/QC Package:	
☐ Standard ☐ Level 4 (Full Validation)	Dan Crawford
☐ Other _____	Sampler: Steven URBAN
☐ EDD (Type) _____	

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
9/11/14	9:30	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
9/11/14	9:30	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3	-001					X	X	
9/11/14	9:30	Liquid	WDW-1, 2, & 3 Effluent	3	HCL	-001		X					
9/11/14	9:30	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001			X				
9/11/14	9:30	Liquid	WDW-1, 2, & 3 Effluent	2	Neat	-001				X			
~~9/11/14~~	~~9:30~~	~~Liquid~~	~~Trip Blank~~	~~2~~	~~Neat~~	~~-002~~	CS 09/12/14	X					
9/11/14	9:30	Liquid	Temperature Blank	1	Neat	—							

Date:	Time:	Relinquished by:	Received by:	Date	Time
9-11-14	10:05	Steven URBAN		09/12/14	09:15
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Report these results separately from all other Chain of Custody kits provided.

The trip blank sample was not recieved. —CS 09/12/14

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	WDW-1,2, & 3 Qrtly Inj Well
Samplers Name	Steven Urban
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	9/11/2014 @ 9:15P
End Date and Time	9/11/2014 @ 10:10P

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Physical Property	
Solids	☐
Liquid	☑
Sludge	☐

Parts / Sample Interval	One
Type of Sampler	Directly to sample jars

Outfall / Sample Location: Waste water effluent pumps to injection wells.

☐ P-849 sample point (first from east)
☐ P-854 sample point (second from east)
☐ P-856 sample point (third from east)
☐ P-857 sample point (fourth from east)

Container	Size	Material	# of Containers	Preservatives: Neat (None)	HCl	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1			3	X			X					Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40 CFR 136.3
2			1			X						VOCs/SW-846 Method 8260C (see attached list 'VOCs')
3			3		X							SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')
4			2	X								R,C,I/40 CFR part 261
5			2	X								Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
6			2	X								Ca, K, Mg, Na/40 CFR 136.3
7			1	X								TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
8												
9												
10												

Field Data (Weather, Observations, Etc) Date and Time: 6/11/2014 08:51 Tmp. 72.0, Humidity 68%, Wind Dir. SE, Wind Speed 8.1 mph, Conditions Overcast

Field Temp. 113°F Field pH 6.58

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 09, 2014

Dan Crawford
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: Quarterly WDW-1, 2, &3 Inj Well OrderNo.: 1411288

Dear Dan Crawford:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/7/2014 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued December 08, 2014

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1411288**
Date: **12/9/2014**

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

The following compounds were also scanned for by NIST library search and not detected. The detection level for these compounds would be ~10ppb:
Allyl alcohol
t-amyl ethyl ether
Bis(2-chloroethyl)sulfide
Bromoacetone
Chloral hydrate
1-chlorobutane
1-chlorohexane
2-chloroethanol
Crotonaldehyde
Cis-1,4-Dichloro-2butene
1,3-Dichloro-2-propanol
1,2,3,4-Depoxybutane
Ethanol
Ethylene oxide
Malonitrile
Methanol
Methyl acrylate
2-Nitropropane
Paraldehyde
Pentafluorobenzene
2-Pentanone
2-picoline
1-propanol
2-propanol
Propargyl alcohol
Beta-propiolactone
n-propylamine

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**LGP**
Fluoride	5.3	0.50	*	mg/L	5	11/7/2014 11:52:12 PM	R22427
Chloride	330	25		mg/L	50	11/19/2014 12:14:33 AM	R22629
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	11/7/2014 11:52:12 PM	R22427
Bromide	0.68	0.50		mg/L	5	11/7/2014 11:52:12 PM	R22427
Nitrogen, Nitrate (As N)	1.3	0.50		mg/L	5	11/7/2014 11:52:12 PM	R22427
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	11/7/2014 11:52:12 PM	R22427
Sulfate	1300	25		mg/L	50	11/19/2014 12:14:33 AM	R22629
EPA METHOD 7470: MERCURY						Analyst:	**MMD**
Mercury	ND	0.00020		mg/L	1	11/13/2014 11:05:18 AM	16357
MERCURY, TCLP						Analyst:	**MMD**
Mercury	ND	0.020		mg/L	1	11/13/2014 2:54:22 PM	16358
EPA METHOD 6010B: TCLP METALS						Analyst:	**ELS**
Arsenic	ND	0.20		mg/L	1	11/12/2014 11:08:39 AM	16345
Barium	ND	0.10		mg/L	1	11/12/2014 11:08:39 AM	16345
Cadmium	ND	0.10		mg/L	1	11/12/2014 11:08:39 AM	16345
Chromium	ND	0.10		mg/L	1	11/12/2014 11:08:39 AM	16345
Lead	ND	0.10		mg/L	1	11/12/2014 11:08:39 AM	16345
Selenium	ND	0.20		mg/L	1	11/12/2014 11:08:39 AM	16345
Silver	ND	0.10		mg/L	1	11/12/2014 11:08:39 AM	16345
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Aluminum	0.48	0.020		mg/L	1	11/12/2014 11:06:42 AM	16345
Antimony	ND	0.050		mg/L	1	11/12/2014 11:06:42 AM	16345
Arsenic	0.050	0.020		mg/L	1	11/12/2014 11:06:42 AM	16345
Barium	ND	0.020		mg/L	1	11/12/2014 11:06:42 AM	16345
Beryllium	ND	0.0030		mg/L	1	11/12/2014 11:06:42 AM	16345
Cadmium	ND	0.0020		mg/L	1	11/12/2014 11:06:42 AM	16345
Calcium	50	1.0		mg/L	1	11/12/2014 11:06:42 AM	16345
Chromium	ND	0.0060		mg/L	1	11/12/2014 11:06:42 AM	16345
Cobalt	ND	0.0060		mg/L	1	11/12/2014 11:06:42 AM	16345
Copper	0.0092	0.0060		mg/L	1	11/12/2014 11:06:42 AM	16345
Iron	0.86	0.050		mg/L	1	11/12/2014 11:06:42 AM	16345
Lead	ND	0.0050		mg/L	1	11/12/2014 11:06:42 AM	16345
Magnesium	17	1.0		mg/L	1	11/12/2014 11:06:42 AM	16345
Manganese	0.10	0.0020		mg/L	1	11/12/2014 11:06:42 AM	16345
Nickel	0.010	0.010		mg/L	1	11/12/2014 11:06:42 AM	16345
Potassium	22	1.0		mg/L	1	11/12/2014 11:06:42 AM	16345
Selenium	0.058	0.050		mg/L	1	11/12/2014 11:06:42 AM	16345

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

Analytical Report
Lab Order **1411288**
Date Reported: **12/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Silver	ND	0.0050		mg/L	1	11/12/2014 11:06:42 AM	16345
Sodium	ND	1.0		mg/L	1	11/12/2014 11:06:42 AM	16345
Thallium	ND	0.050		mg/L	1	11/12/2014 11:06:42 AM	16345
Vanadium	ND	0.050		mg/L	1	11/12/2014 11:06:42 AM	16345
Zinc	0.049	0.020		mg/L	1	11/12/2014 11:06:42 AM	16345
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Acetonitrile	ND	0.500		µg/L	1	11/13/2014	R22819
Allyl chloride	ND	0.500		µg/L	1	11/13/2014	R22819
Chloroprene	ND	0.500		µg/L	1	11/13/2014	R22819
Cyclohexane	ND	0.500		µg/L	1	11/13/2014	R22819
Diethyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Diisopropyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Epichlorohydrin	ND	5.00		µg/L	1	11/13/2014	R22819
Ethyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
Ethyl methacrylate	ND	0.500		µg/L	1	11/13/2014	R22819
Ethyl tert-butyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Freon-113	ND	0.500		µg/L	1	11/13/2014	R22819
Isobutanol	ND	50.0		µg/L	1	11/13/2014	R22819
Isopropyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
Methacrylonitrile	ND	0.500		µg/L	1	11/13/2014	R22819
Methyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
Methyl ethyl ketone	2.82	2.50		µg/L	1	11/13/2014	R22819
Methyl isobutyl ketone	ND	2.50		µg/L	1	11/13/2014	R22819
Methyl methacrylate	ND	0.500		µg/L	1	11/13/2014	R22819
Methylcyclohexane	ND	1.00		µg/L	1	11/13/2014	R22819
n-Amyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
n-Hexane	ND	0.500		µg/L	1	11/13/2014	R22819
Nitrobenzene	ND	5.00		µg/L	1	11/13/2014	R22819
Pentachloroethane	ND	5.00		µg/L	1	11/13/2014	R22819
p-isopropyltoluene	ND	0.500		µg/L	1	11/13/2014	R22819
Propionitrile	ND	0.500		µg/L	1	11/13/2014	R22819
Tetrahydrofuran	ND	0.500		µg/L	1	11/13/2014	R22819
Benzene	ND	0.500		µg/L	1	11/13/2014	R22819
Toluene	ND	0.500		µg/L	1	11/13/2014	R22819
Ethylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Methyl tert-butyl ether (MTBE)	ND	10.0		µg/L	1	11/13/2014	R22819
1,2,4-Trimethylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,3,5-Trimethylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dichloroethane (EDC)	ND	0.500		µg/L	1	11/13/2014	R22819

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
1,2-Dibromoethane (EDB)	ND	0.500		µg/L	1	11/13/2014	R22819
Naphthalene	ND	0.500		µg/L	1	11/13/2014	R22819
Acetone	47.2	2.50		µg/L	1	11/13/2014	R22819
Bromobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Bromodichloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
Bromoform	ND	0.500		µg/L	1	11/13/2014	R22819
Bromomethane	ND	0.500		µg/L	1	11/13/2014	R22819
Carbon disulfide	0.930	0.500		µg/L	1	11/13/2014	R22819
Carbon Tetrachloride	ND	0.500		µg/L	1	11/13/2014	R22819
Chlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Chloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
Chloroform	ND	0.500		µg/L	1	11/13/2014	R22819
Chloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
2-Chlorotoluene	ND	0.500		µg/L	1	11/13/2014	R22819
4-Chlorotoluene	ND	0.500		µg/L	1	11/13/2014	R22819
cis-1,2-DCE	ND	0.500		µg/L	1	11/13/2014	R22819
cis-1,3-Dichloropropene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dibromo-3-chloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
Dibromochloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
Dibromomethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,3-Dichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,4-Dichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Dichlorodifluoromethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1-Dichloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1-Dichloroethene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
1,3-Dichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
2,2-Dichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1-Dichloropropene	ND	0.500		µg/L	1	11/13/2014	R22819
Hexachlorobutadiene	ND	0.500		µg/L	1	11/13/2014	R22819
2-Hexanone	ND	0.500		µg/L	1	11/13/2014	R22819
Isopropylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Methylene Chloride	ND	2.50		µg/L	1	11/13/2014	R22819
n-Butylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
n-Propylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
sec-Butylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Styrene	ND	0.500		µg/L	1	11/13/2014	R22819
tert-Butylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1411288**
Date Reported: **12/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
1,1,1,2-Tetrachloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,2,2-Tetrachloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
Tetrachloroethene (PCE)	ND	0.500		µg/L	1	11/13/2014	R22819
trans-1,2-DCE	ND	0.500		µg/L	1	11/13/2014	R22819
trans-1,3-Dichloropropene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2,3-Trichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2,4-Trichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,1-Trichloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,2-Trichloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
Trichloroethene (TCE)	ND	0.500		µg/L	1	11/13/2014	R22819
Trichlorofluoromethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,2,3-Trichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
Vinyl chloride	ND	0.500		µg/L	1	11/13/2014	R22819
Xylenes, Total	ND	1.00		µg/L	1	11/13/2014	R22819
mp-Xylenes	ND	1.00		µg/L	1	11/13/2014	R22819
o-Xylene	ND	0.500		µg/L	1	11/13/2014	R22819
tert-Amyl methyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
tert-Butyl alcohol	46.8	0.500		µg/L	1	11/13/2014	R22819
Acrolein	ND	0.500		µg/L	1	11/13/2014	R22819
Acrylonitrile	ND	10.0		µg/L	1	11/13/2014	R22819
Bromochloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
2-Chloroethyl vinyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Iodomethane	ND	0.500		µg/L	1	11/13/2014	R22819
trans-1,4-Dichloro-2-butene	ND	0.500		µg/L	1	11/13/2014	R22819
Vinyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
1,4-Dioxane	ND	20.0		µg/L	1	11/13/2014	R22819
Surr: 1,2-Dichlorobenzene-d4	108	70-130		%REC	1	11/13/2014	R22819
Surr: 4-Bromofluorobenzene	101	70-130		%REC	1	11/13/2014	R22819
Surr: Toluene-d8	99.2	70-130		%REC	1	11/13/2014	R22819
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
1,1-Biphenyl	ND	5.0		µg/L	1	11/14/2014	R22918
Atrazine	ND	5.0		µg/L	1	11/14/2014	R22918
Benzaldehyde	ND	5.0		µg/L	1	11/14/2014	R22918
Caprolactam	ND	5.0		µg/L	1	11/14/2014	R22918
N-Nitroso-di-n-butylamine	ND	5.0		µg/L	1	11/14/2014	R22918
Acetophenone	ND	10		µg/L	1	11/14/2014	R22918
1-Methylnaphthalene	ND	10		µg/L	1	11/14/2014	R22918
2,3,4,6-Tetrachlorophenol	ND	10		µg/L	1	11/14/2014	R22918
2,4,5-Trichlorophenol	ND	10		µg/L	1	11/14/2014	R22918

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD						Analyst:	**SUB**
2,4,6-Trichlorophenol	ND	10		µg/L	1	11/14/2014	R22918
2,4-Dichlorophenol	ND	10		µg/L	1	11/14/2014	R22918
2,4-Dimethylphenol	ND	10		µg/L	1	11/14/2014	R22918
2,4-Dinitrophenol	ND	10		µg/L	1	11/14/2014	R22918
2,4-Dinitrotoluene	ND	10		µg/L	1	11/14/2014	R22918
2,6-Dinitrotoluene	ND	10		µg/L	1	11/14/2014	R22918
2-Chloronaphthalene	ND	10		µg/L	1	11/14/2014	R22918
2-Chlorophenol	ND	10		µg/L	1	11/14/2014	R22918
2-Methylnaphthalene	ND	10		µg/L	1	11/14/2014	R22918
2-Methylphenol	ND	10		µg/L	1	11/14/2014	R22918
2-Nitroaniline	ND	10		µg/L	1	11/14/2014	R22918
2-Nitrophenol	ND	10		µg/L	1	11/14/2014	R22918
3,3'-Dichlorobenzidine	ND	10		µg/L	1	11/14/2014	R22918
3-Nitroaniline	ND	10		µg/L	1	11/14/2014	R22918
4,6-Dinitro-2-methylphenol	ND	10		µg/L	1	11/14/2014	R22918
4-Bromophenyl phenyl ether	ND	10		µg/L	1	11/14/2014	R22918
4-Chloro-3-methylphenol	ND	5.0		µg/L	1	11/14/2014	R22918
4-Chloroaniline	ND	10		µg/L	1	11/14/2014	R22918
4-Chlorophenyl phenyl ether	ND	10		µg/L	1	11/14/2014	R22918
4-Nitroaniline	ND	10		µg/L	1	11/14/2014	R22918
4-Nitrophenol	ND	10		µg/L	1	11/14/2014	R22918
Acenaphthene	ND	10		µg/L	1	11/14/2014	R22918
Acenaphthylene	ND	10		µg/L	1	11/14/2014	R22918
Anthracene	ND	10		µg/L	1	11/14/2014	R22918
Benzo(g,h,i)perylene	ND	10		µg/L	1	11/14/2014	R22918
Benz(a)anthracene	ND	0.10		µg/L	1	11/14/2014	R22918
Benzo(a)pyrene	ND	0.10		µg/L	1	11/14/2014	R22918
Benzo(b)fluoranthene	ND	0.10		µg/L	1	11/14/2014	R22918
Benzo(k)fluoranthene	ND	0.10		µg/L	1	11/14/2014	R22918
Bis(2-chloroethoxy)methane	ND	10		µg/L	1	11/14/2014	R22918
Bis(2-chloroethyl)ether	ND	10		µg/L	1	11/14/2014	R22918
Bis(2-chloroisopropyl)ether	ND	10		µg/L	1	11/14/2014	R22918
Bis(2-ethylhexyl)phthalate	ND	5.0		µg/L	1	11/14/2014	R22918
Butyl benzyl phthalate	ND	10		µg/L	1	11/14/2014	R22918
Carbazole	ND	10		µg/L	1	11/14/2014	R22918
Chrysene	ND	0.10		µg/L	1	11/14/2014	R22918
Dibenz(a,h)anthracene	ND	0.10		µg/L	1	11/14/2014	R22918
Dibenzofuran	ND	10		µg/L	1	11/14/2014	R22918
Diethyl phthalate	ND	10		µg/L	1	11/14/2014	R22918

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES/MOD							Analyst: **SUB**
Dimethyl phthalate	ND	10		µg/L	1	11/14/2014	R22918
Di-n-butyl phthalate	ND	10		µg/L	1	11/14/2014	R22918
Di-n-octyl phthalate	ND	10		µg/L	1	11/14/2014	R22918
Fluoranthene	ND	10		µg/L	1	11/14/2014	R22918
Fluorene	ND	10		µg/L	1	11/14/2014	R22918
Hexachlorobenzene	ND	1.0		µg/L	1	11/14/2014	R22918
Hexachlorobutadiene	ND	10		µg/L	1	11/14/2014	R22918
Hexachlorocyclopentadiene	ND	10		µg/L	1	11/14/2014	R22918
Hexachloroethane	ND	10		µg/L	1	11/14/2014	R22918
Indeno(1,2,3-cd)pyrene	ND	5.0		µg/L	1	11/14/2014	R22918
Isophorone	ND	10		µg/L	1	11/14/2014	R22918
Naphthalene	ND	10		µg/L	1	11/14/2014	R22918
Nitrobenzene	ND	10		µg/L	1	11/14/2014	R22918
N-Nitrosodi-n-propylamine	ND	10		µg/L	1	11/14/2014	R22918
N-Nitrosodiphenylamine	ND	2.0		µg/L	1	11/14/2014	R22918
Pentachlorophenol	ND	10		µg/L	1	11/14/2014	R22918
Phenanthrene	ND	10		µg/L	1	11/14/2014	R22918
Phenol	ND	5.0		µg/L	1	11/14/2014	R22918
Pyrene	ND	10		µg/L	1	11/14/2014	R22918
o-Toluidine	ND	5.0		µg/L	1	11/14/2014	R22918
Pyridine	ND	5.0		µg/L	1	11/14/2014	R22918
1,2,4,5-Tetrachlorobenzene	ND	10		µg/L	1	11/14/2014	R22918
Surr: 2,4,6-Tribromophenol	131	10-123	S	%REC	1	11/14/2014	R22918
Surr: 2-Fluorobiphenyl	88.8	19-130		%REC	1	11/14/2014	R22918
Surr: 2-Fluorophenol	82.4	21-110		%REC	1	11/14/2014	R22918
Surr: Nitrobenzene-d5	86.4	25-130		%REC	1	11/14/2014	R22918
Surr: Phenol-d5	90.8	10-125		%REC	1	11/14/2014	R22918
Surr: Terphenyl-d14	35.6	33-141		%REC	1	11/14/2014	R22918
CORROSIVITY							Analyst: **SUB**
pH	7.51			pH Units	1	11/13/2014	R22918
IGNITABILITY METHOD 1010							Analyst: **SUB**
Ignitability	>200	0		°F	1	11/18/2014	R22918
CYANIDE, REACTIVE							Analyst: **SUB**
Cyanide, Reactive	ND	1.00		mg/L	1	11/18/2014	R22918
SULFIDE, REACTIVE							Analyst: **SUB**
Reactive Sulfide	ND	1.0		mg/L	1	11/21/2014	R22918
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JRR**

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Analytical Report
Lab Order **1411288**
Date Reported: **12/9/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1,2,&3 Effluent
Collection Date: 11/6/2014 10:30:00 AM
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JRR**
Conductivity	3500	0.010		µmhos/cm	1	11/11/2014 1:35:05 PM	R22485
SM2320B: ALKALINITY						Analyst:	**JRR**
Bicarbonate (As CaCO3)	320	20		mg/L CaCO3	1	11/11/2014 1:35:05 PM	R22485
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	11/11/2014 1:35:05 PM	R22485
Total Alkalinity (as CaCO3)	320	20		mg/L CaCO3	1	11/11/2014 1:35:05 PM	R22485
SPECIFIC GRAVITY						Analyst:	**JRR**
Specific Gravity	1.001	0			1	11/20/2014 2:11:00 PM	R22669
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	2380	100	*	mg/L	1	11/12/2014 1:18:00 PM	16340

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-002
Client Sample ID: TRIP BLANK
Collection Date:
Matrix: TRIP BLANK
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Acetonitrile	ND	0.500		µg/L	1	11/13/2014	R22819
Allyl chloride	ND	0.500		µg/L	1	11/13/2014	R22819
Chloroprene	ND	0.500		µg/L	1	11/13/2014	R22819
Cyclohexane	ND	0.500		µg/L	1	11/13/2014	R22819
Diethyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Diisopropyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Epichlorohydrin	ND	5.00		µg/L	1	11/13/2014	R22819
Ethyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
Ethyl methacrylate	ND	0.500		µg/L	1	11/13/2014	R22819
Ethyl tert-butyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Freon-113	ND	0.500		µg/L	1	11/13/2014	R22819
Isobutanol	ND	50.0		µg/L	1	11/13/2014	R22819
Isopropyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
Methacrylonitrile	ND	0.500		µg/L	1	11/13/2014	R22819
Methyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
Methyl ethyl ketone	ND	2.50		µg/L	1	11/13/2014	R22819
Methyl isobutyl ketone	ND	2.50		µg/L	1	11/13/2014	R22819
Methyl methacrylate	ND	0.500		µg/L	1	11/13/2014	R22819
Methylcyclohexane	ND	1.00		µg/L	1	11/13/2014	R22819
n-Amyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
n-Hexane	ND	0.500		µg/L	1	11/13/2014	R22819
Nitrobenzene	ND	5.00		µg/L	1	11/13/2014	R22819
Pentachloroethane	ND	5.00		µg/L	1	11/13/2014	R22819
p-isopropyltoluene	ND	0.500		µg/L	1	11/13/2014	R22819
Propionitrile	ND	0.500		µg/L	1	11/13/2014	R22819
Tetrahydrofuran	ND	0.500		µg/L	1	11/13/2014	R22819
Benzene	ND	0.500		µg/L	1	11/13/2014	R22819
Toluene	ND	0.500		µg/L	1	11/13/2014	R22819
Ethylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Methyl tert-butyl ether (MTBE)	ND	10.0		µg/L	1	11/13/2014	R22819
1,2,4-Trimethylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,3,5-Trimethylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dichloroethane (EDC)	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dibromoethane (EDB)	ND	0.500		µg/L	1	11/13/2014	R22819
Naphthalene	ND	0.500		µg/L	1	11/13/2014	R22819
Acetone	5.30	2.50		µg/L	1	11/13/2014	R22819
Bromobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Bromodichloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
Bromoform	ND	0.500		µg/L	1	11/13/2014	R22819

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-002
Client Sample ID: TRIP BLANK
Collection Date:
Matrix: TRIP BLANK
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
Bromomethane	ND	0.500		µg/L	1	11/13/2014	R22819
Carbon disulfide	ND	0.500		µg/L	1	11/13/2014	R22819
Carbon Tetrachloride	ND	0.500		µg/L	1	11/13/2014	R22819
Chlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Chloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
Chloroform	ND	0.500		µg/L	1	11/13/2014	R22819
Chloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
2-Chlorotoluene	ND	0.500		µg/L	1	11/13/2014	R22819
4-Chlorotoluene	ND	0.500		µg/L	1	11/13/2014	R22819
cis-1,2-DCE	ND	0.500		µg/L	1	11/13/2014	R22819
cis-1,3-Dichloropropene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dibromo-3-chloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
Dibromochloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
Dibromomethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,3-Dichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,4-Dichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Dichlorodifluoromethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1-Dichloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1-Dichloroethene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2-Dichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
1,3-Dichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
2,2-Dichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1-Dichloropropene	ND	0.500		µg/L	1	11/13/2014	R22819
Hexachlorobutadiene	ND	0.500		µg/L	1	11/13/2014	R22819
2-Hexanone	ND	0.500		µg/L	1	11/13/2014	R22819
Isopropylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Methylene Chloride	ND	2.50		µg/L	1	11/13/2014	R22819
n-Butylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
n-Propylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
sec-Butylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
Styrene	ND	0.500		µg/L	1	11/13/2014	R22819
tert-Butylbenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,1,2-Tetrachloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,2,2-Tetrachloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
Tetrachloroethene (PCE)	ND	0.500		µg/L	1	11/13/2014	R22819
trans-1,2-DCE	ND	0.500		µg/L	1	11/13/2014	R22819
trans-1,3-Dichloropropene	ND	0.500		µg/L	1	11/13/2014	R22819
1,2,3-Trichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well
Lab ID: 1411288-002
Client Sample ID: TRIP BLANK
Collection Date:
Matrix: TRIP BLANK
Received Date: 11/7/2014 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
1,2,4-Trichlorobenzene	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,1-Trichloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,1,2-Trichloroethane	ND	0.500		µg/L	1	11/13/2014	R22819
Trichloroethene (TCE)	ND	0.500		µg/L	1	11/13/2014	R22819
Trichlorofluoromethane	ND	0.500		µg/L	1	11/13/2014	R22819
1,2,3-Trichloropropane	ND	0.500		µg/L	1	11/13/2014	R22819
Vinyl chloride	ND	0.500		µg/L	1	11/13/2014	R22819
Xylenes, Total	ND	1.00		µg/L	1	11/13/2014	R22819
mp-Xylenes	ND	1.00		µg/L	1	11/13/2014	R22819
o-Xylene	ND	0.500		µg/L	1	11/13/2014	R22819
tert-Amyl methyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
tert-Butyl alcohol	ND	0.500		µg/L	1	11/13/2014	R22819
Acrolein	ND	0.500		µg/L	1	11/13/2014	R22819
Acrylonitrile	ND	10.0		µg/L	1	11/13/2014	R22819
Bromochloromethane	ND	0.500		µg/L	1	11/13/2014	R22819
2-Chloroethyl vinyl ether	ND	0.500		µg/L	1	11/13/2014	R22819
Iodomethane	ND	0.500		µg/L	1	11/13/2014	R22819
trans-1,4-Dichloro-2-butene	ND	0.500		µg/L	1	11/13/2014	R22819
Vinyl acetate	ND	0.500		µg/L	1	11/13/2014	R22819
1,4-Dioxane	ND	20.0		µg/L	1	11/13/2014	R22819
Surr: 1,2-Dichlorobenzene-d4	102	70-130		%REC	1	11/13/2014	R22819
Surr: 4-Bromofluorobenzene	94.4	70-130		%REC	1	11/13/2014	R22819
Surr: Toluene-d8	96.4	70-130		%REC	1	11/13/2014	R22819

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R22427** RunNo: **22427**

Prep Date: Analysis Date: **11/7/2014** SeqNo: **661019** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R22427** RunNo: **22427**

Prep Date: Analysis Date: **11/7/2014** SeqNo: **661020** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	93.8	66.6	112			
Nitrogen, Nitrite (As N)	0.90	0.10	1.000	0	90.2	67.5	109			
Bromide	2.3	0.10	2.500	0	92.8	82.8	103			
Nitrogen, Nitrate (As N)	2.3	0.10	2.500	0	93.3	84	109			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.7	68.8	109			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R22427** RunNo: **22427**

Prep Date: Analysis Date: **11/7/2014** SeqNo: **661041** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R22427** RunNo: **22427**

Prep Date: Analysis Date: **11/7/2014** SeqNo: **661042** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.48	0.10	0.5000	0	96.6	66.6	112			
Nitrogen, Nitrite (As N)	0.94	0.10	1.000	0	94.0	67.5	109			
Bromide	2.4	0.10	2.500	0	96.4	82.8	103			
Nitrogen, Nitrate (As N)	2.4	0.10	2.500	0	97.1	84	109			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.8	68.8	109			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB**	SampType: **MBLK**		TestCode: **EPA Method 300.0: Anions**		
Client ID: **PBW**	Batch ID: **R22629**		RunNo: **22629**		
Prep Date:	Analysis Date: **11/18/2014**		SeqNo: **667493**	Units: **mg/L**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS**	SampType: **LCS**		TestCode: **EPA Method 300.0: Anions**		
Client ID: **LCSW**	Batch ID: **R22629**		RunNo: **22629**		
Prep Date:	Analysis Date: **11/18/2014**		SeqNo: **667494**	Units: **mg/L**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	91.7	90	110			
Sulfate	9.5	0.50	10.00	0	95.2	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R22819**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **R22819**	RunNo: **22819**	
Prep Date:	Analysis Date: **11/13/2014**	SeqNo: **673562**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetonitrile	ND	0.500								
Allyl chloride	ND	0.500								
Chloroprene	ND	0.500								
Cyclohexane	ND	0.500								
Diethyl ether	ND	0.500								
Diisopropyl ether	ND	0.500								
Epichlorohydrin	ND	0.500								
Ethyl acetate	ND	0.500								
Ethyl methacrylate	ND	0.500								
Ethyl tert-butyl ether	ND	0.500								
Freon-113	ND	0.500								
Isobutanol	ND	0.500								
Isopropyl acetate	ND	0.500								
Methacrylonitrile	ND	0.500								
Methyl acetate	ND	0.500								
Methyl ethyl ketone	ND	2.50								
Methyl isobutyl ketone	ND	2.50								
Methyl methacrylate	ND	0.500								
Methylcyclohexane	ND	0.500								
n-Amyl acetate	ND	0.500								
n-Hexane	ND	0.500								
Nitrobenzene	ND	0.500								
Pentachloroethane	ND	0.500								
p-isopropyltoluene	ND	0.500								
Propionitrile	ND	0.500								
Tetrahydrofuran	ND	0.500								
Benzene	ND	0.500								
Toluene	ND	0.500								
Ethylbenzene	ND	0.500								
Methyl tert-butyl ether (MTBE)	ND	0.500								
1,2,4-Trimethylbenzene	ND	0.500								
1,3,5-Trimethylbenzene	ND	0.500								
1,2-Dichloroethane (EDC)	ND	0.500								
1,2-Dibromoethane (EDB)	ND	0.500								
Naphthalene	ND	0.500								
Acetone	ND	2.50								
Bromobenzene	ND	0.500								
Bromodichloromethane	ND	0.500								
Bromoform	ND	0.500								

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R22819**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**	
Client ID: **PBW**	Batch ID: **R22819**	RunNo: **22819**	
Prep Date:	Analysis Date: **11/13/2014**	SeqNo: **673562**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromomethane	ND	0.500								
Carbon disulfide	ND	0.500								
Carbon Tetrachloride	ND	0.500								
Chlorobenzene	ND	0.500								
Chloroethane	ND	0.500								
Chloroform	ND	0.500								
Chloromethane	ND	0.500								
2-Chlorotoluene	ND	0.500								
4-Chlorotoluene	ND	0.500								
cis-1,2-DCE	ND	0.500								
cis-1,3-Dichloropropene	ND	0.500								
1,2-Dibromo-3-chloropropane	ND	0.500								
Dibromochloromethane	ND	0.500								
Dibromomethane	ND	0.500								
1,2-Dichlorobenzene	ND	0.500								
1,3-Dichlorobenzene	ND	0.500								
1,4-Dichlorobenzene	ND	0.500								
Dichlorodifluoromethane	ND	0.500								
1,1-Dichloroethane	ND	0.500								
1,1-Dichloroethene	ND	0.500								
1,2-Dichloropropane	ND	0.500								
1,3-Dichloropropane	ND	0.500								
2,2-Dichloropropane	ND	0.500								
1,1-Dichloropropene	ND	0.500								
Hexachlorobutadiene	ND	0.500								
2-Hexanone	ND	0.500								
Isopropylbenzene	ND	0.500								
Methylene Chloride	ND	2.50								
n-Butylbenzene	ND	0.500								
n-Propylbenzene	ND	0.500								
sec-Butylbenzene	ND	0.500								
Styrene	ND	0.500								
tert-Butylbenzene	ND	0.500								
1,1,1,2-Tetrachloroethane	ND	0.500								
1,1,2,2-Tetrachloroethane	ND	0.500								
Tetrachloroethene (PCE)	ND	0.500								
trans-1,2-DCE	ND	0.500								
trans-1,3-Dichloropropene	ND	0.500								
1,2,3-Trichlorobenzene	ND	0.500								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R22819** SampType: **MBLK** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW** Batch ID: **R22819** RunNo: **22819**
Prep Date: Analysis Date: **11/13/2014** SeqNo: **673562** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	0.500								
1,1,1-Trichloroethane	ND	0.500								
1,1,2-Trichloroethane	ND	0.500								
Trichloroethene (TCE)	ND	0.500								
Trichlorofluoromethane	ND	0.500								
1,2,3-Trichloropropane	ND	0.500								
Vinyl chloride	ND	0.500								
Xylenes, Total	ND	1.00								
mp-Xylenes	ND	1.00								
o-Xylene	ND	0.500								
tert-Amyl methyl ether	ND	0.500								
tert-Butyl alcohol	ND	0.500								
Acrolein	ND	0.500								
Acrylonitrile	ND	0.500								
Bromochloromethane	ND	0.500								
2-Chloroethyl vinyl ether	ND	0.500								
Iodomethane	ND	0.500								
trans-1,4-Dichloro-2-butene	ND	0.500								
Vinyl acetate	ND	0.500								
1,4-Dioxane	ND	0.500								
Surr: 1,2-Dichloroethane-d4	0		10.00		0	70	130			S
Surr: 4-Bromofluorobenzene	0		10.00		0	70	130			S
Surr: Toluene-d8	0		10.00		0	70	130			S

Sample ID **LCS-R22819** SampType: **LCS** TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW** Batch ID: **R22819** RunNo: **22819**
Prep Date: Analysis Date: **11/13/2014** SeqNo: **673563** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.77		10.00	0	97.7	80	120			
Toluene	10.0		10.00	0	100	80	120			
Ethylbenzene	10.0		10.00	0	100	80	120			
Chlorobenzene	9.99		10.00	0	99.9	80	120			
1,1-Dichloroethene	9.57		10.00	0	95.7	80	120			
Trichloroethene (TCE)	9.91		10.00	0	99.1	80	120			
o-Xylene	10.6		10.00	0	106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R22918**	SampType: **MBLK**	TestCode: **EPA 8270C: Semivolatiles/Mod**	
Client ID: **PBW**	Batch ID: **R22918**	RunNo: **22918**	
Prep Date:	Analysis Date: **11/14/2014**	SeqNo: **676667**	Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acetophenone	ND	10								
1-Methylnaphthalene	ND	10								
2,3,4,6-Tetrachlorophenol	ND	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2,4-Dichlorophenol	ND	10								
2,4-Dimethylphenol	ND	10								
2,4-Dinitrophenol	ND	10								
2,4-Dinitrotoluene	ND	10								
2,6-Dinitrotoluene	ND	10								
2-Chloronaphthalene	ND	10								
2-Chlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3,3'-Dichlorobenzidine	ND	10								
3-Nitroaniline	ND	10								
4,6-Dinitro-2-methylphenol	ND	10								
4-Bromophenyl phenyl ether	ND	10								
4-Chloro-3-methylphenol	ND	5.0								
4-Chloroaniline	ND	10								
4-Chlorophenyl phenyl ether	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Anthracene	ND	10								
Benzo(g,h,i)perylene	ND	10								
Benz(a)anthracene	ND	0.10								
Benzo(a)pyrene	ND	0.10								
Benzo(b)fluoranthene	ND	0.10								
Benzo(k)fluoranthene	ND	0.10								
Bis(2-chloroethoxy)methane	ND	10								
Bis(2-chloroethyl)ether	ND	10								
Bis(2-chloroisopropyl)ether	ND	10								
Bis(2-ethylhexyl)phthalate	ND	5.0								
Butyl benzyl phthalate	ND	10								
Carbazole	ND	10								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1411288

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID	MB-R22918	SampType:	MBLK	TestCode:	EPA 8270C: Semivolatiles/Mod
Client ID:	PBW	Batch ID:	R22918	RunNo:	22918
Prep Date:		Analysis Date:	11/14/2014	SeqNo:	676667
				Units:	µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chrysene	ND	0.10								
Dibenz(a,h)anthracene	ND	0.10								
Dibenzofuran	ND	10								
Diethyl phthalate	ND	10								
Dimethyl phthalate	ND	10								
Di-n-butyl phthalate	ND	10								
Di-n-octyl phthalate	ND	10								
Fluoranthene	ND	10								
Fluorene	ND	10								
Hexachlorobenzene	ND	1.0								
Hexachlorobutadiene	ND	10								
Hexachlorocyclopentadiene	ND	10								
Hexachloroethane	ND	10								
Isophorone	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodiphenylamine	ND	2.0								
Pentachlorophenol	ND	10								
Phenanthrene	ND	1.0								
Phenol	ND	5.0								
Pyrene	ND	10								
1,2,4,5-Tetrachlorobenzene	ND	10								

Sample ID	LCS-R22918	SampType:	LCS	TestCode:	EPA 8270C: Semivolatiles/Mod
Client ID:	LCSW	Batch ID:	R22918	RunNo:	22918
Prep Date:		Analysis Date:	11/14/2014	SeqNo:	676668
				Units:	µg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dinitrotoluene	5.4		5.000	0	108	49	134			
2-Chlorophenol	4.8		5.000	0	96.4	50	131			
4-Chloro-3-methylphenol	5.8		5.000	0	115	42	139			
4-Nitrophenol	3.9		5.000	0	78.4	19	137			
Acenaphthene	5.3		5.000	0	105	36	122			
Bis(2-ethylhexyl)phthalate	6.0		5.000	0	120	43	142			
N-Nitrosodi-n-propylamine	5.1		5.000	0	102	46	135			
Pentachlorophenol	4.8		5.000	0	95.2	22	138			
Phenol	4.4		5.000	0	88.0	45	134			
Pyrene	5.9		5.000	0	117	45	138			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID	**MB-16357**	SampType:	**MBLK**		TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**PBW**	Batch ID:	**16357**		RunNo:	**22512**					
Prep Date:	**11/12/2014**	Analysis Date:	**11/13/2014**		SeqNo:	**664165**		Units:	**mg/L**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.00020								

Sample ID	**LCS-16357**	SampType:	**LCS**		TestCode:	**EPA Method 7470: Mercury**					
Client ID:	**LCSW**	Batch ID:	**16357**		RunNo:	**22512**					
Prep Date:	**11/12/2014**	Analysis Date:	**11/13/2014**		SeqNo:	**664166**		Units:	**mg/L**		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		0.0049	0.00020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

WO#: **1411288**

Hall Environmental Analysis Laboratory, Inc.

09-Dec-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-16358** SampType: **MBLK** TestCode: **MERCURY, TCLP**
Client ID: **PBW** Batch ID: **16358** RunNo: **22521**
Prep Date: **11/12/2014** Analysis Date: **11/13/2014** SeqNo: **664178** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID **LCS-16358** SampType: **LCS** TestCode: **MERCURY, TCLP**
Client ID: **LCSW** Batch ID: **16358** RunNo: **22521**
Prep Date: **11/12/2014** Analysis Date: **11/13/2014** SeqNo: **664179** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	97.5	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-16345** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **16345** RunNo: **22489**
Prep Date: **11/11/2014** Analysis Date: **11/12/2014** SeqNo: **663247** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-16345** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **16345** RunNo: **22489**
Prep Date: **11/11/2014** Analysis Date: **11/12/2014** SeqNo: **663248** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	103	80	120			
Barium	ND	100	0.5000	0	98.9	80	120			
Cadmium	ND	1.0	0.5000	0	99.2	80	120			
Chromium	ND	5.0	0.5000	0	98.1	80	120			
Lead	ND	5.0	0.5000	0	95.2	80	120			
Selenium	ND	1.0	0.5000	0	97.9	80	120			
Silver	ND	5.0	0.1000	0	99.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-16345** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**

Client ID: **PBW** Batch ID: **16345** RunNo: **22489**

Prep Date: **11/11/2014** Analysis Date: **11/12/2014** SeqNo: **663203** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-16345** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**

Client ID: **LCSW** Batch ID: **16345** RunNo: **22489**

Prep Date: **11/11/2014** Analysis Date: **11/12/2014** SeqNo: **663204** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.51	0.020	0.5000	0	103	80	120			
Antimony	0.50	0.050	0.5000	0	99.3	80	120			
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.49	0.020	0.5000	0	98.9	80	120			
Beryllium	0.52	0.0030	0.5000	0	104	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.2	80	120			
Calcium	51	1.0	50.00	0	102	80	120			
Chromium	0.49	0.0060	0.5000	0	98.1	80	120			
Cobalt	0.48	0.0060	0.5000	0	95.9	80	120			
Copper	0.50	0.0060	0.5000	0	100	80	120			
Iron	0.49	0.050	0.5000	0	98.8	80	120			
Lead	0.48	0.0050	0.5000	0	95.2	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID	**LCS-16345**	SampType: **LCS**	TestCode: **EPA 6010B: Total Metals**		
Client ID:	**LCSW**	Batch ID: **16345**	RunNo: **22489**		
Prep Date:	**11/11/2014**	Analysis Date: **11/12/2014**	SeqNo: **663204**	Units: **mg/L**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	50	1.0	50.00	0	100	80	120			
Manganese	0.49	0.0020	0.5000	0	97.2	80	120			
Nickel	0.48	0.010	0.5000	0	95.5	80	120			
Potassium	47	1.0	50.00	0	94.6	80	120			
Selenium	0.49	0.050	0.5000	0	97.9	80	120			
Silver	0.10	0.0050	0.1000	0	99.9	80	120			
Thallium	0.48	0.050	0.5000	0	96.1	80	120			
Vanadium	0.52	0.050	0.5000	0	104	80	120			
Zinc	0.49	0.020	0.5000	0	98.0	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R22918**	SampType: **MBLK**	TestCode: **CYANIDE, Reactive**	
Client ID: **PBW**	Batch ID: **R22918**	RunNo: **22918**	
Prep Date:	Analysis Date: **11/18/2014**	SeqNo: **677093**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	ND	1.00								

Sample ID **LCS-R22918**	SampType: **LCS**	TestCode: **CYANIDE, Reactive**	
Client ID: **LCSW**	Batch ID: **R22918**	RunNo: **22918**	
Prep Date:	Analysis Date: **11/18/2014**	SeqNo: **677094**	Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cyanide, Reactive	0.532		0.5000	0	106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company
Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-R22918**	SampType: **MBLK**			TestCode: **SULFIDE, Reactive**						
Client ID: **PBW**	Batch ID: **R22918**			RunNo: **22918**						
Prep Date:	Analysis Date: **11/21/2014**			SeqNo: **677096**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	ND	1.0								

Sample ID **LCS-R22918**	SampType: **LCS**			TestCode: **SULFIDE, Reactive**						
Client ID: **LCSW**	Batch ID: **R22918**			RunNo: **22918**						
Prep Date:	Analysis Date: **11/21/2014**			SeqNo: **677097**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Reactive Sulfide	0.18		0.2000	0	90.0	70	130			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1411288

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID mb-1	SampType: MBLK	TestCode: SM2320B: Alkalinity								
Client ID: PBW	Batch ID: R22485	RunNo: 22485								
Prep Date:	Analysis Date: 11/11/2014	SeqNo: 663098	Units: mg/L CaCO3							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID lcs-1	SampType: LCS	TestCode: SM2320B: Alkalinity								
Client ID: LCSW	Batch ID: R22485	RunNo: 22485								
Prep Date:	Analysis Date: 11/11/2014	SeqNo: 663099	Units: mg/L CaCO3							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79	20	80.00	0	99.3	90	110			

Sample ID mb-2	SampType: MBLK	TestCode: SM2320B: Alkalinity								
Client ID: PBW	Batch ID: R22485	RunNo: 22485								
Prep Date:	Analysis Date: 11/11/2014	SeqNo: 663121	Units: mg/L CaCO3							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID lcs-2	SampType: LCS	TestCode: SM2320B: Alkalinity								
Client ID: LCSW	Batch ID: R22485	RunNo: 22485								
Prep Date:	Analysis Date: 11/11/2014	SeqNo: 663122	Units: mg/L CaCO3							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	80	20	80.00	0	99.5	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1411288**

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **1411288-001ADUP** SampType: **DUP** TestCode: **Specific Gravity**

Client ID: **WDW-1,2,&3 Effluen** Batch ID: **R22669** RunNo: **22669**

Prep Date: Analysis Date: **11/20/2014** SeqNo: **668670** Units:

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Specific Gravity	1.001	0						0.0500	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1411288

09-Dec-14

Client: Navajo Refining Company

Project: Quarterly WDW-1, 2, &3 Inj Well

Sample ID **MB-16340**	SampType: **MBLK**			TestCode: **SM2540C MOD: Total Dissolved Solids**						
Client ID: **PBW**	Batch ID: **16340**			RunNo: **22490**						
Prep Date: **11/11/2014**	Analysis Date: **11/12/2014**			SeqNo: **663255**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-16340**	SampType: **LCS**			TestCode: **SM2540C MOD: Total Dissolved Solids**						
Client ID: **LCSW**	Batch ID: **16340**			RunNo: **22490**						
Prep Date: **11/11/2014**	Analysis Date: **11/12/2014**			SeqNo: **663256**			Units: **mg/L**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1411288 RcptNo: 1

Received by/date: 11/07/14

Logged By: Ashley Gallegos 11/7/2014 9:20:00 AM

Completed By: Ashley Gallegos 11/7/2014 11:26:06 AM

Reviewed By: CS 11/07/14

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☑ No VOA Vials ☐ 11/07/14
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 3 2 (<2 or >12 unless noted)
Adjusted? No
Checked by: MG

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks: All VOA's including trip blank have bubbles. MG 11/07/14

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain of Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

☐ Standar ☐ Rush

Project Name:

Quarterly WDW-1, 2, & 3 Inj Well

Project #: P.O. # 167796

Project Manager:

Dan Crawford

Sampler:

[redacted]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
11/6/14	~~9:00~~ 10:20am	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4	-001	X						X
11/6/14	~~9:00~~ 10:20am	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X	
11/6/14	~~9:00~~ 10:20am	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X					
11/6/14	~~9:00~~ 10:20am	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X				
11/6/14	~~9:00~~ 10:20am	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X			
11/6/14	~~9:00~~ 10:20am	Liquid	Trip Blank	2	Neat	-002		X					
11/6/14	~~9:00~~ 10:20am	Liquid	Temperature Blank	1	Neat								

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/4/14	10:20am	Elizabeth Salsberry Elizabeth Salsberry	[signature]	11/07/14	0920
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Report these results separately from all other Chain of Custody kits provided.

pH: 7.30

temp of sample: 44.4°C

Temp: 54°F windspeed 8.1mp

humidity: 48% condition

wind direction: NNE cl

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

[illegible]	WDW-1,2, & 3 Qrtly Inj Well
[illegible]	Aaron Strange
[illegible]	Navajo Refining Co. LLC
[illegible]	11/6/2014 @ 10:30
[illegible]	11/6/2014 @ 10:30

[illegible]
- [illegible] ☑
- [illegible] ☐
- [illegible] ☐

[illegible] One

[illegible]
- [illegible] ☐
- [illegible] ☑
- [illegible] ☐

[illegible] Directly to sample jars

[illegible] Waste water effluent pumps to injection wells.

- ☐ P-849 sample point (first from east)
- ☐ P-854 sample point (second from east)
- ☑ P-856 sample point (third from east)
- ☐ P-857 sample point (fourth from east)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		3	X			X					Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40 CFR 136.3
		1			X						VOCs/SW-846 Method 8260C (see attached list 'VOCs')
		3		X							SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')
		2	X								R,C,I/40 CFR part 261
		2	X								Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')
		2	X								Ca, K, Mg, Na/40 CFR 136.3
		1	X								TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311

[illegible] Temp: 54 humidity:43% wind direction:NNE Wind speed: 8.1 mph condition: clear

Field Temp. 44.4 C Field pH 7.30

[illegible]
- [illegible] ☑
- [illegible] ☐
- [illegible] ☐

[illegible]
- [illegible] ☑
- [illegible] ☐

Chain-of-Custody Record

Client: Navajo Refining Co.

Mailing Address: P.O. Box 159 Artesia,

NM 88211-0159

Phone #: 575-748-3311

email or Fax#: 575-746-5451

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standar ☐ **Rush**

Project Name:

Quarterly WDW-1, 2, & 3 Inj Well

Project #: P.O. # 167796

Project Manager:

Dan Crawford

Sampler:

On Ice: ☐ Yes ☐ No

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	Specific Gravity,HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270D (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6010, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311
11/6/14	~~9:00~~ 10:30am	Liquid	WDW-1, 2, & 3 Effluent	3	Neat/H2SO4		X						X
11/6/14	~~9:00~~ 10:30am	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X	
11/6/14	~~9:00~~ 10:30am	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X					
11/6/14	~~9:00~~ 10:30am	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X				
11/6/14	~~9:00~~ 10:30am	Liquid	WDW-1, 2, & 3 Effluent	2	Neat					X			
11/6/14	~~9:00~~ 10:30am	Liquid	Trip Blank	2	Neat			X					
11/6/14	~~9:00~~ 10:30am	Liquid	Temperature Blank	1	Neat								

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/6/14	10:30am	Elizabeth Salsberry Elizabeth Salsberry			
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Report these results separately from all other Chain of Custody kits provided.

PH: 7.30

temp of sample: 44.4°C

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

ATTACHMENT D

Fall Off Test Charts

Pressure Survey Report

NAVAJO REFINERY

MEWBOURNE WELL #1

35 HOUR FALLOFF

5/18/14

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

BUILDUP JOB INFORMATION SHEET

Company Information	
Company Name:	NAVAJO REFINERY
Address:	

Well Information	
Well Name:	MEWBOURNE WELL #1
Location:	
Field – Pool:	
Status:	SHUT IN

Test Information	
Type of Test:	35 HOUR FALLOFF
Gauge Depth:	7924 ft
Production Interval:	7924 ft to 8476 ft
Production Through:	3.5" TUBING
Tubing Pressure:	953.06 psi
Casing Pressure:	
Shut In Time	
Status:	SHUT IN
Temperature @ Run Depth	98.63 degF
Surface Temperature:	79.43 degF

Gauge Information	Top Recorder	Bottom Recorder
Serial Number:	76170	76169
Calibration Date:	4/8/13	4/8/13
Pressure Range:	6010 psi	6000 psi

Comments

TAGGED TD WITH GAUGES AT 8990 FT.

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 35 HOUR FALLOFF
SERIAL NUMBER: 76169

WELL NAME: MEWBOURNE WELL #1
FIELD:
GAUGE DEPTH: 7924 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
1	5/16/2014	8:12:48 PM	0.00000	4624.9419	95.0609	0.0000
2	5/16/2014	8:13:48 PM	0.01667	4621.1793	95.0563	-3.7626
3	5/16/2014	8:14:48 PM	0.03333	4612.6350	95.0590	-8.5443
4	5/16/2014	8:15:48 PM	0.05000	4606.0281	95.0607	-6.6069
5	5/16/2014	8:16:48 PM	0.06667	4600.1415	95.0697	-5.8866
6	5/16/2014	8:17:48 PM	0.08333	4594.7889	95.0775	-5.3526
7	5/16/2014	8:18:48 PM	0.10000	4589.8347	95.0943	-4.9542
8	5/16/2014	8:19:48 PM	0.11667	4585.2034	95.1096	-4.6313
9	5/16/2014	8:20:48 PM	0.13333	4580.7480	95.1143	-4.4554
10	5/16/2014	8:21:48 PM	0.15000	4576.5874	95.1206	-4.1606
11	5/16/2014	8:22:48 PM	0.16667	4572.5788	95.1371	-4.0086
12	5/16/2014	8:23:48 PM	0.18333	4568.7472	95.1511	-3.8316
13	5/16/2014	8:24:48 PM	0.20000	4565.1652	95.1847	-3.5820
14	5/16/2014	8:25:48 PM	0.21667	4561.6028	95.1956	-3.5625
15	5/16/2014	8:26:48 PM	0.23333	4558.1883	95.2293	-3.4145
16	5/16/2014	8:27:48 PM	0.25000	4554.9610	95.2505	-3.2272
17	5/16/2014	8:28:48 PM	0.26667	4551.7898	95.2738	-3.1712
18	5/16/2014	8:29:48 PM	0.28333	4548.7403	95.2950	-3.0495
19	5/16/2014	8:30:48 PM	0.30000	4545.8154	95.3209	-2.9249
20	5/16/2014	8:31:48 PM	0.31667	4542.9760	95.3469	-2.8394
21	5/16/2014	8:32:48 PM	0.33333	4540.2884	95.3636	-2.6876
22	5/16/2014	8:33:48 PM	0.35000	4537.5226	95.3866	-2.7658
23	5/16/2014	8:34:48 PM	0.36667	4535.0173	95.4037	-2.5053
24	5/16/2014	8:35:48 PM	0.38333	4532.4985	95.4220	-2.5188
25	5/16/2014	8:36:48 PM	0.40000	4529.9712	95.4466	-2.5273
26	5/16/2014	8:37:48 PM	0.41667	4527.6543	95.4649	-2.3168
27	5/16/2014	8:38:48 PM	0.43333	4525.3609	95.4849	-2.2934
28	5/16/2014	8:39:48 PM	0.45000	4523.0872	95.5034	-2.2737
29	5/16/2014	8:40:48 PM	0.46667	4520.9382	95.5275	-2.1490
30	5/16/2014	8:41:48 PM	0.48333	4518.8051	95.5415	-2.1331
31	5/16/2014	8:42:48 PM	0.50000	4516.7150	95.5582	-2.0901
32	5/16/2014	8:47:48 PM	0.58333	4507.1951	95.6255	-9.5199
33	5/16/2014	8:52:48 PM	0.66667	4498.8025	95.6899	-8.3926
34	5/16/2014	8:57:48 PM	0.75000	4491.2850	95.7527	-7.5175
35	5/16/2014	9:02:48 PM	0.83333	4484.6977	95.8093	-6.5873
36	5/16/2014	9:07:48 PM	0.91667	4478.7131	95.8568	-5.9846
37	5/16/2014	9:12:48 PM	1.00000	4473.4541	95.9053	-5.2590
38	5/16/2014	9:17:48 PM	1.08333	4468.7229	95.9516	-4.7313
39	5/16/2014	9:22:48 PM	1.16667	4464.4659	95.9900	-4.2569
40	5/16/2014	9:27:48 PM	1.25000	4460.4940	96.0299	-3.9719
41	5/16/2014	9:32:48 PM	1.33333	4457.0040	96.0711	-3.4900
42	5/16/2014	9:37:48 PM	1.41667	4453.9236	96.1135	-3.0804
43	5/16/2014	9:42:48 PM	1.50000	4451.0796	96.1429	-2.8440
44	5/16/2014	9:47:48 PM	1.58333	4448.4957	96.1750	-2.5839
45	5/16/2014	9:52:48 PM	1.66667	4446.1347	96.2027	-2.3610
46	5/16/2014	9:57:48 PM	1.75000	4444.0253	96.2396	-2.1094
47	5/16/2014	10:02:48 PM	1.83333	4442.1634	96.2731	-1.8619
48	5/16/2014	10:07:48 PM	1.91667	4440.3658	96.2974	-1.7976
49	5/16/2014	10:12:48 PM	2.00000	4438.7728	96.3296	-1.5930

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 35 HOUR FALLOFF
SERIAL NUMBER: 76169

WELL NAME: MEWBOURNE WELL #1
FIELD:
GAUGE DEPTH: 7924 ft

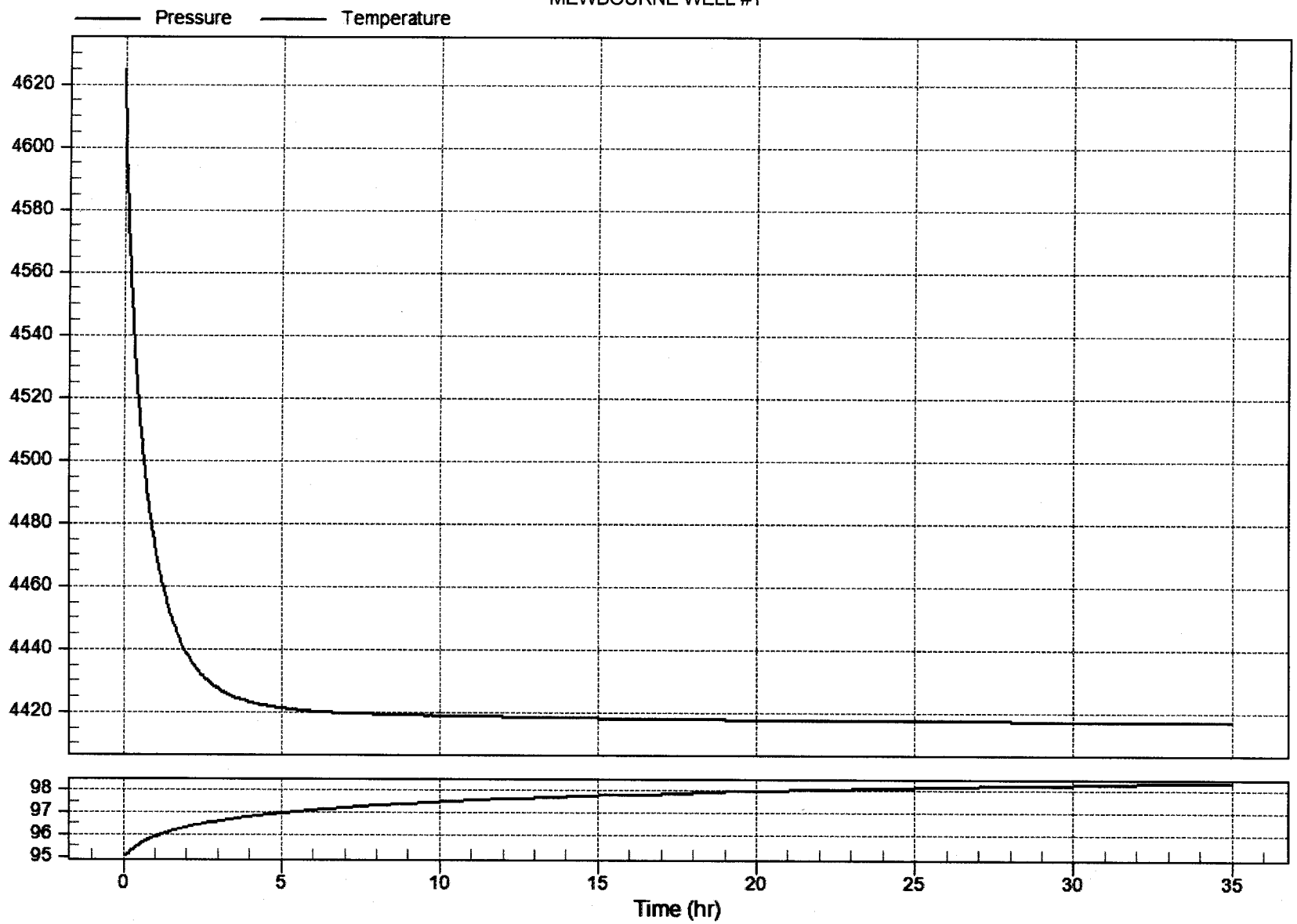
Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
50	5/16/2014	10:17:48 PM	2.08333	4437.3557	96.3556	-1.4171
51	5/16/2014	10:22:48 PM	2.16667	4435.9662	96.3773	-1.3896
52	5/16/2014	10:27:48 PM	2.25000	4434.8354	96.3987	-1.1308
53	5/16/2014	10:32:48 PM	2.33333	4433.6580	96.4277	-1.1773
54	5/16/2014	10:37:48 PM	2.41667	4432.6441	96.4463	-1.0139
55	5/16/2014	10:42:48 PM	2.50000	4431.6647	96.4720	-0.9794
56	5/16/2014	10:47:48 PM	2.58333	4430.8044	96.4876	-0.8603
57	5/16/2014	10:52:48 PM	2.66667	4430.0855	96.5117	-0.7189
58	5/16/2014	10:57:48 PM	2.75000	4429.3167	96.5348	-0.7688
59	5/16/2014	11:02:48 PM	2.83333	4428.6717	96.5502	-0.6449
60	5/16/2014	11:07:48 PM	2.91667	4428.0161	96.5731	-0.6556
61	5/16/2014	11:12:48 PM	3.00000	4427.4693	96.5990	-0.5468
62	5/16/2014	11:17:48 PM	3.08333	4426.8948	96.6068	-0.5745
63	5/16/2014	11:22:48 PM	3.16667	4426.4257	96.6283	-0.4691
64	5/16/2014	11:27:48 PM	3.25000	4426.0420	96.6541	-0.3836
65	5/16/2014	11:32:48 PM	3.33333	4425.6027	96.6664	-0.4393
66	5/16/2014	11:37:48 PM	3.41667	4425.1790	96.6745	-0.4237
67	5/16/2014	11:42:48 PM	3.50000	4424.7923	96.7002	-0.3867
68	5/16/2014	11:47:48 PM	3.58333	4424.5539	96.7167	-0.2383
69	5/16/2014	11:52:48 PM	3.66667	4424.2259	96.7397	-0.3280
70	5/16/2014	11:57:48 PM	3.75000	4423.9346	96.7477	-0.2913
71	5/17/2014	12:02:48 AM	3.83333	4423.6669	96.7659	-0.2677
72	5/17/2014	12:07:48 AM	3.91667	4423.3707	96.7783	-0.2962
73	5/17/2014	12:12:48 AM	4.00000	4423.1001	96.7890	-0.2706
74	5/17/2014	12:27:48 AM	4.25000	4422.5385	96.8362	-0.5616
75	5/17/2014	12:42:48 AM	4.50000	4422.0579	96.8775	-0.4805
76	5/17/2014	12:57:48 AM	4.75000	4421.5566	96.9143	-0.5013
77	5/17/2014	1:12:48 AM	5.00000	4421.2105	96.9526	-0.3462
78	5/17/2014	1:27:48 AM	5.25000	4420.9354	96.9892	-0.2750
79	5/17/2014	1:42:48 AM	5.50000	4420.6748	97.0199	-0.2606
80	5/17/2014	1:57:48 AM	5.75000	4420.3974	97.0460	-0.2774
81	5/17/2014	2:12:48 AM	6.00000	4420.2090	97.0771	-0.1884
82	5/17/2014	2:27:48 AM	6.25000	4420.0186	97.1072	-0.1904
83	5/17/2014	2:42:48 AM	6.50000	4419.9003	97.1410	-0.1183
84	5/17/2014	2:57:48 AM	6.75000	4419.7525	97.1610	-0.1477
85	5/17/2014	3:12:48 AM	7.00000	4419.6152	97.1961	-0.1374
86	5/17/2014	3:27:48 AM	7.25000	4419.5618	97.2218	-0.0534
87	5/17/2014	3:42:48 AM	7.50000	4419.3751	97.2437	-0.1867
88	5/17/2014	3:57:48 AM	7.75000	4419.3897	97.2682	0.0146
89	5/17/2014	4:12:48 AM	8.00000	4419.3433	97.2998	-0.0463
90	5/17/2014	4:42:48 AM	8.50000	4419.1467	97.3385	-0.1966
91	5/17/2014	5:12:48 AM	9.00000	4419.0029	97.3784	-0.1439
92	5/17/2014	5:42:48 AM	9.50000	4419.0452	97.4212	0.0423
93	5/17/2014	6:12:48 AM	10.00000	4418.8906	97.4623	-0.1546
94	5/17/2014	6:42:48 AM	10.50000	4418.8225	97.4962	-0.0680
95	5/17/2014	7:12:48 AM	11.00000	4418.6712	97.5267	-0.1513
96	5/17/2014	7:42:48 AM	11.50000	4418.6148	97.5620	-0.0564
97	5/17/2014	8:12:48 AM	12.00000	4418.6042	97.5969	-0.0105
98	5/17/2014	9:12:48 AM	13.00000	4418.3685	97.6479	-0.2358

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 35 HOUR FALLOFF
SERIAL NUMBER: 76169

WELL NAME: MEWBOURNE WELL #1
FIELD:
GAUGE DEPTH: 7924 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
99	5/17/2014	10:12:48 AM	14.00000	4418.3281	97.7119	-0.0404
100	5/17/2014	11:12:48 AM	15.00000	4418.1354	97.7609	-0.1927
101	5/17/2014	12:12:48 PM	16.00000	4417.9889	97.8080	-0.1465
102	5/17/2014	1:12:48 PM	17.00000	4417.8666	97.8423	-0.1223
103	5/17/2014	2:12:48 PM	18.00000	4417.8136	97.8923	-0.0530
104	5/17/2014	3:12:48 PM	19.00000	4417.6999	97.9308	-0.1136
105	5/17/2014	4:12:48 PM	20.00000	4417.5910	97.9600	-0.1089
106	5/17/2014	5:12:48 PM	21.00000	4417.5629	97.9981	-0.0281
107	5/17/2014	6:12:48 PM	22.00000	4417.5891	98.0347	0.0262
108	5/17/2014	7:12:48 PM	23.00000	4417.5572	98.0609	-0.0320
109	5/17/2014	8:12:48 PM	24.00000	4417.4884	98.0913	-0.0687
110	5/17/2014	9:12:48 PM	25.00000	4417.3871	98.1206	-0.1014
111	5/17/2014	10:12:48 PM	26.00000	4417.2606	98.1450	-0.1265
112	5/17/2014	11:12:48 PM	27.00000	4417.2678	98.1754	0.0072
113	5/18/2014	12:12:48 AM	28.00000	4417.2295	98.2001	-0.0383
114	5/18/2014	1:12:48 AM	29.00000	4417.1142	98.2172	-0.1153
115	5/18/2014	2:12:48 AM	30.00000	4417.1255	98.2461	0.0112
116	5/18/2014	3:12:48 AM	31.00000	4417.0671	98.2631	-0.0584
117	5/18/2014	4:12:48 AM	32.00000	4417.0474	98.2947	-0.0197
118	5/18/2014	5:12:48 AM	33.00000	4417.0460	98.3150	-0.0014
119	5/18/2014	6:12:48 AM	34.00000	4417.0243	98.3291	-0.0217
120	5/18/2014	7:12:48 AM	35.00000	4416.9914	98.3578	-0.0330

NAVAJO REFINERY
MEWBOURNE WELL #1



Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

JOB INFORMATION SHEET

Company Information	
Company Name:	NAVAJO REFINERY
Address:	

Well Information	
Well Name:	MEWBOURNE WELL #1
Location:	
Field – Pool:	
Status:	SHUT IN

Test Information	
Type of Test:	FALLOFF
Gauge Depth:	7924 ft
Production Interval:	7924 ft to 8476 ft
Production Through:	3.5" TUBING
Tubing Pressure:	953.06 psi
Casing Pressure:	0 psi
Shut In Time	
Status:	SHUT IN
Temperature @ Run Depth	98.63 degF
Surface Temperature:	79.43 degF

Gauge Information	Top Recorder	Bottom Recorder
Serial Number:	76170	76169
Calibration Date:	4/8/13	4/8/13
Pressure Range:	6010 psi	6000 psi

Comments

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

Gradient Data Report

NAVAJO REFINERY
MEWBOURNE WELL #1
STATIC GRADIENT

Gradient Data Table

Depth ft	Pressure psi	Temperature degF	Gradient psi/ft
0.00	953.06	79.43	0.0000
1000.00	1397.07	81.89	0.4440
2000.00	1832.84	85.37	0.4358
3000.00	2268.84	88.79	0.4360
4000.00	2704.96	92.18	0.4361
5000.00	3141.18	96.21	0.4362
6000.00	3576.93	100.46	0.4357
7000.00	4013.29	104.00	0.4364
7924.00	4416.61	98.63	0.4365

Analysis Summary

Depth ft	Gradient psi/ft
0.00	
	0.4371
7924.00	

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
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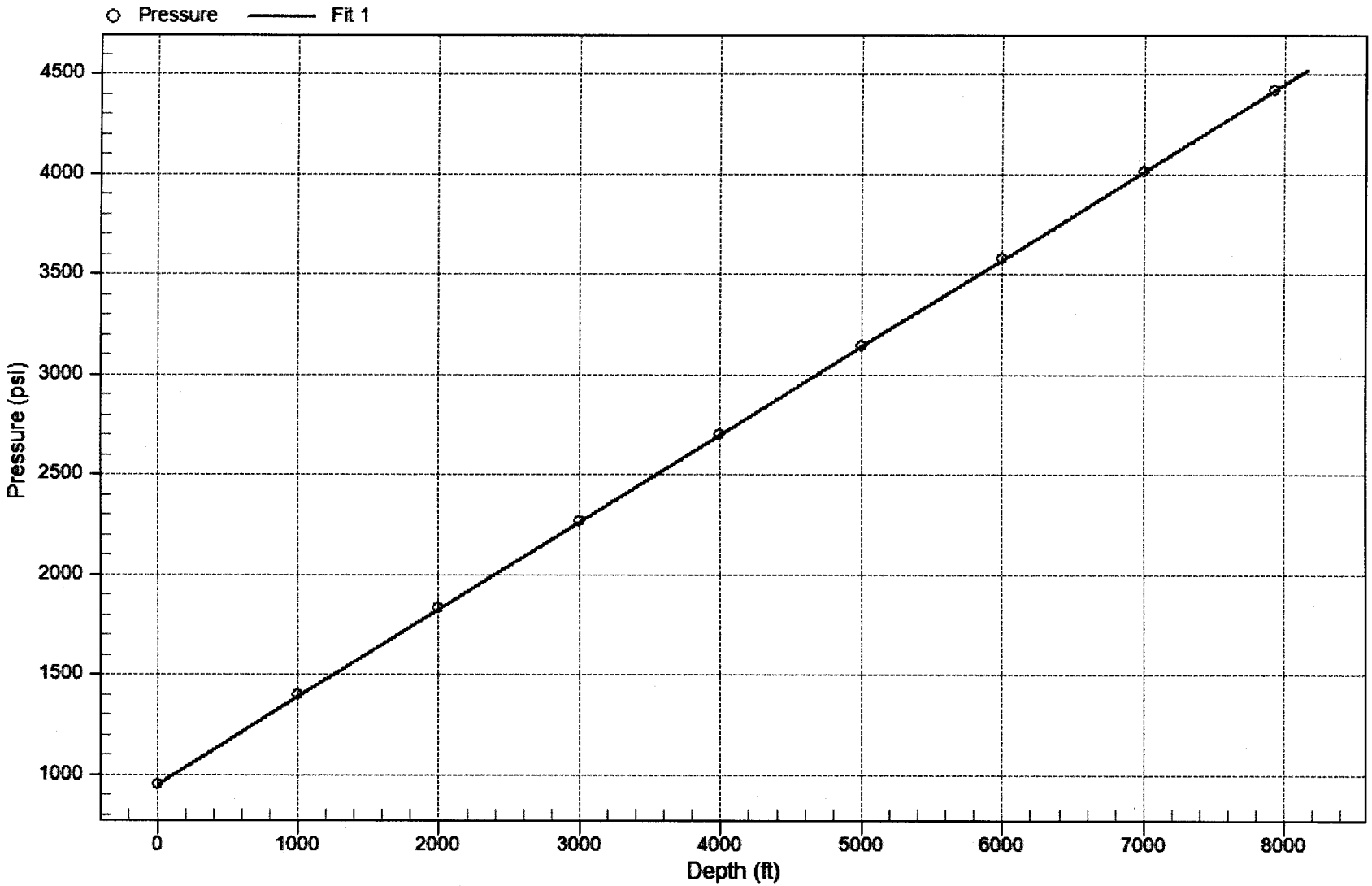
NAVAJO REFINERY
MEWBOURNE WELL #1
Pressure vs. Depth
STATIC GRADIENT



Pro Well Testing & Wireline, Inc.
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NAVAJO REFINERY

CHUKKA WELL #2

37 HOUR FALLOFF

7/2/14

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

BUILDUP JOB INFORMATION SHEET

Company Information	
Company Name:	NAVAJO REFINERY
Address:	

Well Information	
Well Name:	CHUKKA WELL #2
Location:	
Field – Pool:	
Status:	SHUT IN

Test Information	
Type of Test:	37 HOUR FALLOFF
Gauge Depth:	7570 ft
Production Interval:	OPEN HOLE
Production Through:	3.5" TUBING
Tubing Pressure:	
Casing Pressure:	
Shut In Time	
Status:	SHUT IN
Temperature @ Run Depth	107.67 degF
Surface Temperature:	79.32 degF

Gauge Information	Top Recorder	Bottom Recorder
Serial Number:	75871	76173
Calibration Date:	10/29/12	10/29/12
Pressure Range:	6009 psi	6009 psi

Comments

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 37 HOUR FALLOFF
SERIAL NUMBER: 76173

WELL NAME: CHUKKA WELL #2
FIELD:
GAUGE DEPTH: 7570 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
1	6/30/2014	8:04:29 PM	0.00000	4372.6859	102.1465	0.0000
2	6/30/2014	8:05:29 PM	0.01667	4358.8361	102.1552	-13.8498
3	6/30/2014	8:06:29 PM	0.03333	4349.6340	102.1752	-9.2021
4	6/30/2014	8:07:29 PM	0.05000	4343.5766	102.2105	-6.0574
5	6/30/2014	8:08:29 PM	0.06667	4338.7815	102.2389	-4.7951
6	6/30/2014	8:09:29 PM	0.08333	4334.8298	102.2725	-3.9517
7	6/30/2014	8:10:29 PM	0.10000	4331.3296	102.3038	-3.5002
8	6/30/2014	8:11:29 PM	0.11667	4328.2713	102.3313	-3.0583
9	6/30/2014	8:12:29 PM	0.13333	4325.6895	102.3593	-2.5818
10	6/30/2014	8:13:29 PM	0.15000	4323.3104	102.3898	-2.3791
11	6/30/2014	8:14:29 PM	0.16667	4321.1225	102.4163	-2.1879
12	6/30/2014	8:15:29 PM	0.18333	4319.1367	102.4416	-1.9858
13	6/30/2014	8:16:29 PM	0.20000	4317.3220	102.4754	-1.8147
14	6/30/2014	8:17:29 PM	0.21667	4315.7507	102.5099	-1.5713
15	6/30/2014	8:18:29 PM	0.23333	4314.1524	102.5236	-1.5983
16	6/30/2014	8:19:29 PM	0.25000	4312.7301	102.5572	-1.4223
17	6/30/2014	8:20:29 PM	0.26667	4311.5165	102.5830	-1.2135
18	6/30/2014	8:21:29 PM	0.28333	4310.3427	102.6125	-1.1738
19	6/30/2014	8:22:29 PM	0.30000	4309.2662	102.6375	-1.0765
20	6/30/2014	8:23:29 PM	0.31667	4308.2179	102.6566	-1.0483
21	6/30/2014	8:24:29 PM	0.33333	4307.4051	102.6906	-0.8128
22	6/30/2014	8:25:29 PM	0.35000	4306.3967	102.7097	-1.0084
23	6/30/2014	8:26:29 PM	0.36667	4305.6046	102.7339	-0.7921
24	6/30/2014	8:27:29 PM	0.38333	4304.8588	102.7594	-0.7458
25	6/30/2014	8:28:29 PM	0.40000	4304.1380	102.7917	-0.7207
26	6/30/2014	8:29:29 PM	0.41667	4303.4839	102.8156	-0.6541
27	6/30/2014	8:30:29 PM	0.43333	4302.8654	102.8324	-0.6184
28	6/30/2014	8:31:29 PM	0.45000	4302.2383	102.8523	-0.6271
29	6/30/2014	8:32:29 PM	0.46667	4301.6881	102.8765	-0.5503
30	6/30/2014	8:33:29 PM	0.48333	4301.2523	102.9030	-0.4357
31	6/30/2014	8:34:29 PM	0.50000	4300.7385	102.9249	-0.5138
32	6/30/2014	8:39:29 PM	0.58333	4298.7615	103.0373	-1.9770
33	6/30/2014	8:44:29 PM	0.66667	4297.3015	103.1540	-1.4600
34	6/30/2014	8:49:29 PM	0.75000	4296.1607	103.2704	-1.1407
35	6/30/2014	8:54:29 PM	0.83333	4295.3212	103.3687	-0.8396
36	6/30/2014	8:59:29 PM	0.91667	4294.6967	103.4683	-0.6245
37	6/30/2014	9:04:29 PM	1.00000	4294.1487	103.5525	-0.5480
38	6/30/2014	9:09:29 PM	1.08333	4293.7005	103.6535	-0.4482
39	6/30/2014	9:14:29 PM	1.16667	4293.2334	103.7366	-0.4671
40	6/30/2014	9:19:29 PM	1.25000	4293.0094	103.8258	-0.2239
41	6/30/2014	9:24:29 PM	1.33333	4292.7834	103.9052	-0.2260
42	6/30/2014	9:29:29 PM	1.41667	4292.6104	103.9937	-0.1730
43	6/30/2014	9:34:29 PM	1.50000	4292.4057	104.0693	-0.2047
44	6/30/2014	9:39:29 PM	1.58333	4292.2169	104.1471	-0.1888
45	6/30/2014	9:44:29 PM	1.66667	4292.1146	104.2194	-0.1023
46	6/30/2014	9:49:29 PM	1.75000	4292.0151	104.2926	-0.0995
47	6/30/2014	9:54:29 PM	1.83333	4291.9278	104.3612	-0.0872
48	6/30/2014	9:59:29 PM	1.91667	4291.7967	104.4217	-0.1312
49	6/30/2014	10:04:29 PM	2.00000	4291.7357	104.4876	-0.0610

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 37 HOUR FALLOFF
SERIAL NUMBER: 76173

WELL NAME: CHUKKA WELL #2
FIELD:
GAUGE DEPTH: 7570 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
50	6/30/2014	10:09:29 PM	2.08333	4291.6267	104.5529	-0.1090
51	6/30/2014	10:14:29 PM	2.16667	4291.5891	104.6194	-0.0377
52	6/30/2014	10:19:29 PM	2.25000	4291.5598	104.6735	-0.0293
53	6/30/2014	10:24:29 PM	2.33333	4291.5461	104.7286	-0.0137
54	6/30/2014	10:29:29 PM	2.41667	4291.4944	104.7976	-0.0516
55	6/30/2014	10:34:29 PM	2.50000	4291.4480	104.8536	-0.0464
56	6/30/2014	10:39:29 PM	2.58333	4291.4434	104.9083	-0.0046
57	6/30/2014	10:44:29 PM	2.66667	4291.3445	104.9506	-0.0990
58	6/30/2014	10:49:29 PM	2.75000	4291.3569	105.0101	0.0124
59	6/30/2014	10:54:29 PM	2.83333	4291.2976	105.0549	-0.0593
60	6/30/2014	10:59:29 PM	2.91667	4291.2170	105.1011	-0.0805
61	6/30/2014	11:04:29 PM	3.00000	4291.2173	105.1576	0.0002
62	6/30/2014	11:09:29 PM	3.08333	4291.1333	105.2017	-0.0840
63	6/30/2014	11:14:29 PM	3.16667	4291.1761	105.2418	0.0429
64	6/30/2014	11:19:29 PM	3.25000	4291.1261	105.2838	-0.0500
65	6/30/2014	11:24:29 PM	3.33333	4291.0279	105.3260	-0.0982
66	6/30/2014	11:29:29 PM	3.41667	4291.0527	105.3698	0.0248
67	6/30/2014	11:34:29 PM	3.50000	4290.9030	105.4088	-0.1497
68	6/30/2014	11:39:29 PM	3.58333	4291.0027	105.4518	0.0997
69	6/30/2014	11:44:29 PM	3.66667	4290.9482	105.4832	-0.0545
70	6/30/2014	11:49:29 PM	3.75000	4290.8872	105.5245	-0.0611
71	6/30/2014	11:54:29 PM	3.83333	4290.8818	105.5604	-0.0053
72	6/30/2014	11:59:29 PM	3.91667	4290.8712	105.5974	-0.0107
73	7/1/2014	12:04:29 AM	4.00000	4290.9199	105.6441	0.0488
74	7/1/2014	12:19:29 AM	4.25000	4290.7924	105.7234	-0.1275
75	7/1/2014	12:34:29 AM	4.50000	4290.8712	105.8207	0.0788
76	7/1/2014	12:49:29 AM	4.75000	4290.8281	105.9091	-0.0431
77	7/1/2014	1:04:29 AM	5.00000	4290.7499	105.9808	-0.0782
78	7/1/2014	1:19:29 AM	5.25000	4290.7315	106.0570	-0.0184
79	7/1/2014	1:34:29 AM	5.50000	4290.7727	106.1240	0.0412
80	7/1/2014	1:49:29 AM	5.75000	4290.6357	106.1859	-0.1370
81	7/1/2014	2:04:29 AM	6.00000	4290.6529	106.2505	0.0173
82	7/1/2014	2:19:29 AM	6.25000	4290.5661	106.3104	-0.0868
83	7/1/2014	2:34:29 AM	6.50000	4290.6071	106.3694	0.0410
84	7/1/2014	2:49:29 AM	6.75000	4290.5773	106.4164	-0.0298
85	7/1/2014	3:04:29 AM	7.00000	4290.5290	106.4698	-0.0483
86	7/1/2014	3:19:29 AM	7.25000	4290.5073	106.5145	-0.0217
87	7/1/2014	3:34:29 AM	7.50000	4290.4017	106.5533	-0.1056
88	7/1/2014	3:49:29 AM	7.75000	4290.3667	106.5998	-0.0350
89	7/1/2014	4:04:29 AM	8.00000	4290.3633	106.6428	-0.0033
90	7/1/2014	4:34:29 AM	8.50000	4290.3156	106.7147	-0.0478
91	7/1/2014	5:04:29 AM	9.00000	4290.2200	106.7833	-0.0955
92	7/1/2014	5:34:29 AM	9.50000	4290.1116	106.8489	-0.1085
93	7/1/2014	6:04:29 AM	10.00000	4290.0877	106.9078	-0.0239
94	7/1/2014	6:34:29 AM	10.50000	4290.0283	106.9563	-0.0594
95	7/1/2014	7:04:29 AM	11.00000	4289.9439	106.9986	-0.0844
96	7/1/2014	7:34:29 AM	11.50000	4289.9670	107.0498	0.0231
97	7/1/2014	8:04:29 AM	12.00000	4289.9682	107.0887	0.0013
98	7/1/2014	9:04:29 AM	13.00000	4290.0339	107.1594	0.0657

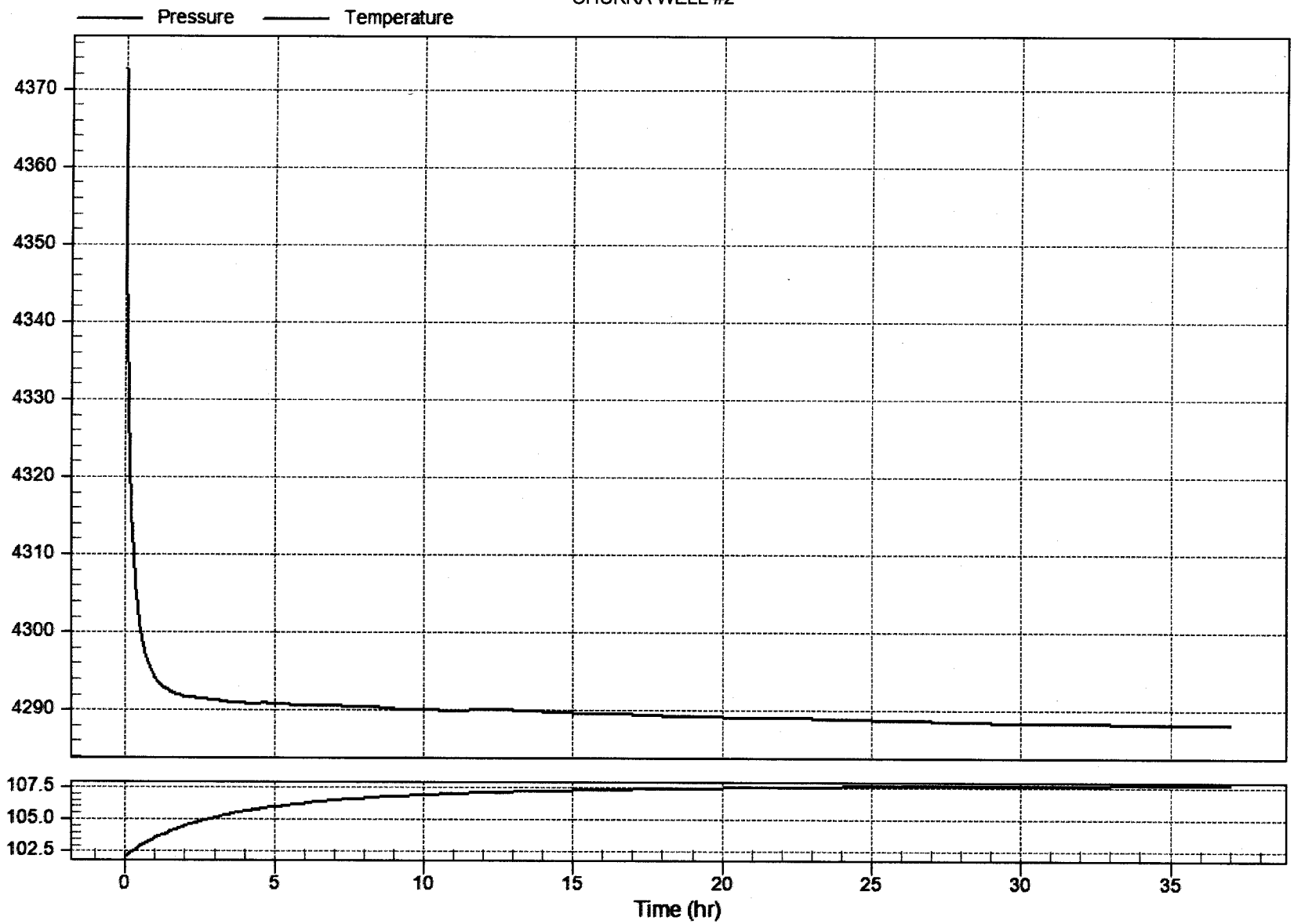
COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 37 HOUR FALLOFF
SERIAL NUMBER: 76173

WELL NAME: CHUKKA WELL #2
FIELD:
GAUGE DEPTH: 7570 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
99	7/1/2014	10:04:29 AM	14.00000	4289.7924	107.2206	-0.2415
100	7/1/2014	11:04:29 AM	15.00000	4289.7685	107.2702	-0.0239
101	7/1/2014	12:04:29 PM	16.00000	4289.5274	107.3207	-0.2411
102	7/1/2014	1:04:29 PM	17.00000	4289.4767	107.3557	-0.0507
103	7/1/2014	2:04:29 PM	18.00000	4289.4228	107.3920	-0.0539
104	7/1/2014	3:04:29 PM	19.00000	4289.1259	107.4196	-0.2970
105	7/1/2014	4:04:29 PM	20.00000	4289.1048	107.4507	-0.0210
106	7/1/2014	5:04:29 PM	21.00000	4289.0709	107.4753	-0.0339
107	7/1/2014	6:04:29 PM	22.00000	4288.9710	107.4950	-0.0999
108	7/1/2014	7:04:29 PM	23.00000	4289.0383	107.5173	0.0673
109	7/1/2014	8:04:29 PM	24.00000	4288.8627	107.5332	-0.1755
110	7/1/2014	9:04:29 PM	25.00000	4288.8260	107.5497	-0.0367
111	7/1/2014	10:04:29 PM	26.00000	4288.6748	107.5660	-0.1512
112	7/1/2014	11:04:29 PM	27.00000	4288.6520	107.5746	-0.0227
113	7/2/2014	12:04:29 AM	28.00000	4288.5163	107.5909	-0.1358
114	7/2/2014	1:04:29 AM	29.00000	4288.4782	107.6006	-0.0380
115	7/2/2014	2:04:29 AM	30.00000	4288.3655	107.6164	-0.1127
116	7/2/2014	3:04:29 AM	31.00000	4288.3857	107.6222	0.0201
117	7/2/2014	4:04:29 AM	32.00000	4288.3266	107.6293	-0.0591
118	7/2/2014	5:04:29 AM	33.00000	4288.3383	107.6438	0.0118
119	7/2/2014	6:04:29 AM	34.00000	4288.1559	107.6488	-0.1824
120	7/2/2014	7:04:29 AM	35.00000	4288.2554	107.6518	0.0994
121	7/2/2014	8:04:29 AM	36.00000	4288.2028	107.6659	-0.0526
122	7/2/2014	9:04:29 AM	37.00000	4288.1631	107.6683	-0.0396

NAVAJO REFINERY

CHUKKA WELL #2



Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

JOB INFORMATION SHEET

Company Information	
Company Name:	NAVAJO REFINERY
Address:	

Well Information	
Well Name:	CHUKKA WELL #2
Location:	
Field – Pool:	
Status:	SHUT IN

Test Information	
Type of Test:	STATIC GRADIENT
Gauge Depth:	7570 ft
Production Interval:	OPEN HOLE
Production Through:	3.5" TUBING
Tubing Pressure:	1000.95 psi
Casing Pressure:	
Shut In Time	
Status:	SHUT IN
Temperature @ Run Depth	107.67 degF
Surface Temperature:	79.32 degF

Gauge Information		
	Top Recorder	Bottom Recorder
Serial Number:	75871	76173
Calibration Date:	10/29/12	10/29/12
Pressure Range:	6009 psi	6009 psi

Comments

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

Gradient Data Report

NAVAJO REFINERY
CHUKKA WELL #2
STATIC GRADIENT

Gradient Data Table

Depth ft	Pressure psi	Temperature degF	Gradient psi/ft
0.00	1000.95	79.32	0.0000
1000.00	1427.13	83.89	0.4262
2000.00	1863.00	88.88	0.4359
3000.00	2297.83	91.88	0.4348
4000.00	2733.46	95.73	0.4356
5000.00	3168.84	100.24	0.4354
6000.00	3604.37	106.47	0.4355
7000.00	4039.71	111.87	0.4353
7570.00	4288.26	107.67	0.4361

Analysis Summary

Depth ft	Gradient psi/ft
0.00	
	0.4343
7570.00	

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
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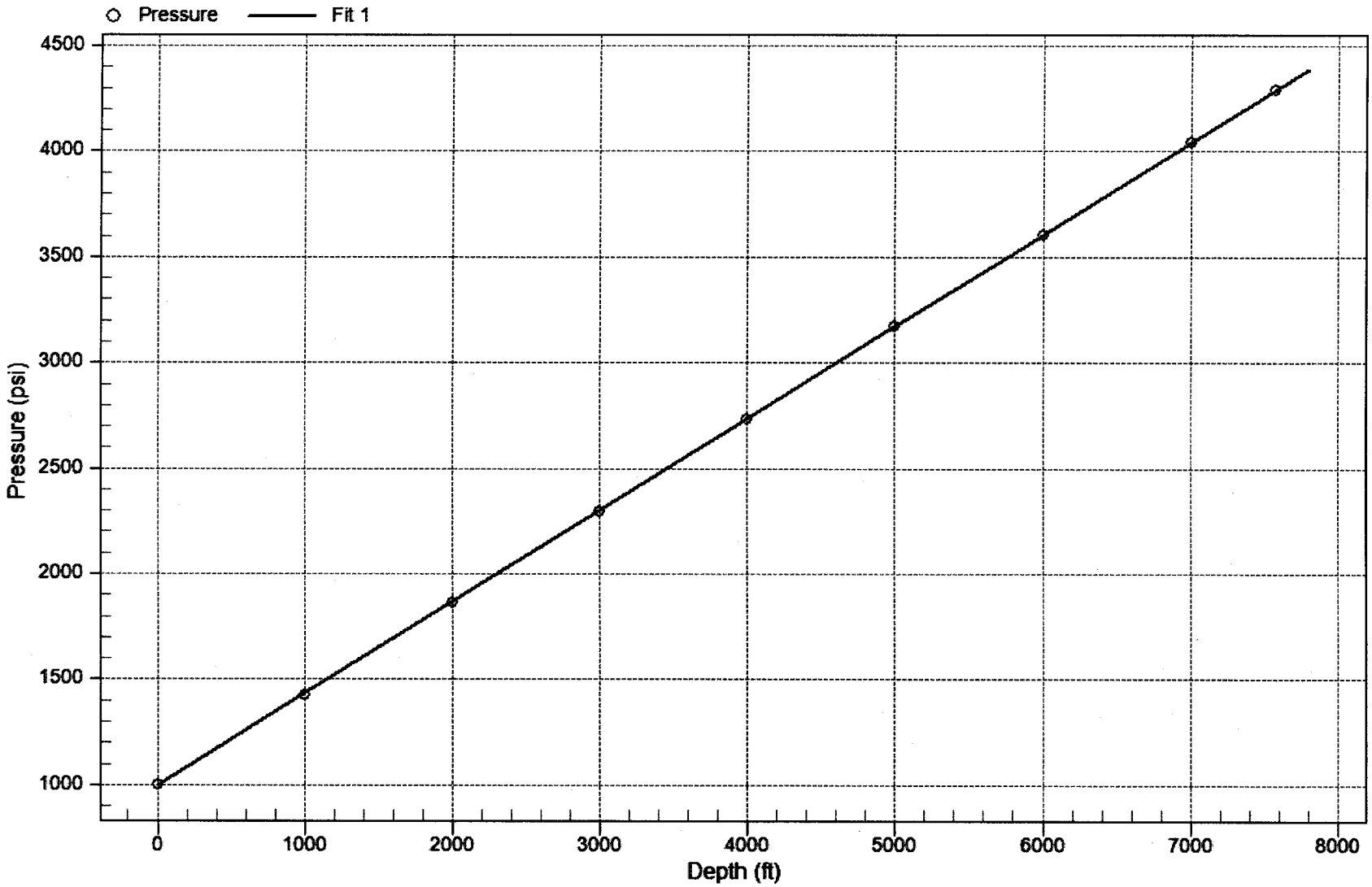
NAVAJO REFINERY
CHUKKA WELL #2
Pressure vs. Depth
STATIC GRADIENT



Pro Well Testing & Wireline, Inc.
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Pressure Survey Report

NAVAJO REFINERY

GAINES WELL #3

40 HOUR FALLOFF

8/28/14

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

BUILDUP JOB INFORMATION SHEET

Company Information	
Company Name:	NAVAJO REFINERY
Address:	

Well Information	
Well Name:	GAINES WELL #3
Location:	
Field – Pool:	
Status:	SHUT IN

Test Information	
Type of Test:	40 HOUR FALLOFF
Gauge Depth:	7660 ft
Production Interval:	OPEN HOLE COMPLETION
Production Through:	3.5" TUBING
Tubing Pressure:	
Casing Pressure:	
Shut In Time	
Status:	SHUT IN
Temperature @ Run Depth	139.96 degF
Surface Temperature:	79.28 degF

Gauge Information	Top Recorder	Bottom Recorder
Serial Number:	76404	76171
Calibration Date:	6/11/11	8/23/11
Pressure Range:	10005 psi	6001 psi

Comments

TAGGED TD AT 8946 FT.

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 40 HOUR FALLOFF
SERIAL NUMBER: 76171

WELL NAME: GAINES WELL #3
FIELD:
GAUGE DEPTH: 7660 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
1	8/26/2014	5:39:00 PM	0.00000	4415.0054	104.0477	0.0000
2	8/26/2014	5:40:00 PM	0.01667	4402.9279	104.0480	-12.0775
3	8/26/2014	5:41:00 PM	0.03333	4399.2770	104.0709	-3.6509
4	8/26/2014	5:42:00 PM	0.05000	4396.5923	104.0829	-2.6847
5	8/26/2014	5:43:00 PM	0.06667	4394.4062	104.0954	-2.1860
6	8/26/2014	5:44:00 PM	0.08333	4392.7290	104.1153	-1.6772
7	8/26/2014	5:45:00 PM	0.10000	4391.0913	104.1352	-1.6377
8	8/26/2014	5:46:00 PM	0.11667	4389.8069	104.1505	-1.2844
9	8/26/2014	5:47:00 PM	0.13333	4388.5403	104.1647	-1.2666
10	8/26/2014	5:48:00 PM	0.15000	4387.4236	104.1772	-1.1167
11	8/26/2014	5:49:00 PM	0.16667	4386.3750	104.1900	-1.0486
12	8/26/2014	5:50:00 PM	0.18333	4385.3189	104.2004	-1.0561
13	8/26/2014	5:51:00 PM	0.20000	4384.4974	104.2209	-0.8215
14	8/26/2014	5:52:00 PM	0.21667	4383.6566	104.2340	-0.8408
15	8/26/2014	5:53:00 PM	0.23333	4382.9391	104.2506	-0.7175
16	8/26/2014	5:54:00 PM	0.25000	4382.1631	104.2601	-0.7760
17	8/26/2014	5:55:00 PM	0.26667	4381.4714	104.2743	-0.6917
18	8/26/2014	5:56:00 PM	0.28333	4380.8451	104.2904	-0.6263
19	8/26/2014	5:57:00 PM	0.30000	4380.3281	104.3054	-0.5171
20	8/26/2014	5:58:00 PM	0.31667	4379.7462	104.3215	-0.5819
21	8/26/2014	5:59:00 PM	0.33333	4379.2094	104.3300	-0.5368
22	8/26/2014	6:00:00 PM	0.35000	4378.7392	104.3403	-0.4702
23	8/26/2014	6:01:00 PM	0.36667	4378.2752	104.3507	-0.4640
24	8/26/2014	6:02:00 PM	0.38333	4377.9255	104.3684	-0.3497
25	8/26/2014	6:03:00 PM	0.40000	4377.5069	104.3804	-0.4186
26	8/26/2014	6:04:00 PM	0.41667	4377.0989	104.3913	-0.4080
27	8/26/2014	6:05:00 PM	0.43333	4376.7527	104.4066	-0.3461
28	8/26/2014	6:06:00 PM	0.45000	4376.3936	104.4189	-0.3591
29	8/26/2014	6:07:00 PM	0.46667	4376.0886	104.4284	-0.3050
30	8/26/2014	6:08:00 PM	0.48333	4375.8791	104.4470	-0.2095
31	8/26/2014	6:09:00 PM	0.50000	4375.5516	104.4647	-0.3275
32	8/26/2014	6:14:00 PM	0.58333	4374.3936	104.5269	-1.1580
33	8/26/2014	6:19:00 PM	0.66667	4373.5853	104.6212	-0.8083
34	8/26/2014	6:24:00 PM	0.75000	4372.7968	104.7006	-0.7886
35	8/26/2014	6:29:00 PM	0.83333	4372.2204	104.7879	-0.5764
36	8/26/2014	6:34:00 PM	0.91667	4371.8254	104.8877	-0.3950
37	8/26/2014	6:39:00 PM	1.00000	4371.4134	104.9796	-0.4121
38	8/26/2014	6:44:00 PM	1.08333	4371.0686	105.0615	-0.3448
39	8/26/2014	6:49:00 PM	1.16667	4370.7462	105.1438	-0.3224
40	8/26/2014	6:54:00 PM	1.25000	4370.4823	105.2183	-0.2639
41	8/26/2014	6:59:00 PM	1.33333	4370.1492	105.2865	-0.3331
42	8/26/2014	7:04:00 PM	1.41667	4369.9614	105.3577	-0.1879
43	8/26/2014	7:09:00 PM	1.50000	4369.7502	105.4164	-0.2111
44	8/26/2014	7:14:00 PM	1.58333	4369.5854	105.4870	-0.1648
45	8/26/2014	7:19:00 PM	1.66667	4369.4348	105.5410	-0.1507
46	8/26/2014	7:24:00 PM	1.75000	4369.2061	105.5929	-0.2287
47	8/26/2014	7:29:00 PM	1.83333	4369.1169	105.6532	-0.0891
48	8/26/2014	7:34:00 PM	1.91667	4368.9418	105.7056	-0.1751
49	8/26/2014	7:39:00 PM	2.00000	4368.8396	105.7579	-0.1022

Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 40 HOUR FALLOFF
SERIAL NUMBER: 76171

WELL NAME: GAINES WELL #3
FIELD:
GAUGE DEPTH: 7660 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
50	8/26/2014	7:44:00 PM	2.08333	4368.7078	105.8109	-0.1317
51	8/26/2014	7:49:00 PM	2.16667	4368.6649	105.8608	-0.0430
52	8/26/2014	7:54:00 PM	2.25000	4368.5400	105.9039	-0.1249
53	8/26/2014	7:59:00 PM	2.33333	4368.4119	105.9478	-0.1281
54	8/26/2014	8:04:00 PM	2.41667	4368.3420	105.9896	-0.0699
55	8/26/2014	8:09:00 PM	2.50000	4368.2484	106.0332	-0.0936
56	8/26/2014	8:14:00 PM	2.58333	4368.1582	106.0742	-0.0902
57	8/26/2014	8:19:00 PM	2.66667	4368.0701	106.1167	-0.0881
58	8/26/2014	8:24:00 PM	2.75000	4368.0024	106.1514	-0.0677
59	8/26/2014	8:29:00 PM	2.83333	4368.0096	106.1939	0.0072
60	8/26/2014	8:34:00 PM	2.91667	4367.8637	106.2283	-0.1459
61	8/26/2014	8:39:00 PM	3.00000	4367.8202	106.2687	-0.0435
62	8/26/2014	8:44:00 PM	3.08333	4367.7601	106.3061	-0.0601
63	8/26/2014	8:49:00 PM	3.16667	4367.6953	106.3394	-0.0648
64	8/26/2014	8:54:00 PM	3.25000	4367.6485	106.3740	-0.0468
65	8/26/2014	8:59:00 PM	3.33333	4367.5426	106.4092	-0.1059
66	8/26/2014	9:04:00 PM	3.41667	4367.4942	106.4363	-0.0484
67	8/26/2014	9:09:00 PM	3.50000	4367.5384	106.4766	0.0443
68	8/26/2014	9:14:00 PM	3.58333	4367.4368	106.5039	-0.1016
69	8/26/2014	9:19:00 PM	3.66667	4367.4243	106.5356	-0.0125
70	8/26/2014	9:24:00 PM	3.75000	4367.3632	106.5623	-0.0610
71	8/26/2014	9:29:00 PM	3.83333	4367.2643	106.5902	-0.0990
72	8/26/2014	9:34:00 PM	3.91667	4367.2492	106.6194	-0.0151
73	8/26/2014	9:39:00 PM	4.00000	4367.1949	106.6472	-0.0543
74	8/26/2014	9:54:00 PM	4.25000	4367.1397	106.7283	-0.0552
75	8/26/2014	10:09:00 PM	4.50000	4367.0927	106.8153	-0.0471
76	8/26/2014	10:24:00 PM	4.75000	4367.0009	106.8841	-0.0917
77	8/26/2014	10:39:00 PM	5.00000	4366.9023	106.9564	-0.0986
78	8/26/2014	10:54:00 PM	5.25000	4366.7838	107.0126	-0.1185
79	8/26/2014	11:09:00 PM	5.50000	4366.6664	107.0779	-0.1174
80	8/26/2014	11:24:00 PM	5.75000	4366.6247	107.1387	-0.0417
81	8/26/2014	11:39:00 PM	6.00000	4366.6321	107.2010	0.0073
82	8/26/2014	11:54:00 PM	6.25000	4366.5049	107.2528	-0.1272
83	8/27/2014	12:09:00 AM	6.50000	4366.4670	107.3025	-0.0379
84	8/27/2014	12:24:00 AM	6.75000	4366.4063	107.3445	-0.0607
85	8/27/2014	12:39:00 AM	7.00000	4366.3903	107.3912	-0.0160
86	8/27/2014	12:54:00 AM	7.25000	4366.3644	107.4379	-0.0259
87	8/27/2014	1:09:00 AM	7.50000	4366.2174	107.4786	-0.1470
88	8/27/2014	1:24:00 AM	7.75000	4366.2707	107.5274	0.0534
89	8/27/2014	1:39:00 AM	8.00000	4366.1737	107.5689	-0.0970
90	8/27/2014	2:09:00 AM	8.50000	4366.1119	107.6465	-0.0619
91	8/27/2014	2:39:00 AM	9.00000	4366.1323	107.7199	0.0204
92	8/27/2014	3:09:00 AM	9.50000	4366.0396	107.7745	-0.0927
93	8/27/2014	3:39:00 AM	10.00000	4365.9814	107.7515	-0.0582
94	8/27/2014	4:09:00 AM	10.50000	4365.9382	107.7379	-0.0432
95	8/27/2014	4:39:00 AM	11.00000	4365.8245	107.7436	-0.1137
96	8/27/2014	5:09:00 AM	11.50000	4365.7552	107.8001	-0.0693
97	8/27/2014	5:39:00 AM	12.00000	4365.7553	107.8146	0.0002
98	8/27/2014	6:39:00 AM	13.00000	4365.5625	107.8891	-0.1929

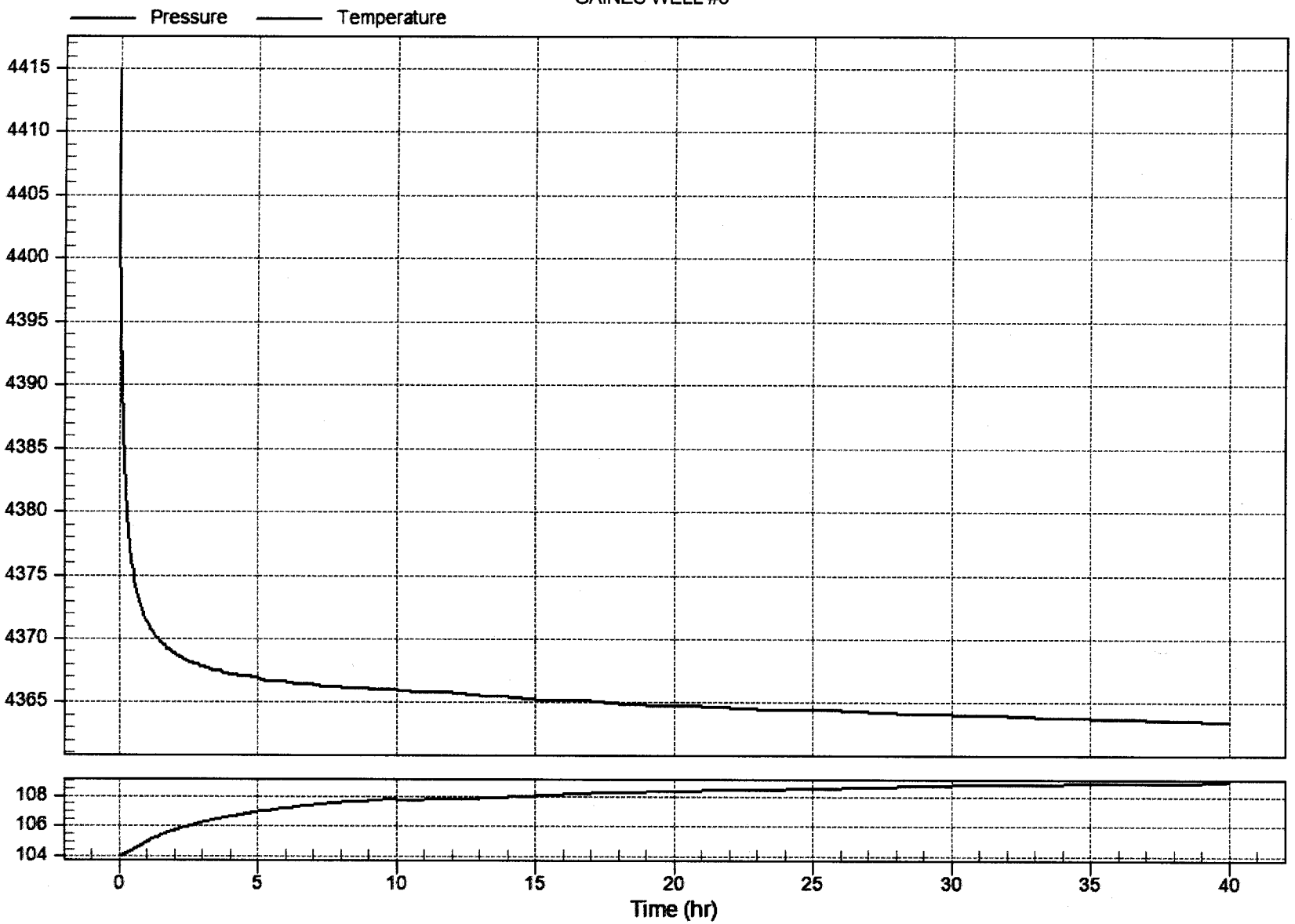
COMPANY: NAVAJO REFINERY
LOCATION:
PURPOSE: 40 HOUR FALLOFF
SERIAL NUMBER: 76171

WELL NAME: GAINES WELL #3
FIELD:
GAUGE DEPTH: 7660 ft

Line No.	Date M/d/yyyy	Real Time h:mm:ss tt	Time hr	Pressure psi	Temperature degF	dPressure psi
99	8/27/2014	7:39:00 AM	14.00000	4365.4630	107.9735	-0.0995
100	8/27/2014	8:39:00 AM	15.00000	4365.2921	108.0592	-0.1709
101	8/27/2014	9:39:00 AM	16.00000	4365.2039	108.1065	-0.0882
102	8/27/2014	10:39:00 AM	17.00000	4365.1467	108.1916	-0.0571
103	8/27/2014	11:39:00 AM	18.00000	4364.9866	108.2321	-0.1602
104	8/27/2014	12:39:00 PM	19.00000	4364.8416	108.2708	-0.1450
105	8/27/2014	1:39:00 PM	20.00000	4364.7073	108.3110	-0.1343
106	8/27/2014	2:39:00 PM	21.00000	4364.7268	108.3626	0.0195
107	8/27/2014	3:39:00 PM	22.00000	4364.6561	108.4103	-0.0707
108	8/27/2014	4:39:00 PM	23.00000	4364.5340	108.4311	-0.1221
109	8/27/2014	5:39:00 PM	24.00000	4364.4574	108.4677	-0.0766
110	8/27/2014	6:39:00 PM	25.00000	4364.4004	108.5231	-0.0569
111	8/27/2014	7:39:00 PM	26.00000	4364.3846	108.5619	-0.0159
112	8/27/2014	8:39:00 PM	27.00000	4364.3055	108.6058	-0.0791
113	8/27/2014	9:39:00 PM	28.00000	4364.2438	108.6378	-0.0617
114	8/27/2014	10:39:00 PM	29.00000	4364.1276	108.6774	-0.1162
115	8/27/2014	11:39:00 PM	30.00000	4364.0608	108.7093	-0.0668
116	8/28/2014	12:39:00 AM	31.00000	4364.0335	108.7189	-0.0273
117	8/28/2014	1:39:00 AM	32.00000	4363.9560	108.7470	-0.0775
118	8/28/2014	2:39:00 AM	33.00000	4363.9156	108.7697	-0.0404
119	8/28/2014	3:39:00 AM	34.00000	4363.7458	108.7973	-0.1698
120	8/28/2014	4:39:00 AM	35.00000	4363.7952	108.8063	0.0494
121	8/28/2014	5:39:00 AM	36.00000	4363.7103	108.8273	-0.0849
122	8/28/2014	6:39:00 AM	37.00000	4363.6314	108.8549	-0.0790
123	8/28/2014	7:39:00 AM	38.00000	4363.6051	108.8716	-0.0262
124	8/28/2014	8:39:00 AM	39.00000	4363.5743	108.8961	-0.0308
125	8/28/2014	9:39:00 AM	40.00000	4363.4621	108.8956	-0.1122

NAVAJO REFINERY

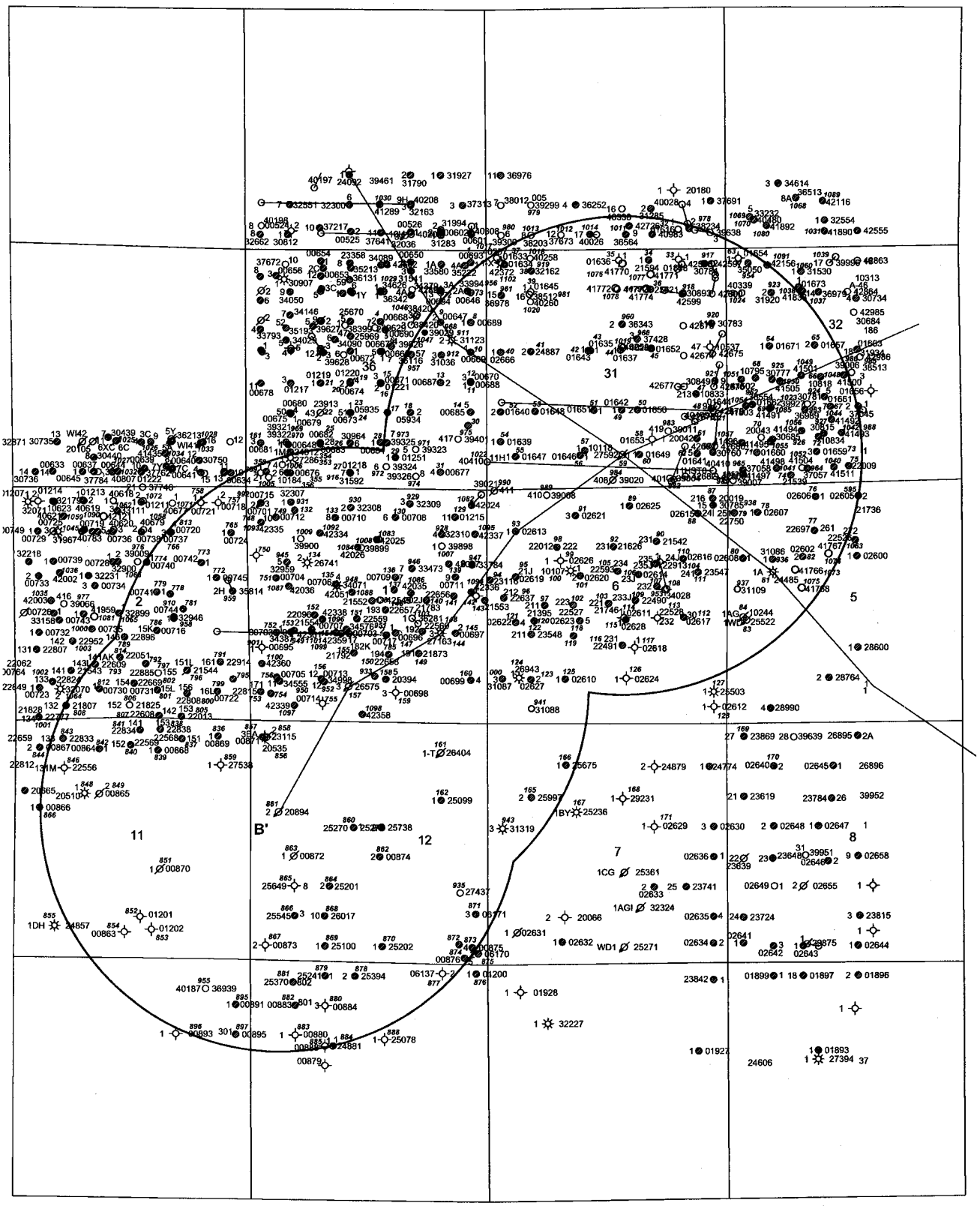
GAINES WELL #3



Pro Well Testing & Wireline, Inc.
P.O. Box 791 Hobbs, NM 88241
(505) 397-3590

ATTACHMENT E

Area of Review Summary


31
32
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B'

Navajo AOR Update May 2015 -- 27 New Wells

ID	API No.			Unit	Sect	Town	Range	Footages	Well Name	Operator	Changes
1103	30	015	42555	O	29	17S	28E	330 FSL & 2310 FEL	Outlaw State #005	Apache Corporation	NEW: Permit to Drill
1104	30	015	42863	B	32	17S	28E	330 FSL & 2310 FEL	Jackrabbit State #004	Apache Corporation	NEW: Permit to Drill
1105	30	015	42864	B	32	17S	28E	1010 FNL & 2540 FEL	Jackrabbit State #005	Apache Corporation	NEW: Permit to Drill
1106	30	015	42985	G	32	17S	28E	1470 FNL & 2405 FEL	Jackrabbit State #012	Apache Corporation	NEW: Permit to Drill
1107	30	015	42986	G	32	17S	28E	2460 FNL & 2280 FEL	Jackrabbit State #013	Apache Corporation	NEW: Permit to Drill
1108	30	015	42726	O	30	17S	28E	505 FSL & 2140 FEL	Staley State #029	LRE Operating LLC	NEW: Permit to Drill
1109	30	015	40983	O	30	17S	28E	330 FSL & 1650 FEL	Staley State #020	LRE Operating LLC	NEW: Permit to Drill
1110	30	015	42597	A	31	17S	28E	570 FNL & 250 FEL	Ranger State #001	Apache Corporation	NEW: Permit to Drill
1111	30	015	42598	A	31	17S	28E	445 FNL & 1090 FEL	Ranger State #002	Apache Corporation	NEW: Permit to Drill
1112					AP#1079					Apache Corporation	NEW: Permit to Drill
1113	30	015	42599	B	31	17S	28E	905 FNL & 1385 FEL	Ranger State #001	Apache Corporation	NEW: Permit to Drill
1114	30	015	42600	A	31	17S	28E	645 FNL & 250 FEL	Ranger State #004	Apache Corporation	NEW: Permit to Drill
1115	30	015	42673	H	31	17S	28E	1650 FNL & 990 FEL	Ranger State #006	Apache Corporation	NEW: Permit to Drill
1116					AP #1019					Apache Corporation	NEW: Permit to Drill
1117	30	015	42674	H	31	17S	28E	2310 FNL & 990 FEL	Ranger State #007	Apache Corporation	NEW: Permit to Drill
1118	30	015	42675	H	31	17S	28E	1875 FNL & 110 FEL	Ranger State #008	Apache Corporation	NEW: Permit to Drill
1119	30	015	42677	I	31	17S	28E	2310 FSL & 1130 FEL	Ranger State #010	Apache Corporation	NEW: Permit to Drill
1120	30	015	42676	H	31	17S	28E	2520 FNL & 195 FEL	Ranger State #009	Apache Corporation	NEW: Permit to Drill
1121	30	015	42678	I	31	17S	28E	1535 FSL & 760 FEL	Ranger State #011	Apache Corporation	NEW: Permit to Drill
1122	30	015	42679	I	31	17S	28E	1760 FSL & 245 FEL	Ranger State #012	Apache Corporation	NEW: Permit to Drill
1123	30	015	42680	I	31	17S	28E	1710 FSL & 245 FEL	Ranger State #013	Apache Corporation	NEW: Permit to Drill
1124	30	015	42681	P	16	17S	28E	225 FSL & 1300 FEL	Ranger State #014	Apache Corporation	NEW: Permit to Drill
1125	30	015	42806	P	31	17S	28E	245 FSL & 90 FEL	Ranger State #016	Apache Corporation	NEW: Permit to Drill
1126	30	015	42682	P	31	17S	28E	260 FSL & 1250 FEL	Ranger State #015	Apache Corporation	NEW: Permit to Drill
1127	30	015	42602	B	36	17S	27E	330 FNL & 2210 FEL	Jeffers 36 State #005	LRE Operating LLC	NEW: Permit to Drill
1128	30	015	42899	B	36	17S	27E	890 FNL & 1655 FEL	Jeffers 36 State #006	LRE Operating LLC	NEW: Permit to Drill
1129	30	015	42027	H	1	18S	27E	1650 FNL & 865 FEL	AAO Federal #017	Apache Corporation	NEW: Permit to Drill
1130	30	015	42549	G	1	18S	27E	2470 FNL & 2380 FEL	AAO Federal SWD #001	Apache Corporation	NEW: Permit to Drill
1131	30	015	25270	F	12	18S	27E	2310 FNL & 2310 FWL	Chukka Federal #001	Bill L. Miller	NEW: Permit to Drill

*Note AP 1112 and AP 1116 already accounted for in AOR. Total of 27 new wells in AOR.

ATTACHMENT F

Well Annulus Monitoring System Data

Navajo Refining Company, L.L.C.

2014 FIRST QUARTER WEEKLY WAMS LEVEL TABLE

	1/6/14	1/15/14	1/20/14	1/30/14	2/3/14	2/10/14	2/17/14	2/24/14	3/3/14	3/12/14	3/17/14	3/27/14	3/31/14
WDW -1[1]	145	145	160	155	155	150	150	150	150	150	150	150	150
WDW-2[1]	145	145	145	145	145	145	145	145	145	145	145	145	145
WDW-3[1]	100	100	155	150	150	150	150	150	150	150	150	150	150
Comments: 1/20/14 2 drums glycol added to WDW-1 and 1/21/14 1 drum glycol added to WDW-3 after surface tubing leaks repaired													

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

Navajo Refining Company, L.L.C.

2014 FOURTH QUARTER WEEKLY WAMS LEVEL TABLE

	10/8/14	10/13/14	10/21/14	10/27/02	11/4/14	11/10/14	11/17/14	11/24/14	12/1/14	12/9/14	12/15/14	12/22/14	12/29/14
WDW -1[1]	145	145	145	145	145	145	145	145	145	145	145	145	145
WDW-2[1]	100	100	100	100	100	100	100	100	100	100	100	100	100
WDW-3[1]	145	145	145	145	145	145	145	200	200	200	200	200	200
				Comments:									

[1] Graduated tank gauged weekly in the field. Reading is in gallons.
WDW-1 is Mewbourne
WDW-2 is Chukka
WDW-3 is Gaines

HOLLYFRONTIER.

RECEIVED OCD

2014 MAY 27 P 1:55

May 22, 2014

Mr. Carl Chavez, CHMM
NM Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505-5472

Certified Mail/Return Receipt
7007 3020 0000 3028 8048

RE: 2013 Annual Class I Non-Hazardous Waste Injection Wells (WDW-1, WDW-2 and WDW-3) Report from Navajo Refining Company, L.L.C.

Dear Mr. Chavez,

Enclosed, please find the annual injection well report for fluids that the Navajo Refining Company, L.L.C. (permittee) injected into wells WDW-1, WDW-2 and WDW-3 during 2013 as required under permits UICI-008-1, UICI-008-2 and UICI-008-3, Permit Condition 2.I.2, Annual Reports, for all three wells. The API numbers for the wells are: 30-015-27592 (WDW-1), 30-015-20894 (WDW-2) and 30-015-26575 (WDW-3).

This report is signed and certified in accordance with WQCC section 5101.G. If there are any questions, please call me at 575-748-3311.

Respectfully,

Michael McKee
Vice-President, Refinery Manager
Navajo Refining Company L.L.C.

Electronic cc (w/enc.): D Crawford, R Combs, M Schultz, A Strange
Environmental File: Injection Wells/Reports Annual/2013/ 2014-05-22 2013 Annual Inj Rpt letter
Navajo: (ART: REF 14– 4.A.02.D)

Annual Report Requirements per WDW-1, WDW-2, and WDW-3 Permit Condition 2.I.2:

Summary of WDW-1, WDW-2 and WDW-3 operations for 2013

The wells themselves did not have any remedial or major work performed during 2013. No C-103 forms were prepared in 2013. The addition of booster pumps to all three wells' pre-injection systems was approved by an Oil Conservation Division (OCD) letter of June 26, 2013 as a minor permit modification (Attachment A). The booster pumps at all three wells were installed in the fall of 2013.

Monthly injection/disposal volume with cumulative totals

Quarterly flow, pressure and volume reports have been submitted to OCD and are resubmitted as Attachment B

Maximum and average injection pressures

Quarterly flow, pressure and volume reports have been submitted to OCD and are resubmitted as Attachment B. These reports include maximum and average pressures.

Quarterly chemical analyses with QA/QC, data summary tables

Quarterly chemical analyses, including QA/QC and summary tables, were submitted with the four 2013 quarterly reports, and are resubmitted as Attachment C. The three wells share a common transmission pipe up from the refinery wastewater treatment facility to the wellhead area where the flow is divided among the three wells. The single sample point for all three wells is on the main pipeline.

Copies of any mechanical integrity test charts

Per OCD approval by Mr. Carl J. Chavez on September 27, 2013, no mechanical integrity tests (MITs) were done during 2013 due to the booster pump project. The MITs were delayed until 2014 which will be within the 3-year cycle. Previously, MITs were performed in the fall of 2012.

Copies of fall-off test charts

Per OCD approval by Mr. Carl J. Chavez on September 27, 2013, no fall-off tests (FOTs) were performed during 2013 due to the booster pump project. The FOTs were delayed until 2014 which will be within the 3-year cycle. Previously, FOTs were performed in the fall of 2012.

Brief explanation describing deviations from the normal injection operations

Each booster pump was installed at a different time during the fall to allow for the other two wells to take the full flow during installation. Normally, the flow is divided between the three wells simultaneously. Flow data for each well is included in Attachment B.

Results of any leaks and spill reports (Include C-141 reports)

There were no leaks or spills of effluent and no C-141 reports filed for any of the wells during 2013.

An Area of Review (AOR) annual update summary

No new wells were noted in the one mile area around WDW-1, WDW-2, and WDW-3 since the previous report was submitted in 2012.

A summary of MITs, fall-off tests, etc. with conclusions and recommendations

Per OCD approval by Mr. Carl J. Chavez on September 27, 2013, neither MITs nor FOTs were performed during 2013 due to the booster pump installation project. The tests were delayed until 2014 which will be within the 3-year cycle. Previously, MITs and FOTs were last performed in fall 2012.

Records of expansion tank monitoring level, fluid removals and/or additions indicating well MIT conditions

WAMS (Well Annulus Monitoring System) data for all 3 wells are submitted with the quarterly reports and are resubmitted as Attachment D.

A summary of all major facility activities or events which occurred during the year

Each well received a new REDA HPS 300-hp booster pump during the fall of 2013. The existing injection pumps could sustain surface injection pressures of only 700 to 900 psi at the wellhead rather than near the 1500 psi allowed by the injection well permits. Booster pumps were installed to increase the injection pressure at the wellhead.

A summary of any new discoveries of groundwater contamination

There were no new discoveries of groundwater contamination at any of the three wells.

APPENDIX A

Injection Well Booster Pump Minor Permit Modification Request

Injection Well Booster Pump Minor Permit Modification Approval

HOLLYFRONTIER
THE HOLLYFRONTIER COMPANIES

June 20, 2013

Mr. Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Minor Modification for Navajo Refining Company L.L.C.
Discharge Permit UICI-008
WDW-1 (API 30-015-27592)
WDW-2 (API 30-015-20894)
WDW-3 (API 30-015-26575)

Dear Mr. Chavez:

As discussed with you and other agency personnel during a meeting in your Santa Fe offices on Wednesday, May 1, 2013; Navajo Refining Company, L.L.C. would like to install booster pumps into the pre-injection system for each of the three referenced injection wells. These wells are used to permanently dispose of certain nonhazardous liquid wastes associated with our refinery operation in Artesia, New Mexico.

It is Navajo's understanding from the May 1st meeting that the addition of the booster pumps is considered a minor modification to the existing Discharge Permits and can be handled administratively.

Per our discussion at that meeting, Navajo is pleased to provide the agency with information about the booster pumps. P&ID drawings that have been prepared for each injection well that depict the existing pre-injection system for that particular well and the planned booster pump to be installed at each well site are provided in Attachment A. Information about the booster pumps is included in Attachment B.

Navajo Refining Company, LLC
PO Box 159 • Artesia, NM 88211-0159 • (575) 748-3311
http://www.hollyfrontier.com

The booster pump installed at each well site will allow surface injection pressures to be increased but not exceed the regulatory established maximum surface injection pressure as specified for each well in the existing Discharge Permit for that well. The existing pumps, located at the Refinery, have only been able to attain surface injection pressures of 700 psi to 900 psi at the wellhead, substantially less than the permitted maximum surface injection pressures.

Each booster pump will be installed on a concrete pad with secondary containment (curb) and collection sump to preclude any potential release to the environment should there ever be a leak during service or maintenance. A drawing of the concrete pad is provided in Attachment C.

Each pump will be equipped with high pressure alarms and shutdowns to prevent the pump's discharge pressures from reaching the permitted maximum surface injection pressures. The pumps will also have seal failure alarms to detect and alert personnel in the unlikely event of seal failure which could cause a discharge inside the containment.

It is our plan to provide a pump installation designed to the most modern and safe standards.

Navajo appreciates the continued cooperation of the NM OCD. Should you have any questions or require any additional information regarding the addition of the booster pumps, please contact me via e-mail at mike.holder@hollyfrontier.com or via telephone at (575) 746- 5487.

Regards,

Mike Holder
Navajo Refining Company, L.L.C.

Attachments

cc: Gary Davis, Navajo Refining Company, L.L.C.
Tim Jones, Subsurface Technology, Inc.
Walt Cook, Subsurface Technology, Inc.
Jerry W. Taylor, Subsurface Technology, Inc.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

June 26, 2013

Mr. Mike Holder
Environmental Manager
Navajo Refining Company, LLC
P.O. Box 159
Artesia, New Mexico 88211-0159

Re: Navajo Refining Company, LLC Modification Request Letter (June 20, 2013) to Install a Booster Pump at WDW-1 (UICI-008), WDW-2 (UICI-008-1) & WDW-3 (UICI-008-0) Disposal Well Locations, Eddy County, New Mexico

Dear Mr. Holder:

The New Mexico Oil Conservation Division (OCD) is in receipt of Navajo Refining Company, LLC's (NRC) Letter dated June 20, 2013 (letter).

In the letter, NRC is requesting a "modification" to the discharge permit (permit) conditions at each of its WDW 1, 2 & 3 disposal wells to install a REDA HPS™ 300-hp pump with secondary containment (waste minimization) near each of the wells to increase the efficiency and injection potential under its disposal well permits.

OCD hereby approves the "modification" request.

If you have any questions, please do not hesitate to contact me by phone at (505) 476-3490, mail or email at CarlJ.Chavez@state.nm.us. Thank you.

Sincerely,

Carl J. Chávez
Environmental Engineer

Note: Please be advised that OCD approval of this modification request does not relieve NRC of responsibility should their operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve NRC of responsibility for compliance with any other federal, state, or local laws and/or regulations

CJC/cjc

cc: OCD Artesia Office

APPENDIX B

Quarterly Flow, Pressure, Volume Reports

Navajo Refining Company, L.L.C.

2013 FIRST QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	32,678,404
Jan-13	876	896	823	133	152	71	355	452	215	4,576	5,220	2,418	141,858	32,820,263
Feb-12	889	900	824	135	138	127	362	469	273	4,621	4,723	4,359	129,378	32,949,641
Mar-13	901	911	877	134	139	126	399	525	185	4,594	4,753	4,332	142,426	33,092,067
WDW-2													**Previous Quarter**	19,723,933
Jan-13	825	911	726	148	194	116	430	720	206	5,074	6,667	3,989	157,292	19,881,226
Feb-12	837	913	786	146	149	134	551	742	391	4,992	5,114	4,588	139,769	20,020,995
Mar-13	862	964	749	140	147	111	897	1,048	609	4,802	5,045	3,821	148,874	20,169,868
WDW-3													**Previous Quarter**	10,160,993
Jan-13	855	873	793	218	419	99	439	648	245	7,485	14,382	3,385	232,037	10,393,030
Feb-12	871	883	808	88	113	35	495	677	342	3,018	3,887	1,207	84,515	10,477,544
Mar-13	884	898	855	101	113	84	736	959	488	3,457	3,879	2,896	107,157	10,584,701
													Total Injected fluids:	63,846,636

Navajo Refining Company, L.L.C.

2013 SECOND QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	33,078,081
Apr-13	908	922	883	118	136	92	406	531	232	4,047	4,661	3,165	121,412	33,199,493
May-13	944	1,014	914	119	155	55	480	734	208	4,067	5,301	1,869	126,086	33,325,579
Jun-13	985	1,047	846	148	164	137	481	692	323	5,073	5,620	4,712	152,178	33,477,757
WDW-2													**Previous Quarter**	20,199,139
Apr-13	865	910	671	142	150	128	679	1,022	388	4,876	5,154	4,404	146,276	20,345,415
May-13	906	920	889	139	148	125	780	955	402	4,762	5,060	4,289	147,623	20,493,037
Jun-13	903	928	846	176	287	131	577	808	417	6,044	9,844	4,491	181,307	20,674,345
WDW-3													**Previous Quarter**	10,555,976
Apr-13	897	908	860	112	276	76	384	580	253	3,839	9,477	2,609	115,169	10,671,145
May-13	908	922	889	102	134	86	631	804	248	3,507	4,601	2,941	108,703	10,779,848
Jun-13	910	936	890	166	309	86	635	762	526	5,704	10,588	2,945	171,111	10,950,959
													Total Injected fluids:	65,103,061

Navajo Refining Company, L.L.C.

2013 THIRD QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	33,477,757
Jul-13	1,036	1,050	1,003	151	165	145	342	466	206	5,177	5,657	4,971	161,474	33,639,231
Aug-13	754	851	719	146	154	137	379	477	265	5,006	5,280	4,697	155,432	33,794,663
Sep-13	877	1,132	743	141	150	135	362	474	192	4,834	5,143	4,629	145,123	33,939,786
WDW-2													**Previous Quarter**	20,674,345
Jul-13	968	1,062	893	127	138	109	369	595	114	4,354	4,731	3,737	135,801	20,810,146
Aug-13	1,024	1,062	977	133	136	128	277	405	164	4,560	4,663	4,389	141,668	20,951,814
Sep-13	993	1,036	958	140	183	114	339	497	49	4,800	6,274	3,909	144,575	21,096,389
WDW-3													**Previous Quarter**	10,950,959
Jul-13	877	942	792	78	108	33	622	822	321	2,674	3,703	1,131	82,822	11,033,781
Aug-13	927	951	900	102	110	86	662	778	582	3,497	3,771	2,941	108,822	11,142,603
Sep-13	952	966	932	99	105	82	455	650	275	3,394	3,600	2,811	101,808	11,244,411
													Total Injected fluids:	66,280,586

Navajo Refining Company, L.L.C.

2013 FOURTH QUARTER MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

	Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMULATIVE Volume (barrels)
WDW-1													**Previous Quarter**	33,939,786
Oct-13	1,068	1,115	838	140	146	116	365	726	187	4,800	5,006	3,977	149,415	34,089,201
Nov-13	1,007	1,175	583	135	175	30	431	807	113	4,629	6,000	1,029	139,175	34,228,376
Dec-13	1,121	1,193	1,048	133	167	0	229	388	175	4,560	5,726	0	141,425	34,369,800
WDW-2													**Previous Quarter**	21,096,389
Oct-13	936	1,000	712	175	222	103	339	728	41	6,000	7,611	3,531	186,441	21,282,830
Nov-13	1,077	1,182	766	148	166	99	754	1,097	450	5,074	5,691	3,394	152,789	21,435,619
Dec-13	1,129	1,193	1,086	148	163	54	337	658	192	5,074	5,589	1,851	157,299	21,592,917
WDW-3													**Previous Quarter**	11,244,411
Oct-13	943	1,150	819	77	149	2	562	848	232	2,640	5,109	69	82,339	11,326,750
Nov-13	1,100	1,179	733	125	153	0	699	976	406	4,286	5,246	0	128,952	11,455,702
Dec-13	1,110	1,192	1,050	120	146	97	479	666	346	4,114	5,006	3,326	128,288	11,583,990
													Total Injected fluids:	67,546,708

APPENDIX C

Quarterly Chemical Analyses Reports

29-Mar-2013

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-6733
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: **1303855**

Dear Aaron,

ALS Environmental received 2 samples on 22-Mar-2013 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 40.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager

Certificate No: T104704231-12-10

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1303855**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1303855-01	WW Effluent	Liquid		3/21/2013 14:55	3/22/2013 09:30	☐
1303855-02	Trip Blank - 021813-56	Water		3/21/2013	3/22/2013 09:30	☑

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1303855

Case Narrative

The result for pH is flagged with H indicating that the holding time was exceeded. Per 40CFR136, the holding time for pH is "immediate."

The analysis for specific gravity was performed at Texas Oil Tech located in Houston, Texas.

Batch 68699, Total Metals, Sample 1303846-05D: MS/MSD is for an unrelated sample.

Batch 68756, Semivolatile Organics 8270, Sample SLCSDW2-130327: Insufficient sample was received for MS/MSD.

Batch R144692, Volatile Organics 8260, Sample 1303880-02A: MS/MSD is for an unrelated sample.

ALS Environmental

Date: *29-Mar-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 3/21/2013 02:55 PM

Work Order: 1303855
Lab ID: 1303855-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
MERCURY-SW7470A			**SW7470**				Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	3/27/2013	3/27/2013 01:13 PM
METALS			**SW6020**				Analyst: **ALR**
Aluminum	**1.34**		**0.0200**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Arsenic	**0.0404**	*	**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Barium	**0.0860**		**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Beryllium	ND		0.00400	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Boron	**0.722**		**0.100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Cadmium	ND		0.00400	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Calcium	**110**		**1.00**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Chromium	ND		0.0100	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Cobalt	ND		0.0100	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Copper	ND		0.0100	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Iron	**0.793**		**0.400**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Lead	ND		0.0100	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Magnesium	**37.2**		**0.400**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Manganese	**0.0832**		**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Molybdenum	**0.182**		**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Nickel	**0.0153**		**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Potassium	**107**		**0.400**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Selenium	**0.924**	*	**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Silver	ND		0.0100	mg/L	1	3/26/2013	3/27/2013 06:39 PM
Sodium	**1,400**		**4.00**	**mg/L**	10	3/26/2013	3/27/2013 07:09 PM
Vanadium	**0.0221**		**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
Zinc	**0.0737**		**0.0100**	**mg/L**	1	3/26/2013	3/27/2013 06:39 PM
SEMIVOLATILES - SW8270D			**SW8270**				Analyst: **JLJ**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2-Methylphenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2-Nitroaniline	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
2-Nitrophenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
3-Nitroaniline	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
4-Nitroaniline	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
4-Nitrophenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Acenaphthene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Mar-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 3/21/2013 02:55 PM

Work Order: 1303855
Lab ID: 1303855-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Acenaphthylene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Aniline	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Anthracene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Benzidine	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Hexachloroethane	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Isophorone	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Naphthalene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Nitrobenzene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Pentachlorophenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Phenanthrene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Phenol	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Pyrene	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Pyridine	ND		0.0050	mg/L	1	3/27/2013	3/27/2013 07:55 PM
Surr: 2,4,6-Tribromophenol	*114*		*42-124*	*%REC*	1	3/27/2013	3/27/2013 07:55 PM
Surr: 2-Fluorobiphenyl	*73.5*		*48-120*	*%REC*	1	3/27/2013	3/27/2013 07:55 PM
Surr: 2-Fluorophenol	*69.2*		*20-120*	*%REC*	1	3/27/2013	3/27/2013 07:55 PM
Surr: 4-Terphenyl-d14	*87.7*		*51-135*	*%REC*	1	3/27/2013	3/27/2013 07:55 PM
Surr: Nitrobenzene-d5	*67.3*		*41-120*	*%REC*	1	3/27/2013	3/27/2013 07:55 PM
Surr: Phenol-d6	*75.7*		*20-120*	*%REC*	1	3/27/2013	3/27/2013 07:55 PM
VOLATILES - SW8260C			**SW8260**				Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
2-Butanone	ND		0.010	mg/L	1		3/27/2013 02:05 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1		3/27/2013 02:05 PM
2-Hexanone	ND		0.010	mg/L	1		3/27/2013 02:05 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1		3/27/2013 02:05 PM
Acetone	**0.016**		**0.010**	**mg/L**	1		3/27/2013 02:05 PM
Benzene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Bromodichloromethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Bromoform	ND		0.0050	mg/L	1		3/27/2013 02:05 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Mar-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 3/21/2013 02:55 PM

Work Order: 1303855
Lab ID: 1303855-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Bromomethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Carbon disulfide	ND		0.010	mg/L	1		3/27/2013 02:05 PM
Carbon tetrachloride	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Chlorobenzene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Chloroethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Chloroform	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Chloromethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Dibromochloromethane	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Ethylbenzene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
m,p-Xylene	ND		0.010	mg/L	1		3/27/2013 02:05 PM
Methylene chloride	ND		0.010	mg/L	1		3/27/2013 02:05 PM
Styrene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Tetrachloroethene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Toluene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Trichloroethene	ND		0.0050	mg/L	1		3/27/2013 02:05 PM
Vinyl acetate	ND		0.010	mg/L	1		3/27/2013 02:05 PM
Vinyl chloride	ND		0.0020	mg/L	1		3/27/2013 02:05 PM
Xylenes, Total	ND		0.015	mg/L	1		3/27/2013 02:05 PM
Surr: 1,2-Dichloroethane-d4	*104*		*70-125*	*%REC*	1		3/27/2013 02:05 PM
Surr: 4-Bromofluorobenzene	*98.1*		*72-125*	*%REC*	1		3/27/2013 02:05 PM
Surr: Dibromofluoromethane	*108*		*71-125*	*%REC*	1		3/27/2013 02:05 PM
Surr: Toluene-d8	*101*		*75-125*	*%REC*	1		3/27/2013 02:05 PM
REACTIVE CYANIDE			**SW-846**				Analyst: **HN**
Reactive Cyanide	*See Attached*		40.0	mg/Kg	1		3/28/2013 09:45 AM
REACTIVE SULFIDE			**SW-846**				Analyst: **HN**
Reactive Sulfide	*See Attached*		40.0	mg/Kg	1		3/28/2013 09:45 AM
MISCELLANEOUS ANALYSIS			**NA**				Analyst: **SUB**
Miscellaneous Analysis	**See Attached**				1		3/28/2013
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Bromide	**2.60**		**0.500**	**mg/L**	5		3/28/2013 05:02 PM
Chloride	**647**		**50.0**	**mg/L**	100		3/28/2013 05:23 PM
Fluoride	**22.8**		**0.500**	**mg/L**	5		3/28/2013 05:02 PM
Sulfate	**2,630**		**50.0**	**mg/L**	100		3/28/2013 05:23 PM
Surr: Selenate (surr)	*97.3*		*85-115*	*%REC*	100		3/28/2013 05:23 PM
Surr: Selenate (surr)	*111*		*85-115*	*%REC*	5		3/28/2013 05:02 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *29-Mar-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 3/21/2013 02:55 PM

Work Order: 1303855
Lab ID: 1303855-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Alkalinity, Bicarbonate (As CaCO3	**366**		**6.00**	**mg/L**	1		3/26/2013 11:18 AM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		3/26/2013 11:18 AM
Alkalinity, Hydroxide (As CaCO3)	ND		6.00	mg/L	1		3/26/2013 11:18 AM
Alkalinity, Total (As CaCO3)	**366**		**6.00**	**mg/L**	1		3/26/2013 11:18 AM
SPECIFIC CONDUCTIVITY			**M2510 B**				Analyst: **KL**
Specific Conductivity	**8,110**		**1.00**	**µmhos/cm**	1		3/26/2013 02:07 PM
IGNITIBILITY			**SW1010**				Analyst: **KL**
Ignitability	*> 212*		50.0	°F	1		3/27/2013 12:00 PM
PH - SW9040C			**SW9040**				Analyst: **KL**
pH	**7.98**	H	**0.100**	**pH units**	1		3/26/2013 11:18 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**5,500**		**10.0**	**mg/L**	1		3/26/2013 06:05 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 29-Mar-13

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68699** Instrument ID **ICP7500** Method: **SW6020**

MBLK Sample ID: **MBLKW2-032613-68699** Units: **mg/L** Analysis Date: **3/26/2013 09:30 PM**

Client ID: Run ID: **ICP7500_130326A** SeqNo: **3153091** Prep Date: **3/26/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Calcium	ND	0.50								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Magnesium	ND	0.20								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Potassium	ND	0.20								
Silver	ND	0.0050								
Sodium	ND	0.20								
Vanadium	ND	0.0050								
Zinc	ND	0.0050								

MBLK Sample ID: **MBLKW2-032613-68699** Units: **mg/L** Analysis Date: **3/27/2013 04:53 PM**

Client ID: Run ID: **ICP7500_130327A** SeqNo: **3154491** Prep Date: **3/26/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	ND	0.0050								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68699** Instrument ID **ICP7500** Method: **SW6020**

LCS Sample ID: **MLCSW2-032613-68699** Units: **mg/L** Analysis Date: **3/26/2013 09:35 PM**

Client ID: Run ID: **ICP7500_130326A** SeqNo: **3153092** Prep Date: **3/26/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1068	0.010	0.1	0	107	80-120	0			
Arsenic	0.046	0.0050	0.05	0	92	80-120	0			
Barium	0.05079	0.0050	0.05	0	102	80-120	0			
Beryllium	0.05012	0.0020	0.05	0	100	80-120	0			
Boron	0.501	0.050	0.5	0	100	80-120	0			
Cadmium	0.05025	0.0020	0.05	0	100	80-120	0			
Calcium	4.655	0.50	5	0	93.1	80-120	0			
Chromium	0.04537	0.0050	0.05	0	90.7	80-120	0			
Cobalt	0.04537	0.0050	0.05	0	90.7	80-120	0			
Copper	0.04618	0.0050	0.05	0	92.4	80-120	0			
Iron	4.768	0.20	5	0	95.4	80-120	0			
Lead	0.04924	0.0050	0.05	0	98.5	80-120	0			
Magnesium	5.105	0.20	5	0	102	80-120	0			
Manganese	0.04744	0.0050	0.05	0	94.9	80-120	0			
Molybdenum	0.04742	0.0050	0.05	0	94.8	80-120	0			
Nickel	0.04539	0.0050	0.05	0	90.8	80-120	0			
Potassium	5.074	0.20	5	0	101	80-120	0			
Silver	0.05002	0.0050	0.05	0	100	80-120	0			
Sodium	5.057	0.20	5	0	101	80-120	0			
Vanadium	0.04575	0.0050	0.05	0	91.5	80-120	0			
Zinc	0.04974	0.0050	0.05	0	99.5	80-120	0			

LCS Sample ID: **MLCSW2-032613-68699** Units: **mg/L** Analysis Date: **3/27/2013 04:58 PM**

Client ID: Run ID: **ICP7500_130327A** SeqNo: **3154492** Prep Date: **3/26/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04697	0.0050	0.05	0	93.9	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68699** Instrument ID **ICP7500** Method: **SW6020**

MS Sample ID: **1303846-05DMS** Units: **mg/L** Analysis Date: **3/27/2013 06:04 PM**

Client ID: Run ID: **ICP7500_130327A** SeqNo: **3154505** Prep Date: **3/26/2013** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1684	0.020	0.1	0.0651	103	80-120	0			
Arsenic	0.04742	0.010	0.05	0.002868	89.1	80-120	0			
Barium	0.06544	0.010	0.05	0.021	88.9	80-120	0			
Beryllium	0.0481	0.0040	0.05	0.0003478	95.5	80-120	0			
Boron	1.671	0.10	0.5	1.231	88.1	80-120	0			
Cadmium	0.06756	0.0040	0.05	0.0228	89.5	80-120	0			
Calcium	88.26	1.0	5	79.32	179	80-120	0			SO
Chromium	0.04292	0.010	0.05	0.0008358	84.2	80-120	0			
Cobalt	0.04426	0.010	0.05	0.001916	84.7	80-120	0			
Copper	0.04364	0.010	0.05	0.000758	85.8	80-120	0			
Iron	4.544	0.40	5	0.05926	89.7	80-120	0			
Lead	0.04498	0.010	0.05	0.002284	85.4	80-120	0			
Magnesium	98.7	0.40	5	90.9	156	80-120	0			SO
Manganese	0.7488	0.010	0.05	0.6738	150	80-120	0			SO
Molybdenum	15.33	0.010	0.05	14.64	1380	80-120	0			SEO
Nickel	0.04574	0.010	0.05	0.004562	82.4	80-120	0			
Potassium	7.952	0.40	5	3.454	90	80-120	0			
Selenium	0.0572	0.010	0.05	0.002686	109	80-120	0			
Silver	0.04278	0.010	0.05	0.000395	84.8	80-120	0			
Sodium	ND	0.40	5	0	0	80-120	0			SX
Vanadium	0.07002	0.010	0.05	0.0257	88.6	80-120	0			
Zinc	0.04656	0.010	0.05	0.002674	87.8	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68699** Instrument ID **ICP7500** Method: **SW6020**

MSD Sample ID: **1303846-05DMSD** Units: **mg/L** Analysis Date: **3/27/2013 06:09 PM**

Client ID: Run ID: **ICP7500_130327A** SeqNo: **3154506** Prep Date: **3/26/2013** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.167	0.020	0.1	0.0651	102	80-120	0.1684	0.811	15	
Arsenic	0.0497	0.010	0.05	0.002868	93.7	80-120	0.04742	4.7	15	
Barium	0.0648	0.010	0.05	0.021	87.6	80-120	0.06544	0.983	15	
Beryllium	0.04798	0.0040	0.05	0.0003478	95.3	80-120	0.0481	0.25	15	
Boron	1.673	0.10	0.5	1.231	88.6	80-120	1.671	0.132	15	
Cadmium	0.06806	0.0040	0.05	0.0228	90.5	80-120	0.06756	0.737	15	
Calcium	85.4	1.0	5	79.32	122	80-120	88.26	3.29	15	SO
Chromium	0.04178	0.010	0.05	0.0008358	81.9	80-120	0.04292	2.69	15	
Cobalt	0.0429	0.010	0.05	0.001916	82	80-120	0.04426	3.12	15	
Copper	0.04132	0.010	0.05	0.000758	81.1	80-120	0.04364	5.46	15	
Iron	4.424	0.40	5	0.05926	87.3	80-120	4.544	2.68	15	
Lead	0.04468	0.010	0.05	0.002284	84.8	80-120	0.04498	0.669	15	
Magnesium	96.64	0.40	5	90.9	115	80-120	98.7	2.11	15	O
Manganese	0.7256	0.010	0.05	0.6738	104	80-120	0.7488	3.15	15	O
Molybdenum	15.06	0.010	0.05	14.64	840	80-120	15.33	1.78	15	SEO
Nickel	0.04486	0.010	0.05	0.004562	80.6	80-120	0.04574	1.94	15	
Potassium	7.822	0.40	5	3.454	87.4	80-120	7.952	1.65	15	
Selenium	0.05088	0.010	0.05	0.002686	96.4	80-120	0.0572	11.7	15	
Silver	0.04192	0.010	0.05	0.000395	83	80-120	0.04278	2.03	15	
Sodium	ND	0.40	5	0	0	80-120	0	0	15	SX
Vanadium	0.06808	0.010	0.05	0.0257	84.8	80-120	0.07002	2.81	15	
Zinc	0.0462	0.010	0.05	0.002674	87.1	80-120	0.04656	0.776	15	

DUP Sample ID: **1303846-05DDUP** Units: **mg/L** Analysis Date: **3/27/2013 05:08 PM**

Client ID: Run ID: **ICP7500_130327A** SeqNo: **3154494** Prep Date: **3/26/2013** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Molybdenum	13.95	0.50	0	0	0	0-0	13.56	2.84	25	
Sodium	1874	20	0	0	0	0-0	1846	1.51	25	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68699** Instrument ID **ICP7500** Method: **SW6020**

DUP Sample ID: **1303846-05DDUP** Units: **mg/L** Analysis Date: **3/27/2013 05:54 PM**

Client ID: Run ID: **ICP7500_130327A** SeqNo: **3154503** Prep Date: **3/26/2013** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.06508	0.020	0	0	0	0-0	0.0651	0.0307	25	
Arsenic	ND	0.010	0	0	0	0-0	0.002868	0	25	
Barium	0.01995	0.010	0	0	0	0-0	0.021	5.15	25	
Beryllium	ND	0.0040	0	0	0	0-0	0.0003478	0	25	
Boron	1.222	0.10	0	0	0	0-0	1.231	0.701	25	
Cadmium	0.02212	0.0040	0	0	0	0-0	0.0228	3.03	25	
Calcium	79.3	1.0	0	0	0	0-0	79.32	0.0252	25	
Chromium	ND	0.010	0	0	0	0-0	0.0008358	0	25	
Cobalt	ND	0.010	0	0	0	0-0	0.001916	0	25	
Copper	ND	0.010	0	0	0	0-0	0.000758	0	25	
Iron	ND	0.40	0	0	0	0-0	0.05926	0	25	
Lead	ND	0.010	0	0	0	0-0	0.002284	0	25	
Magnesium	90.02	0.40	0	0	0	0-0	90.9	0.973	25	
Manganese	0.6718	0.010	0	0	0	0-0	0.6738	0.297	25	
Nickel	ND	0.010	0	0	0	0-0	0.004562	0	25	
Potassium	3.424	0.40	0	0	0	0-0	3.454	0.872	25	
Selenium	ND	0.010	0	0	0	0-0	0.002686	0	25	
Silver	ND	0.010	0	0	0	0-0	0.000395	0	25	
Vanadium	0.02582	0.010	0	0	0	0-0	0.0257	0.466	25	
Zinc	ND	0.010	0	0	0	0-0	0.002674	0	25	

The following samples were analyzed in this batch: 1303855-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68749** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW1-032713-68749** Units: **mg/L** Analysis Date: **3/27/2013 12:15 PM**
Client ID: Run ID: **MERCURY_130326A** SeqNo: **3153512** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW1-032713-68749** Units: **mg/L** Analysis Date: **3/27/2013 12:20 PM**
Client ID: Run ID: **MERCURY_130326A** SeqNo: **3153513** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00536	0.00020	0.005	0	107	85-115	0			

MS Sample ID: **1303777-01DMS** Units: **mg/L** Analysis Date: **3/27/2013 12:25 PM**
Client ID: Run ID: **MERCURY_130326A** SeqNo: **3153516** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00519	0.00020	0.005	-0.000005	104	85-115	0			

MSD Sample ID: **1303777-01DMSD** Units: **mg/L** Analysis Date: **3/27/2013 12:27 PM**
Client ID: Run ID: **MERCURY_130326A** SeqNo: **3153517** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.00020	0.005	-0.000005	104	85-115	0.00519	0.386	20	

DUP Sample ID: **1303777-01DDUP** Units: **mg/L** Analysis Date: **3/27/2013 12:23 PM**
Client ID: Run ID: **MERCURY_130326A** SeqNo: **3153515** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	-0.000005	0	20	

The following samples were analyzed in this batch: 1303855-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68756** Instrument ID **SV-3** Method: **SW8270**

MBLK Sample ID: **SBLKW2-130327-68756** Units: **µg/L** Analysis Date: **3/27/2013 07:00 PM**

Client ID: Run ID: **SV-3_130327A** SeqNo: **3155049** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidine	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	94.74	5.0	*100*	0	*94.7*	*42-124*	0			
Surr: 2-Fluorobiphenyl	107	5.0	*100*	0	*107*	*48-120*	0			
Surr: 2-Fluorophenol	79.61	5.0	*100*	0	*79.6*	*20-120*	0			
Surr: 4-Terphenyl-d14	94.22	5.0	*100*	0	*94.2*	*51-135*	0			
Surr: Nitrobenzene-d5	91.09	5.0	*100*	0	*91.1*	*41-120*	0			
Surr: Phenol-d6	70.94	5.0	*100*	0	*70.9*	*20-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68756** Instrument ID **SV-3** Method: **SW8270**

LCS Sample ID: **SLCSW2-130327-68756** Units: **µg/L** Analysis Date: **3/27/2013 05:34 PM**
Client ID: Run ID: **SV-3_130327A** SeqNo: **3155047** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	49.68	5.0	50	0	99.4	50-120	0			
2,4,5-Trichlorophenol	88.8	5.0	100	0	88.8	50-120	0			
2,4,6-Trichlorophenol	87.66	5.0	100	0	87.7	50-120	0			
2,4-Dinitrotoluene	40.23	5.0	50	0	80.5	50-120	0			
2-Methylnaphthalene	39.69	5.0	50	0	79.4	55-120	0			
2-Methylphenol	71.05	5.0	100	0	71.1	50-120	0			
2-Nitroaniline	48.2	5.0	50	0	96.4	55-125	0			
2-Nitrophenol	88.78	5.0	100	0	88.8	55-120	0			
3&4-Methylphenol	101.7	5.0	150	0	67.8	45-120	0			
3-Nitroaniline	19.35	5.0	50	0	38.7	25-120	0			
4-Nitroaniline	34.79	5.0	50	0	69.6	50-120	0			
4-Nitrophenol	64.27	5.0	100	0	64.3	45-120	0			
Acenaphthene	45.43	5.0	50	0	90.9	55-120	0			
Acenaphthylene	45.76	5.0	50	0	91.5	55-120	0			
Aniline	18.75	5.0	50	0	37.5	30-120	0			
Anthracene	46.49	5.0	50	0	93	55-120	0			
Benz(a)anthracene	49.81	5.0	50	0	99.6	55-120	0			
Benzidine	20.46	5.0	50	0	40.9	10-120	0			
Hexachlorobenzene	46.03	5.0	50	0	92.1	55-120	0			
Hexachloroethane	41.25	5.0	50	0	82.5	55-120	0			
Indeno(1,2,3-cd)pyrene	47.39	5.0	50	0	94.8	55-120	0			
Isophorone	43.91	5.0	50	0	87.8	55-120	0			
Naphthalene	44.86	5.0	50	0	89.7	55-120	0			
Nitrobenzene	44.14	5.0	50	0	88.3	55-120	0			
N-Nitrosodimethylamine	36.13	5.0	50	0	72.3	45-120	0			
N-Nitrosodi-n-propylamine	34.59	5.0	50	0	69.2	50-120	0			
N-Nitrosodiphenylamine	48.17	5.0	50	0	96.3	55-120	0			
Pentachlorophenol	86.13	5.0	100	0	86.1	55-120	0			
Phenanthrene	45.79	5.0	50	0	91.6	55-120	0			
Phenol	73.5	5.0	100	0	73.5	50-120	0			
Pyrene	50.95	5.0	50	0	102	55-120	0			
Pyridine	30.36	5.0	50	0	60.7	35-120	0			
Surr: 2,4,6-Tribromophenol	81.62	5.0	*100*	0	*81.6*	*42-124*	0			
Surr: 2-Fluorobiphenyl	95.81	5.0	*100*	0	*95.8*	*48-120*	0			
Surr: 2-Fluorophenol	86.76	5.0	*100*	0	*86.8*	*20-120*	0			
Surr: 4-Terphenyl-d14	94.07	5.0	*100*	0	*94.1*	*51-135*	0			
Surr: Nitrobenzene-d5	95.81	5.0	*100*	0	*95.8*	*41-120*	0			
Surr: Phenol-d6	77.52	5.0	*100*	0	*77.5*	*20-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68756** Instrument ID **SV-3** Method: **SW8270**

LCSD Sample ID: **SLCSDW2-130327-68756** Units: **µg/L** Analysis Date: **3/27/2013 05:55 PM**

Client ID: Run ID: **SV-3_130327A** SeqNo: **3155048** Prep Date: **3/27/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	46.64	5.0	50	0	93.3	50-120	49.68	6.3	20	
2,4,5-Trichlorophenol	85.18	5.0	100	0	85.2	50-120	88.8	4.16	20	
2,4,6-Trichlorophenol	84.54	5.0	100	0	84.5	50-120	87.66	3.63	20	
2,4-Dinitrotoluene	39.66	5.0	50	0	79.3	50-120	40.23	1.44	20	
2-Methylnaphthalene	37.18	5.0	50	0	74.4	55-120	39.69	6.52	20	
2-Methylphenol	65.48	5.0	100	0	65.5	50-120	71.05	8.17	20	
2-Nitroaniline	44.48	5.0	50	0	89	55-125	48.2	8.04	20	
2-Nitrophenol	84.41	5.0	100	0	84.4	55-120	88.78	5.05	20	
3&4-Methylphenol	92.04	5.0	150	0	61.4	45-120	101.7	9.99	20	
3-Nitroaniline	19.94	5.0	50	0	39.9	25-120	19.35	3.03	20	
4-Nitroaniline	34.39	5.0	50	0	68.8	50-120	34.79	1.15	20	
4-Nitrophenol	63.61	5.0	100	0	63.6	45-120	64.27	1.04	20	
Acenaphthene	43.04	5.0	50	0	86.1	55-120	45.43	5.41	20	
Acenaphthylene	43.25	5.0	50	0	86.5	55-120	45.76	5.66	20	
Aniline	17.91	5.0	50	0	35.8	30-120	18.75	4.58	20	
Anthracene	44.23	5.0	50	0	88.5	55-120	46.49	4.99	20	
Benz(a)anthracene	45.91	5.0	50	0	91.8	55-120	49.81	8.15	20	
Benzidine	20.73	5.0	50	0	41.5	10-120	20.46	1.31	20	
Hexachlorobenzene	44.09	5.0	50	0	88.2	55-120	46.03	4.3	20	
Hexachloroethane	38.38	5.0	50	0	76.8	55-120	41.25	7.2	20	
Indeno(1,2,3-cd)pyrene	42.28	5.0	50	0	84.6	55-120	47.39	11.4	20	
Isophorone	40.17	5.0	50	0	80.3	55-120	43.91	8.9	20	
Naphthalene	42.22	5.0	50	0	84.4	55-120	44.86	6.07	20	
Nitrobenzene	41.46	5.0	50	0	82.9	55-120	44.14	6.27	20	
N-Nitrosodimethylamine	36.24	5.0	50	0	72.5	45-120	36.13	0.308	20	
N-Nitrosodi-n-propylamine	30.03	5.0	50	0	60.1	50-120	34.59	14.1	20	
N-Nitrosodiphenylamine	47.01	5.0	50	0	94	55-120	48.17	2.44	20	
Pentachlorophenol	82.01	5.0	100	0	82	55-120	86.13	4.9	20	
Phenanthrene	43.58	5.0	50	0	87.2	55-120	45.79	4.96	20	
Phenol	69.04	5.0	100	0	69	50-120	73.5	6.26	20	
Pyrene	47.14	5.0	50	0	94.3	55-120	50.95	7.76	20	
Pyridine	30.05	5.0	50	0	60.1	35-120	30.36	1.02	20	
Surr: 2,4,6-Tribromophenol	76.73	5.0	*100*	0	*76.7*	*42-124*	81.62	*6.18*	*20*	
Surr: 2-Fluorobiphenyl	89.6	5.0	*100*	0	*89.6*	*48-120*	95.81	*6.7*	*20*	
Surr: 2-Fluorophenol	82.43	5.0	*100*	0	*82.4*	*20-120*	86.76	*5.11*	*20*	
Surr: 4-Terphenyl-d14	87.05	5.0	*100*	0	*87.1*	*51-135*	94.07	*7.74*	*20*	
Surr: Nitrobenzene-d5	87.58	5.0	*100*	0	*87.6*	*41-120*	95.81	*8.97*	*20*	
Surr: Phenol-d6	71.04	5.0	*100*	0	*71*	*20-120*	77.52	*8.73*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **68756** Instrument ID **SV-3** Method: **SW8270**

The following samples were analyzed in this batch: 1303855-01F

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144692** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-130327-R144692** Units: **µg/L** Analysis Date: **3/27/2013 12:01 PM**

Client ID: Run ID: **VOA1_130327A** SeqNo: **3153674** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	48.56	5.0	*50*	0	*97.1*	*70-125*		0		
Surr: 4-Bromofluorobenzene	49.7	5.0	*50*	0	*99.4*	*72-125*		0		
Surr: Dibromofluoromethane	50.63	5.0	*50*	0	*101*	*71-125*		0		
Surr: Toluene-d8	50.65	5.0	*50*	0	*101*	*75-125*		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144692** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-130327-R144692** Units: **µg/L** Analysis Date: **3/27/2013 10:47 AM**

Client ID: Run ID: **VOA1_130327A** SeqNo: **3153673** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	53.72	5.0	50	0	107	80-120	0			
1,1,2,2-Tetrachloroethane	51.85	5.0	50	0	104	72-120	0			
1,1,2-Trichloroethane	53.1	5.0	50	0	106	80-120	0			
1,1-Dichloroethane	50.79	5.0	50	0	102	76-120	0			
1,1-Dichloroethene	53.7	5.0	50	0	107	73-124	0			
1,2-Dichloroethane	56.13	5.0	50	0	112	78-120	0			
2-Butanone	102	10	100	0	102	58-132	0			
2-Chloroethyl vinyl ether	110.8	10	100	0	111	74-120	0			
2-Hexanone	95.73	10	100	0	95.7	61-130	0			
4-Methyl-2-pentanone	100.9	10	100	0	101	65-127	0			
Acetone	100.7	10	100	0	101	59-137	0			
Benzene	55.45	5.0	50	0	111	73-121	0			
Bromodichloromethane	57.11	5.0	50	0	114	80-120	0			
Bromoform	54.58	5.0	50	0	109	79-120	0			
Bromomethane	63.78	5.0	50	0	128	60-145	0			
Carbon disulfide	107.4	10	100	0	107	68-141	0			
Carbon tetrachloride	52.32	5.0	50	0	105	75-124	0			
Chlorobenzene	48.25	5.0	50	0	96.5	80-120	0			
Chloroethane	63.88	5.0	50	0	128	70-130	0			
Chloroform	56.86	5.0	50	0	114	80-120	0			
Chloromethane	56.47	5.0	50	0	113	67-123	0			
cis-1,3-Dichloropropene	56.88	5.0	50	0	114	80-120	0			
Dibromochloromethane	52.37	5.0	50	0	105	80-120	0			
Ethylbenzene	50.83	5.0	50	0	102	80-120	0			
m,p-Xylene	107.3	10	100	0	107	78-121	0			
Methylene chloride	58.65	10	50	0	117	65-133	0			
Styrene	54.45	5.0	50	0	109	80-120	0			
Tetrachloroethene	48.75	5.0	50	0	97.5	79-120	0			
Toluene	51.05	5.0	50	0	102	80-120	0			
trans-1,3-Dichloropropene	57.12	5.0	50	0	114	80-120	0			
Trichloroethene	53.05	5.0	50	0	106	80-120	0			
Vinyl acetate	112.6	10	100	0	113	67-139	0			
Vinyl chloride	61.31	2.0	50	0	123	70-127	0			
Xylenes, Total	160.3	15	150	0	107	80-120	0			
Surr: 1,2-Dichloroethane-d4	52.17	5.0	*50*	0	*104*	*70-125*	0			
Surr: 4-Bromofluorobenzene	49	5.0	*50*	0	*98*	*72-125*	0			
Surr: Dibromofluoromethane	53.46	5.0	*50*	0	*107*	*71-125*	0			
Surr: Toluene-d8	49.09	5.0	*50*	0	*98.2*	*75-125*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144692** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1303880-02AMS** Units: **µg/L** Analysis Date: **3/27/2013 04:07 PM**
Client ID: Run ID: **VOA1_130327A** SeqNo: **3154160** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	53.16	5.0	50	0	106	80-120	0			
1,1,2,2-Tetrachloroethane	50.78	5.0	50	0	102	72-120	0			
1,1,2-Trichloroethane	53.3	5.0	50	0	107	80-120	0			
1,1-Dichloroethane	55.4	5.0	50	0	111	76-120	0			
1,1-Dichloroethene	49.99	5.0	50	0	100	73-124	0			
1,2-Dichloroethane	51.09	5.0	50	0	102	78-120	0			
2-Butanone	118.8	10	100	0	119	58-132	0			
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S
2-Hexanone	112.2	10	100	0	112	61-130	0			
4-Methyl-2-pentanone	122.2	10	100	0	122	65-127	0			
Acetone	105	10	100	0	105	59-137	0			
Benzene	48.55	5.0	50	0	97.1	73-121	0			
Bromodichloromethane	52.48	5.0	50	0	105	80-120	0			
Bromoform	53.38	5.0	50	0	107	79-120	0			
Bromomethane	40.05	5.0	50	0	80.1	60-145	0			
Carbon disulfide	99.1	10	100	0	99.1	68-141	0			
Carbon tetrachloride	46.5	5.0	50	0	93	75-124	0			
Chlorobenzene	48.96	5.0	50	0	97.9	80-120	0			
Chloroethane	57.33	5.0	50	0	115	70-130	0			
Chloroform	53.98	5.0	50	0	108	80-120	0			
Chloromethane	41.3	5.0	50	0	82.6	67-123	0			
cis-1,3-Dichloropropene	48.53	5.0	50	0	97.1	80-120	0			
Dibromochloromethane	54.02	5.0	50	0	108	80-120	0			
Ethylbenzene	46.34	5.0	50	0	92.7	80-120	0			
m,p-Xylene	97.8	10	100	0	97.8	78-121	0			
Methylene chloride	59.97	10	50	0	120	65-133	0			
Styrene	52.33	5.0	50	0	105	80-120	0			
Tetrachloroethene	42.49	5.0	50	0	85	79-120	0			
Toluene	50.72	5.0	50	0	101	80-120	0			
trans-1,3-Dichloropropene	52.03	5.0	50	0	104	80-120	0			
Trichloroethene	45.51	5.0	50	0	91	80-120	0			
Vinyl acetate	118.1	10	100	0	118	67-139	0			
Vinyl chloride	50.68	2.0	50	0	101	70-127	0			
Xylenes, Total	147.4	15	150	0	98.3	80-120	0			
Surr: 1,2-Dichloroethane-d4	51.5	5.0	*50*	0	*103*	*70-125*	0			
Surr: 4-Bromofluorobenzene	52.78	5.0	*50*	0	*106*	*72-125*	0			
Surr: Dibromofluoromethane	54.24	5.0	*50*	0	*108*	*71-125*	0			
Surr: Toluene-d8	50.68	5.0	*50*	0	*101*	*75-125*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144692** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1303880-02AMSD** Units: **µg/L** Analysis Date: **3/27/2013 04:32 PM**

Client ID: Run ID: **VOA1_130327A** SeqNo: **3154161** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	52.35	5.0	50	0	105	80-120	53.16	1.53	20	
1,1,2,2-Tetrachloroethane	47.84	5.0	50	0	95.7	72-120	50.78	5.97	20	
1,1,2-Trichloroethane	55.66	5.0	50	0	111	80-120	53.3	4.33	20	
1,1-Dichloroethane	53.79	5.0	50	0	108	76-120	55.4	2.97	20	
1,1-Dichloroethene	49.14	5.0	50	0	98.3	73-124	49.99	1.72	20	
1,2-Dichloroethane	52.85	5.0	50	0	106	78-120	51.09	3.38	20	
2-Butanone	106.7	10	100	0	107	58-132	118.8	10.7	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	116.6	10	100	0	117	61-130	112.2	3.85	20	
4-Methyl-2-pentanone	119.3	10	100	0	119	65-127	122.2	2.36	20	
Acetone	94.96	10	100	0	95	59-137	105	10.1	20	
Benzene	48.8	5.0	50	0	97.6	73-121	48.55	0.498	20	
Bromodichloromethane	51.3	5.0	50	0	103	80-120	52.48	2.29	20	
Bromoform	54.41	5.0	50	0	109	79-120	53.38	1.92	20	
Bromomethane	43.99	5.0	50	0	88	60-145	40.05	9.37	20	
Carbon disulfide	99.03	10	100	0	99	68-141	99.1	0.0691	20	
Carbon tetrachloride	49.81	5.0	50	0	99.6	75-124	46.5	6.88	20	
Chlorobenzene	46.31	5.0	50	0	92.6	80-120	48.96	5.56	20	
Chloroethane	54.21	5.0	50	0	108	76-121	57.33	5.6	20	
Chloroform	53.92	5.0	50	0	108	80-120	53.98	0.111	20	
Chloromethane	41.96	5.0	50	0	83.9	67-123	41.3	1.59	20	
cis-1,3-Dichloropropene	52.97	5.0	50	0	106	80-120	48.53	8.74	20	
Dibromochloromethane	54.57	5.0	50	0	109	80-120	54.02	1.01	20	
Ethylbenzene	50.09	5.0	50	0	100	80-120	46.34	7.76	20	
m,p-Xylene	102.8	10	100	0	103	78-121	97.8	4.98	20	
Methylene chloride	55.34	10	50	0	111	65-133	59.97	8.03	20	
Styrene	52.71	5.0	50	0	105	80-120	52.33	0.717	20	
Tetrachloroethene	45.86	5.0	50	0	91.7	79-120	42.49	7.61	20	
Toluene	52.2	5.0	50	0	104	80-120	50.72	2.88	20	
trans-1,3-Dichloropropene	52.07	5.0	50	0	104	80-120	52.03	0.0724	20	
Trichloroethene	46.98	5.0	50	0	94	80-120	45.51	3.18	20	
Vinyl acetate	107.9	10	100	0	108	67-139	118.1	9.06	20	
Vinyl chloride	51.41	2.0	50	0	103	70-127	50.68	1.42	20	
Xylenes, Total	152.2	15	150	0	101	78-121	147.4	3.18	20	
Surr: 1,2-Dichloroethane-d4	52.3	5.0	*50*	0	*105*	*70-125*	51.5	*1.54*	*20*	
Surr: 4-Bromofluorobenzene	55.23	5.0	*50*	0	*110*	*72-125*	52.78	*4.54*	*20*	
Surr: Dibromofluoromethane	52.95	5.0	*50*	0	*106*	*71-125*	54.24	*2.41*	*20*	
Surr: Toluene-d8	51	5.0	*50*	0	*102*	*75-125*	50.68	*0.633*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144692** Instrument ID **VOA1** Method: **SW8260**

The following samples were analyzed in this batch: 1303855-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144618** Instrument ID **ManTech01** Method: **M2510 B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-130326-R144618** Units: **µmhos/cm** Analysis Date: **3/26/2013 02:02 PM**
Client ID: Run ID: **MANTECH01_130326B** SeqNo: **3152044** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **LCS-COND-R144618** Units: **µmhos/cm** Analysis Date: **3/26/2013 02:03 PM**
Client ID: Run ID: **MANTECH01_130326B** SeqNo: **3152045** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1440	1.0	1413	0	102	80-120	0			

DUP Sample ID: **1303819-01HDUP** Units: **µmhos/cm** Analysis Date: **3/26/2013 02:06 PM**
Client ID: Run ID: **MANTECH01_130326B** SeqNo: **3152047** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	225.8	1.0	0	0	0		225.8	0	20	

The following samples were analyzed in this batch: 1303855-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144619** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-130326-R144619** Units: **mg/L** Analysis Date: **3/26/2013 10:41 AM**
Client ID: Run ID: **MANTECH01_130326C** SeqNo: **3151868** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	6.0								
Alkalinity, Carbonate (As CaCO3)	ND	6.0								
Alkalinity, Hydroxide (As CaCO3)	ND	6.0								
Alkalinity, Total (As CaCO3)	ND	6.0								

LCS Sample ID: **WLCSW1-130326-R144619** Units: **mg/L** Analysis Date: **3/26/2013 10:47 AM**
Client ID: Run ID: **MANTECH01_130326C** SeqNo: **3151869** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1091	6.0	1000	0	109	80-120	0			

DUP Sample ID: **1303819-01HDUP** Units: **mg/L** Analysis Date: **3/26/2013 11:12 AM**
Client ID: Run ID: **MANTECH01_130326C** SeqNo: **3151875** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	93.73	6.0	0	0	0	0-0	92.43	1.4	0	
Alkalinity, Carbonate (As CaCO3)	ND	6.0	0	0	0	0-0	0	0	0	
Alkalinity, Hydroxide (As CaCO3)	ND	6.0	0	0	0	0-0	0	0	0	
Alkalinity, Total (As CaCO3)	93.73	6.0	0	0	0	0-0	92.43	1.4	20	

The following samples were analyzed in this batch: 1303855-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144637** Instrument ID **ManTech01** Method: **SW9040** **(Dissolve)**

LCS Sample ID: **LCS-PH-R144637** Units: **pH units** Analysis Date: **3/26/2013 10:50 AM**

Client ID: Run ID: **MANTECH01_130326D** SeqNo: **3152391** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.51	0.10	6	0	108	90-110	0			

DUP Sample ID: **1303819-01ZDUP** Units: **pH units** Analysis Date: **3/26/2013 11:12 AM**

Client ID: Run ID: **MANTECH01_130326D** SeqNo: **3152396** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.27	0.10	0	0	0	0-0	8.28	0.121	20	

The following samples were analyzed in this batch: 1303855-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144691** Instrument ID **WetChem** Method: **SW1010** **(Dissolve)**

LCS Sample ID: **WLCSW1-130327-R144691** Units: **°F** Analysis Date: **3/27/2013 12:00 PM**

Client ID: Run ID: **WETCHEM_130327D** SeqNo: **3153656** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	85	50	84	0	101	80-120	0			

DUP Sample ID: **1303824-01DDUP** Units: **°F** Analysis Date: **3/27/2013 12:00 PM**

Client ID: Run ID: **WETCHEM_130327D** SeqNo: **3153660** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	ND	50	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 1303855-01E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144712** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-032613-R144712** Units: **mg/L** Analysis Date: **3/26/2013 06:05 PM**
Client ID: Run ID: **BALANCE1_130326C** SeqNo: **3154077** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **WLCS-032613-R144712** Units: **mg/L** Analysis Date: **3/26/2013 06:05 PM**
Client ID: Run ID: **BALANCE1_130326C** SeqNo: **3154078** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1022	10	1000	0	102	85-115	0			

DUP Sample ID: **1303714-01FDUP** Units: **mg/L** Analysis Date: **3/26/2013 06:05 PM**
Client ID: Run ID: **BALANCE1_130326C** SeqNo: **3154070** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	464	10	0	0	0	0-0	456	1.74	20	

DUP Sample ID: **1303876-01FDUP** Units: **mg/L** Analysis Date: **3/26/2013 06:05 PM**
Client ID: Run ID: **BALANCE1_130326C** SeqNo: **3155604** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	472	10	0	0	0	0-0	476	0.844	20	

The following samples were analyzed in this batch: 1303855-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1303855
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R144819** Instrument ID **ICS3K2** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R144819** Units: **mg/L** Analysis Date: **3/28/2013 12:15 PM**
Client ID: Run ID: **ICS3K2_130328A** SeqNo: **3156592** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	ND	0.10								
Chloride	ND	0.50								
Fluoride	ND	0.10								
Sulfate	ND	0.50								
Surr: Selenate (surr)	4.899	0.10	*5*	0	*98*	*85-115*	0			

LCS Sample ID: **WLCSW1-R144819** Units: **mg/L** Analysis Date: **3/28/2013 12:37 PM**
Client ID: Run ID: **ICS3K2_130328A** SeqNo: **3156593** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	3.848	0.10	4	0	96.2	90-110	0			
Chloride	20.42	0.50	20	0	102	90-110	0			
Fluoride	3.645	0.10	4	0	91.1	90-110	0			
Sulfate	19.09	0.50	20	0	95.5	90-110	0			
Surr: Selenate (surr)	4.847	0.10	*5*	0	*96.9*	*85-115*	0			

MS Sample ID: **1303813-45DMS** Units: **mg/L** Analysis Date: **3/28/2013 04:18 PM**
Client ID: Run ID: **ICS3K2_130328A** SeqNo: **3156599** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	10.62	0.50	10	0	106	80-120	0			
Chloride	72.64	2.5	50	24.99	95.3	80-120	0			
Fluoride	8.866	0.50	10	0.139	87.3	80-120	0			
Sulfate	155.8	2.5	50	106	99.6	80-120	0			
Surr: Selenate (surr)	22.85	0.50	*25*	0	*91.4*	*85-115*	0			

MSD Sample ID: **1303813-45DMSD** Units: **mg/L** Analysis Date: **3/28/2013 04:40 PM**
Client ID: Run ID: **ICS3K2_130328A** SeqNo: **3156600** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	10.65	0.50	10	0	106	80-120	10.62	0.244	20	
Chloride	72.71	2.5	50	24.99	95.4	80-120	72.64	0.1	20	
Fluoride	8.976	0.50	10	0.139	88.4	80-120	8.866	1.23	20	
Sulfate	156.8	2.5	50	106	101	80-120	155.8	0.582	20	
Surr: Selenate (surr)	23.07	0.50	*25*	0	*92.3*	*85-115*	22.85	*0.949*	*20*	

The following samples were analyzed in this batch: 1303855-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: **1303855**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
°F	Farenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **22-Mar-13 09:30**

Work Order: **1303855** Received by: **RDN**

Checklist completed by Paresh M. Giga (eSignature) 25-Mar-13 (Date) Reviewed by: Sonia West (eSignature) 26-Mar-13 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1c C/U	IR1	
Cooler(s)/Kit(s):	2896		
Date/Time sample(s) sent to storage:	3/25/13 16:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Fo

Page 1 of 1

1303855

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Project Manager: Pat Lynch

Customer Information		Project Information	
Purchase Order		Project Name	Injection Well Quarterly
Work Order		Project Number	
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange
Address	P. O. Box 159	Address	501 East Main
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210
Phone	(575) 748-3311	Phone	(575) 748-3311
Fax	(575) 746-5451	Fax	(575) 746-5451
e-Mail Address	Aaron.Strange@hollyfrontier.com	e-Mail Address	Aaron.Strange@hollyfrontier.com

A	VOC (8260) Select
B	SVOC (8270) Select
C	Total Metals (6020 / 7000) NM GW Metals + Ca, K, Mg, Na
D	R.C.I. Profile
E	Anions (300) F, Cl, SO4, Br
F	Alkalinity
G	pH
H	Conductivity
I	TDS
J	Specific Gravity

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW Effluent	3/21/13	14:55	Liquid	Yes	10	X	X	X	X	X	X	X	X	X	X	
2	Temperature Blank					1											
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign
Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by: Aaron Strange	Date: 3/21/2013	Time: 16:15	Received by:	Notes: See attachment for more detail.
Relinquished by:	Date: 3/22/13	Time: 09:30	Received by (Laboratory): RNO AG	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

	Level II: Standard QC	TRRP-Checklist
	Level III: Std QC + Raw Data	TRRP Level IV
	Level IV: SW846 CLP-Like	
	Other: _____	

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

ALS Group USA, Corp

Date: 28-Mar-13

Client: ALS Environmental
Project: 1303855
Work Order: **1303831**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1303831-01	1303855-01H	Liquid		3/21/2013 14:55	3/26/2013 09:30	☐

ALS Group USA, Corp

Date: 28-Mar-13

Client: ALS Environmental
Project: 1303855
WorkOrder: **1303831**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
TDL	Target Detection Limit
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: *28-Mar-13*

Client: ALS Environmental
Project: 1303855
Sample ID: 1303855-01H
Collection Date: 3/21/2013 02:55 PM

Work Order: 1303831
Lab ID: 1303831-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **EE**
Cyanide, Reactive	ND		40.0	mg/Kg	1	3/28/2013 09:45 AM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **EE**
Sulfide, Reactive	ND		40.0	mg/Kg	1	3/28/2013 09:45 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 28-Mar-13

Client: ALS Environmental
Work Order: 1303831
Project: 1303855

QC BATCH REPORT

Batch ID: **R118051** Instrument ID **WETCHEM** Method: **SW7.3.4.2**

MBLK Sample ID: **WBLKW1-032813-R118051** Units: **mg/Kg** Analysis Date: **3/28/2013 09:45 AM**

Client ID: Run ID: **WETCHEM_130328I** SeqNo: **2252596** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

LCS Sample ID: **WLCSW1-032813-R118051** Units: **mg/Kg** Analysis Date: **3/28/2013 09:45 AM**

Client ID: Run ID: **WETCHEM_130328I** SeqNo: **2252597** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	699.2	40	1075	0	65	60-120		0		

The following samples were analyzed in this batch: 1303831-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Work Order: 1303831
Project: 1303855

QC BATCH REPORT

Batch ID: **R118052** Instrument ID **WETCHEM** Method: **SW7.3.3.2**

MBLK Sample ID: **WBLKW1-032813-R118052** Units: **mg/Kg** Analysis Date: **3/28/2013 09:45 AM**
Client ID: Run ID: **WETCHEM_130328J** SeqNo: **2252608** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: **WLCSW1-032813-R118052** Units: **mg/Kg** Analysis Date: **3/28/2013 09:45 AM**
Client ID: Run ID: **WETCHEM_130328J** SeqNo: **2252609** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	75-125	0			

MS Sample ID: **1303827-01A MS** Units: **mg/Kg** Analysis Date: **3/28/2013 09:45 AM**
Client ID: Run ID: **WETCHEM_130328J** SeqNo: **2252611** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	218.9	40	250	0	87.6	50-150	0			

MSD Sample ID: **1303827-01A MSD** Units: **mg/Kg** Analysis Date: **3/28/2013 09:45 AM**
Client ID: Run ID: **WETCHEM_130328J** SeqNo: **2252612** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	233.5	40	250	0	93.4	50-150	218.9	6.45	35	

The following samples were analyzed in this batch: 1303831-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1303831

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424
TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Date: 25-Mar-13
COC ID: 13717
Due Date 28-Mar-13

Salesperson: Mala H. Belmonte

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1303855	A	Reactive Cyanide (SW-846)
Work Order		Project Number		B	Reactive Sulfide (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	
Send Report To	Sonia West	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	Sonia.West@alsglobal.com	eMail CC		J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1303855-01H (WW Effluent)	Liquid	21/Mar/2013 14:55	(1) 250PNEAT	X	X								

Comments:

Please analyze for reactive cyanide & reactive sulfide. Due on 3/28/13. Send report to sonia.west@alsglobal.com & cc : results to jumoke.lawal@alsglobal.com & luke.hernandez@alsglobal.com

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	3/25/13 1800				Std
Relinquished by:	Date/Time	Received by:	Date/Time		
			3/26/13 0930		

3.26

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **26-Mar-13 09:30**

Work Order: **1303831** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 26-Mar-13 (Date) Reviewed by: Bill Carey (eSignature) 26-Mar-13 (Date)

Matrices: Liquid
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2 c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	3/26/2013 1:31:30 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
10450 Stanellin Hwy, Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5657

CUSTODY SEAL
Date:
Time:
Name:
Company:

Seal Broken By:
Date:

ALS Environmental
10450 Stanellin Hwy, Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5657

CUSTODY SEAL
Date:
Time:
Name:
Company:

Seal Broken By:
Date:

Certificate of Analysis

SINCE 1985

Quality Controlled Through Analysis

10630 FALLSTONE RD. HOUSTON, TEXAS 77099
P.O. BOX 741905, HOUSTON, TEXAS 77274

TEL: (281) 495-2400
FAX: (281) 495-2410

CLIENT:	ALS Group USA, Corp.	**REQUESTED BY:**	Ms. Sonia West
CLIENT PROJECT:	1303855-01G	**PURCHASE ORDER NO:**	10-2125597
LABORATORY NO:	70395	**REPORT DATE:**	March 28, 2013
SAMPLE:	1303855-01G (WW Effluent)		

TEST **RESULT**

API Gravity of Petroleum Products, Hydrometer Method (Density, Relative Density, Specific Gravity), ASTM D 1298

	Results
Specific Gravity @ 60°F(15°C)	0.9998
Density, g/cm³	0.9958

Respectfully submitted
For Texas OilTech Laboratories, L.P.

A. Phillip Sorurbakhsh
Director of Laboratory Operations

ALS Environmental

12-Jul-2013

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-6733
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: **1307042**

Dear Aaron,

ALS Environmental received 2 samples on 28-Jun-2013 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 45.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager

Certificate No: T104704231-13-12

ALS Environmental

Date: 12-Jul-13

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1307042**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1307042-01	WW Effluent	Liquid		6/27/2013 14:15	6/28/2013 09:20	☐
1307042-02	Trip blank - 031213-77	Water		6/27/2013	6/28/2013 09:20	☑

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1307042

Case Narrative

Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.

Batch R150152, Bromide 300.0, Sample 1307265 Spent Blast 13-122: This sample was analyzed at a dilution due to matrix interference from high Sulfate concentrations.

Batch 71254, Semivolatile Organcis 8270, Sample SLCSDW1-130703: Insufficient sample was received for MS/MSD.

Batch 71235, Total Metals 200.8, Sample 1307088-05C: MS/MSD are for an unrelated sample.

Batch 71236 Total Metals 6020, Sample 13061143-05E: MS/MSD are for an unrelated sample.

Batch 71299 Total Mercury 7470, Sample 1307168-07C: MS/MSD are for an unrelated sample.

Batch R150118, Volatile Organics 8260, Sample 1307106-08A: MS/MSD are for an unrelated sample.

ALS Environmental

Date: *12-Jul-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 6/27/2013 02:15 PM

Work Order: 1307042
Lab ID: 1307042-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TOTAL RECOVERABLE METALS			**E200.8**		E200.8		Analyst: **SKS**
Calcium	**70.5**		**10.0**	**mg/L**	20	7/3/2013	7/5/2013 01:39 PM
Magnesium	**20.8**		**10.0**	**mg/L**	20	7/3/2013	7/5/2013 01:39 PM
Potassium	**16.1**		**5.00**	**mg/L**	10	7/3/2013	7/3/2013 04:09 PM
Sodium	**1,500**		**20.0**	**mg/L**	100	7/3/2013	7/3/2013 03:10 PM
MERCURY-SW7470A			**SW7470**		SW7470		Analyst: **OFO**
Mercury	ND		0.000200	mg/L	1	7/5/2013	7/5/2013 03:34 PM
METALS			**SW6020**		SW3010A		Analyst: **ALR**
Aluminum	**2.57**		**0.0200**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Arsenic	**0.0367**	*	**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Barium	**0.0711**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Beryllium	ND		0.00400	mg/L	2	7/3/2013	7/4/2013 03:44 AM
Boron	**0.282**		**0.100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Cadmium	ND		0.00400	mg/L	2	7/3/2013	7/4/2013 03:44 AM
Calcium	**62.1**		**1.00**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Chromium	ND		0.0100	mg/L	2	7/3/2013	7/4/2013 03:44 AM
Cobalt	ND		0.0100	mg/L	2	7/3/2013	7/4/2013 03:44 AM
Copper	**0.0268**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Iron	**0.567**		**0.400**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Lead	ND		0.0100	mg/L	2	7/3/2013	7/4/2013 03:44 AM
Magnesium	**20.1**		**0.400**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Manganese	**0.0489**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Molybdenum	**0.123**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Nickel	**0.0125**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Potassium	**16.0**		**2.00**	**mg/L**	10	7/3/2013	7/5/2013 01:49 PM
Selenium	**0.810**	*	**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Silver	ND		0.0100	mg/L	2	7/3/2013	7/4/2013 03:44 AM
Sodium	**1,400**		**2.00**	**mg/L**	10	7/3/2013	7/5/2013 01:49 PM
Vanadium	**0.0340**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
Zinc	**0.0950**		**0.0100**	**mg/L**	2	7/3/2013	7/4/2013 03:44 AM
SEMIVOLATILES - SW8270D			**SW8270**		SW3510		Analyst: **JLJ**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
1-Methylnaphthalene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
2-Methylphenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Jul-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 6/27/2013 02:15 PM

Work Order: 1307042
Lab ID: 1307042-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
2-Nitroaniline	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
2-Nitrophenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
3-Nitroaniline	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
4-Nitroaniline	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
4-Nitrophenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Acenaphthene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Acenaphthylene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Aniline	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Anthracene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Benzidine	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Hexachloroethane	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Isophorone	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Naphthalene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Nitrobenzene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Pentachlorophenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Phenanthrene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Phenol	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Pyrene	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Pyridine	ND		0.0050	mg/L	1	7/3/2013	7/3/2013 05:17 PM
Surr: 2,4,6-Tribromophenol	*69.4*		*42-124*	*%REC*	1	7/3/2013	7/3/2013 05:17 PM
Surr: 2-Fluorobiphenyl	*52.5*		*48-120*	*%REC*	1	7/3/2013	7/3/2013 05:17 PM
Surr: 2-Fluorophenol	*55.5*		*20-120*	*%REC*	1	7/3/2013	7/3/2013 05:17 PM
Surr: 4-Terphenyl-d14	*65.3*		*51-135*	*%REC*	1	7/3/2013	7/3/2013 05:17 PM
Surr: Nitrobenzene-d5	*58.9*		*41-120*	*%REC*	1	7/3/2013	7/3/2013 05:17 PM
Surr: Phenol-d6	*71.0*		*20-120*	*%REC*	1	7/3/2013	7/3/2013 05:17 PM
VOLATILES - SW8260C			**SW8260**				Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
2-Butanone	ND		0.010	mg/L	1		7/7/2013 01:11 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Jul-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 6/27/2013 02:15 PM

Work Order: 1307042
Lab ID: 1307042-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1		7/7/2013 01:11 PM
2-Hexanone	ND		0.010	mg/L	1		7/7/2013 01:11 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1		7/7/2013 01:11 PM
Acetone	**0.014**		**0.010**	**mg/L**	1		7/7/2013 01:11 PM
Benzene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Bromodichloromethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Bromoform	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Bromomethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Carbon disulfide	ND		0.010	mg/L	1		7/7/2013 01:11 PM
Carbon tetrachloride	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Chlorobenzene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Chloroethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Chloroform	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Chloromethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Dibromochloromethane	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Ethylbenzene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
m,p-Xylene	ND		0.010	mg/L	1		7/7/2013 01:11 PM
Methylene chloride	ND		0.010	mg/L	1		7/7/2013 01:11 PM
Styrene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Tetrachloroethene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Toluene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Trichloroethene	ND		0.0050	mg/L	1		7/7/2013 01:11 PM
Vinyl acetate	ND		0.010	mg/L	1		7/7/2013 01:11 PM
Vinyl chloride	ND		0.0020	mg/L	1		7/7/2013 01:11 PM
Xylenes, Total	ND		0.015	mg/L	1		7/7/2013 01:11 PM
Surr: 1,2-Dichloroethane-d4	*104*		*70-125*	*%REC*	1		7/7/2013 01:11 PM
Surr: 4-Bromofluorobenzene	*99.8*		*72-125*	*%REC*	1		7/7/2013 01:11 PM
Surr: Dibromofluoromethane	*108*		*71-125*	*%REC*	1		7/7/2013 01:11 PM
Surr: Toluene-d8	*102*		*75-125*	*%REC*	1		7/7/2013 01:11 PM
REACTIVE CYANIDE			**SW-846**				Analyst: **SUB**
Reactive Cyanide	ND		40.0	mg/Kg	1		7/3/2013 11:00 AM
REACTIVE SULFIDE			**SW-846**				Analyst: **SUB**
Reactive Sulfide	ND		40.0	mg/Kg	1		7/3/2013 11:00 AM
MISCELLANEOUS ANALYSIS			**NA**				Analyst: **SUB**
Miscellaneous Analysis	**See Attached**				1		7/5/2013
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *12-Jul-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WW Effluent
Collection Date: 6/27/2013 02:15 PM

Work Order: 1307042
Lab ID: 1307042-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Bromide	ND		0.500	mg/L	5		7/8/2013 12:52 PM
Chloride	**265**		**2.50**	**mg/L**	5		7/8/2013 12:52 PM
Fluoride	**3.97**		**0.500**	**mg/L**	5		7/8/2013 12:52 PM
Sulfate	**3,560**		**50.0**	**mg/L**	100		7/8/2013 01:17 PM
Surr: Selenate (surr)	*110*		*85-115*	*%REC*	5		7/8/2013 12:52 PM
Surr: Selenate (surr)	*102*		*85-115*	*%REC*	100		7/8/2013 01:17 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**195**		**6.00**	**mg/L**	1		7/2/2013 10:53 AM
Alkalinity, Carbonate (As CaCO3)	ND		6.00	mg/L	1		7/2/2013 10:53 AM
Alkalinity, Total (As CaCO3)	**195**		**6.00**	**mg/L**	1		7/2/2013 10:53 AM
SPECIFIC CONDUCTIVITY			**M2510 B**				Analyst: **KL**
Specific Conductivity	**7,530**		**1.00**	**µmhos/cm**	1		7/2/2013 10:53 AM
IGNITIBILITY			**SW1010**				Analyst: **Avijeet**
Ignitability	*> 212*		50.0	°F	1		7/5/2013 02:40 PM
ION BALANCE - SM1030E			**SM1030E**				Analyst: **DCP**
Anions	**86**		**0.10**	**meq/L**	1		7/4/2013
Cations	**71**		**0.10**	**meq/L**	1		7/4/2013
Ion Balance % Diff.	**9.3**		**0.10**	**%**	1		7/4/2013
PH - SW9040C			**SW9040**				Analyst: **KL**
pH	**7.53**	H	**0.100**	**pH units**	1		7/2/2013 10:53 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**5,300**		**10.0**	**mg/L**	1		7/3/2013 12:40 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 12-Jul-13

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71235** Instrument ID **ICPMS05** Method: **E200.8**

MBLK Sample ID: **MBLKW1-070313-71235** Units: **µg/L** Analysis Date: **7/3/2013 03:03 PM**

Client ID: Run ID: **ICPMS05_130703A** SeqNo: **3277636** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	ND	500								
Magnesium	ND	500								
Potassium	ND	500								
Sodium	ND	200								

LCS Sample ID: **MLCSW1-070313-71235** Units: **µg/L** Analysis Date: **7/3/2013 03:05 PM**

Client ID: Run ID: **ICPMS05_130703A** SeqNo: **3277637** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5056	500	5000	0	101	85-115				
Magnesium	5140	500	5000	0	103	85-115				
Potassium	4975	500	5000	0	99.5	85-115				
Sodium	4942	200	5000	0	98.8	85-115				

MS Sample ID: **1307088-05CMS** Units: **µg/L** Analysis Date: **7/3/2013 03:32 PM**

Client ID: Run ID: **ICPMS05_130703A** SeqNo: **3277653** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	77070	500	5000	73180	77.7	70-130				O
Magnesium	30480	500	5000	26200	85.6	70-130				O
Potassium	8765	500	5000	3973	95.8	70-130				
Sodium	54460	200	5000	51090	67.6	70-130				SO

MSD Sample ID: **1307088-05CMSD** Units: **µg/L** Analysis Date: **7/3/2013 03:34 PM**

Client ID: Run ID: **ICPMS05_130703A** SeqNo: **3277655** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	76740	500	5000	73180	71	70-130	77070	0.435	20	O
Magnesium	30730	500	5000	26200	90.6	70-130	30480	0.816	20	O
Potassium	8679	500	5000	3973	94.1	70-130	8765	0.986	20	
Sodium	55220	200	5000	51090	82.7	70-130	54460	1.38	20	O

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71235** Instrument ID **ICPMS05** Method: **E200.8**

DUP Sample ID: **1307088-05CDUP** Units: **µg/L** Analysis Date: **7/3/2013 03:29 PM**

Client ID: Run ID: **ICPMS05_130703A** SeqNo: **3277647** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	73270	500					73180	0.117	20	
Magnesium	27240	500					26200	3.87	20	
Potassium	4024	500					3973	1.28	20	
Sodium	52930	200					51090	3.55	20	

The following samples were analyzed in this batch: 1307042-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71236** Instrument ID **ICP7500** Method: **SW6020**

MBLK Sample ID: **MBLKW2-070313-71236** Units: **mg/L** Analysis Date: **7/4/2013 01:18 AM**

Client ID: Run ID: **ICP7500_130703A** SeqNo: **3278531** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Calcium	ND	0.50								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Magnesium	ND	0.20								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Sodium	ND	0.20								
Vanadium	ND	0.0050								
Zinc	ND	0.0050								

MBLK Sample ID: **MBLKW2-070313-71236** Units: **mg/L** Analysis Date: **7/5/2013 01:34 PM**

Client ID: Run ID: **ICP7500_130705A** SeqNo: **3279307** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	ND	0.20								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71236** Instrument ID **ICP7500** Method: **SW6020**

LCS Sample ID: **MLCSW2-070313-71236** Units: **mg/L** Analysis Date: **7/4/2013 01:23 AM**

Client ID: Run ID: **ICP7500_130703A** SeqNo: **3278532** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1074	0.010	0.1	0	107	80-120				
Arsenic	0.04665	0.0050	0.05	0	93.3	80-120				
Barium	0.04916	0.0050	0.05	0	98.3	80-120				
Beryllium	0.04715	0.0020	0.05	0	94.3	80-120				
Boron	0.4363	0.050	0.5	0	87.3	80-120				
Cadmium	0.04595	0.0020	0.05	0	91.9	80-120				
Calcium	4.939	0.50	5	0	98.8	80-120				
Chromium	0.04645	0.0050	0.05	0	92.9	80-120				
Cobalt	0.04542	0.0050	0.05	0	90.8	80-120				
Copper	0.04757	0.0050	0.05	0	95.1	80-120				
Iron	4.597	0.20	5	0	91.9	80-120				
Lead	0.04602	0.0050	0.05	0	92	80-120				
Magnesium	4.949	0.20	5	0	99	80-120				
Manganese	0.04668	0.0050	0.05	0	93.4	80-120				
Molybdenum	0.04473	0.0050	0.05	0	89.5	80-120				
Nickel	0.04568	0.0050	0.05	0	91.4	80-120				
Selenium	0.04568	0.0050	0.05	0	91.4	80-120				
Silver	0.04504	0.0050	0.05	0	90.1	80-120				
Sodium	4.96	0.20	5	0	99.2	80-120				
Vanadium	0.04681	0.0050	0.05	0	93.6	80-120				
Zinc	0.04614	0.0050	0.05	0	92.3	80-120				

LCS Sample ID: **MLCSW2-070313-71236** Units: **mg/L** Analysis Date: **7/5/2013 01:39 PM**

Client ID: Run ID: **ICP7500_130705A** SeqNo: **3279308** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	4.947	0.20	5	0	98.9	80-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71236** Instrument ID **ICP7500** Method: **SW6020**

MS Sample ID: **13061143-05EMS** Units: **mg/L** Analysis Date: **7/4/2013 01:42 AM**

Client ID: Run ID: **ICP7500_130703A** SeqNo: **3278537** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2053	0.010	0.1	0.09859	107	80-120				
Arsenic	0.05031	0.0050	0.05	0.002259	96.1	80-120				
Barium	0.1431	0.0050	0.05	0.09807	90.1	80-120				
Beryllium	0.04734	0.0020	0.05	0.0001126	94.5	80-120				
Boron	0.5806	0.050	0.5	0.1514	85.8	80-120				
Cadmium	0.04592	0.0020	0.05	0.0000368	91.8	80-120				
Calcium	95.25	0.50	5	91.12	82.6	80-120				O
Chromium	0.04806	0.0050	0.05	0.0002598	95.6	80-120				
Cobalt	0.04564	0.0050	0.05	-0.00005296	91.4	80-120				
Copper	0.04806	0.0050	0.05	0.001675	92.8	80-120				
Iron	4.797	0.20	5	0.05061	94.9	80-120				
Lead	0.04596	0.0050	0.05	0.0006849	90.6	80-120				
Magnesium	12.63	0.20	5	8.112	90.4	80-120				
Manganese	0.05341	0.0050	0.05	0.006173	94.5	80-120				
Molybdenum	0.04519	0.0050	0.05	0.001619	87.1	80-120				
Nickel	0.04625	0.0050	0.05	0.0006686	91.2	80-120				
Selenium	0.04928	0.0050	0.05	0.002189	94.2	80-120				
Silver	0.04375	0.0050	0.05	0.0005337	86.4	80-120				
Sodium	28.7	0.20	5	24.6	82	80-120				O
Vanadium	0.05167	0.0050	0.05	0.002773	97.8	80-120				
Zinc	0.08137	0.0050	0.05	0.03883	85.1	80-120				

MS Sample ID: **13061143-05EMS** Units: **mg/L** Analysis Date: **7/5/2013 03:13 PM**

Client ID: Run ID: **ICP7500_130705A** SeqNo: **3280382** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	5.866	0.20	5	0.6949	103	80-120				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71236** Instrument ID **ICP7500** Method: **SW6020**

MSD Sample ID: **13061143-05EMSD** Units: **mg/L** Analysis Date: **7/4/2013 01:47 AM**

Client ID: Run ID: **ICP7500_130703A** SeqNo: **3278538** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2066	0.010	0.1	0.09859	108	80-120	0.2053	0.631	15	
Arsenic	0.049	0.0050	0.05	0.002259	93.5	80-120	0.05031	2.64	15	
Barium	0.1457	0.0050	0.05	0.09807	95.3	80-120	0.1431	1.8	15	
Beryllium	0.04846	0.0020	0.05	0.0001126	96.7	80-120	0.04734	2.34	15	
Boron	0.5825	0.050	0.5	0.1514	86.2	80-120	0.5806	0.327	15	
Cadmium	0.04686	0.0020	0.05	0.0000368	93.6	80-120	0.04592	2.03	15	
Calcium	94	0.50	5	91.12	57.6	80-120	95.25	1.32	15	SO
Chromium	0.04638	0.0050	0.05	0.0002598	92.2	80-120	0.04806	3.56	15	
Cobalt	0.04402	0.0050	0.05	-0.00005296	88.1	80-120	0.04564	3.61	15	
Copper	0.04538	0.0050	0.05	0.001675	87.4	80-120	0.04806	5.74	15	
Iron	4.612	0.20	5	0.05061	91.2	80-120	4.797	3.93	15	
Lead	0.04674	0.0050	0.05	0.0006849	92.1	80-120	0.04596	1.68	15	
Magnesium	12.59	0.20	5	8.112	89.6	80-120	12.63	0.317	15	
Manganese	0.05142	0.0050	0.05	0.006173	90.5	80-120	0.05341	3.8	15	
Molybdenum	0.04545	0.0050	0.05	0.001619	87.7	80-120	0.04519	0.574	15	
Nickel	0.04512	0.0050	0.05	0.0006686	88.9	80-120	0.04625	2.47	15	
Selenium	0.0475	0.0050	0.05	0.002189	90.6	80-120	0.04928	3.68	15	
Silver	0.04336	0.0050	0.05	0.0005337	85.7	80-120	0.04375	0.895	15	
Sodium	28.7	0.20	5	24.6	82	80-120	28.7	0	15	O
Vanadium	0.04929	0.0050	0.05	0.002773	93	80-120	0.05167	4.71	15	
Zinc	0.07916	0.0050	0.05	0.03883	80.7	80-120	0.08137	2.75	15	

MSD Sample ID: **13061143-05EMSD** Units: **mg/L** Analysis Date: **7/5/2013 03:18 PM**

Client ID: Run ID: **ICP7500_130705A** SeqNo: **3280383** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	5.83	0.20	5	0.6949	103	80-120	5.866	0.616	15	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71236** Instrument ID **ICP7500** Method: **SW6020**

DUP Sample ID: **13061143-05EDUP** Units: **mg/L** Analysis Date: **7/4/2013 01:32 AM**

Client ID: Run ID: **ICP7500_130703A** SeqNo: **3278535** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09583	0.010					0.09859	2.84	25	
Arsenic	ND	0.0050					0.002259	0	25	
Barium	0.09501	0.0050					0.09807	3.17	25	
Beryllium	ND	0.0020					0.0001126	0	25	
Boron	0.1477	0.050					0.1514	2.47	25	
Cadmium	ND	0.0020					0.0000368	0	25	
Calcium	87.82	0.50					91.12	3.69	25	
Chromium	ND	0.0050					0.0002598	0	25	
Cobalt	ND	0.0050					-0.00005296	0	25	
Copper	ND	0.0050					0.001675	0	25	
Iron	ND	0.20					0.05061	0	25	
Lead	ND	0.0050					0.0006849	0	25	
Magnesium	7.868	0.20					8.112	3.05	25	
Manganese	0.005695	0.0050					0.006173	8.06	25	
Molybdenum	ND	0.0050					0.001619	0	25	
Nickel	ND	0.0050					0.0006686	0	25	
Selenium	ND	0.0050					0.002189	0	25	
Silver	ND	0.0050					0.0005337	0	25	
Sodium	23.94	0.20					24.6	2.72	25	
Vanadium	ND	0.0050					0.002773	0	25	
Zinc	0.03391	0.0050					0.03883	13.5	25	

DUP Sample ID: **13061143-05EDUP** Units: **mg/L** Analysis Date: **7/5/2013 03:03 PM**

Client ID: Run ID: **ICP7500_130705A** SeqNo: **3280380** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Potassium	0.6928	0.20					0.6949	0.303	25	

The following samples were analyzed in this batch: 1307042-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71299** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW3-070513-71299** Units: **mg/L** Analysis Date: **7/5/2013 03:18 PM**
Client ID: Run ID: **MERCURY_130703A** SeqNo: **3279620** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW3-070513-71299** Units: **mg/L** Analysis Date: **7/5/2013 03:20 PM**
Client ID: Run ID: **MERCURY_130703A** SeqNo: **3279621** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00458	0.00020	0.005	0	91.6	85-115				

MS Sample ID: **1307168-07CMS** Units: **mg/L** Analysis Date: **7/5/2013 03:26 PM**
Client ID: Run ID: **MERCURY_130703A** SeqNo: **3279624** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00306	0.00020	0.005	-0.000002	61.2	85-115				S

MSD Sample ID: **1307168-07CMSD** Units: **mg/L** Analysis Date: **7/5/2013 03:28 PM**
Client ID: Run ID: **MERCURY_130703A** SeqNo: **3279625** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00311	0.00020	0.005	-0.000002	62.2	85-115	0.00306	1.62	20	S

DUP Sample ID: **1307168-07CDUP** Units: **mg/L** Analysis Date: **7/5/2013 03:24 PM**
Client ID: Run ID: **MERCURY_130703A** SeqNo: **3279623** Prep Date: **7/5/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020					-0.000002	0	20	

The following samples were analyzed in this batch: 1307042-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71254** Instrument ID **SV-3** Method: **SW8270**

MBLK Sample ID: **SBLKW1-130703-71254** Units: **µg/L** Analysis Date: **7/3/2013 01:05 PM**

Client ID: Run ID: **SV-3_130703A** SeqNo: **3279556** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
1-Methylnaphthalene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidine	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	71.1	5.0	*100*	*0*	*71.1*	*42-124*		*0*		
Surr: 2-Fluorobiphenyl	78.23	5.0	*100*	*0*	*78.2*	*48-120*		*0*		
Surr: 2-Fluorophenol	80.51	5.0	*100*	*0*	*80.5*	*20-120*		*0*		
Surr: 4-Terphenyl-d14	84.28	5.0	*100*	*0*	*84.3*	*51-135*		*0*		
Surr: Nitrobenzene-d5	84.47	5.0	*100*	*0*	*84.5*	*41-120*		*0*		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **71254** Instrument ID **SV-3** Method: **SW8270**

Surr: Phenol-d6	78.65	5.0	*100*	*0*	*78.6*	*20-120*	*0*

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71254** Instrument ID **SV-3** Method: **SW8270**

LCS Sample ID: **SLCSW1-130703-71254** Units: **µg/L** Analysis Date: **7/3/2013 01:28 PM**

Client ID: Run ID: **SV-3_130703A** SeqNo: **3279557** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	32.66	5.0	50	0	65.3	50-120				
1-Methylnaphthalene	35.97	5.0	50	0	71.9	55-120				
2,4,5-Trichlorophenol	61.88	5.0	100	0	61.9	50-120				
2,4,6-Trichlorophenol	59.33	5.0	100	0	59.3	50-120				
2,4-Dinitrotoluene	33.03	5.0	50	0	66.1	50-120				
2-Methylnaphthalene	34.54	5.0	50	0	69.1	55-120				
2-Methylphenol	75.01	5.0	100	0	75	50-120				
2-Nitroaniline	44.76	5.0	50	0	89.5	55-125				
2-Nitrophenol	67.19	5.0	100	0	67.2	55-120				
3&4-Methylphenol	116.3	5.0	150	0	77.5	45-120				
3-Nitroaniline	16.95	5.0	50	0	33.9	25-120				
4-Nitroaniline	26.85	5.0	50	0	53.7	50-120				
4-Nitrophenol	78.89	5.0	100	0	78.9	45-120				
Acenaphthene	35.13	5.0	50	0	70.3	55-120				
Acenaphthylene	36.2	5.0	50	0	72.4	55-120				
Aniline	21.59	5.0	50	0	43.2	30-120				
Anthracene	36.76	5.0	50	0	73.5	55-120				
Benz(a)anthracene	33.98	5.0	50	0	68	55-120				
Benzidine	6.753	5.0	50	0	13.5	10-120				
Hexachlorobenzene	31.63	5.0	50	0	63.3	55-120				
Hexachloroethane	34.14	5.0	50	0	68.3	55-120				
Indeno(1,2,3-cd)pyrene	28.76	5.0	50	0	57.5	55-120				
Isophorone	35.06	5.0	50	0	70.1	55-120				
Naphthalene	35.81	5.0	50	0	71.6	55-120				
Nitrobenzene	36.11	5.0	50	0	72.2	55-120				
N-Nitrosodimethylamine	33.57	5.0	50	0	67.1	45-120				
N-Nitrosodi-n-propylamine	39.77	5.0	50	0	79.5	50-120				
N-Nitrosodiphenylamine	35.9	5.0	50	0	71.8	55-120				
Pentachlorophenol	64.26	5.0	100	0	64.3	55-120				
Phenanthrene	36.6	5.0	50	0	73.2	55-120				
Phenol	76.26	5.0	100	0	76.3	50-120				
Pyrene	36.84	5.0	50	0	73.7	55-120				
Pyridine	25.94	5.0	50	0	51.9	35-120				
Surr: 2,4,6-Tribromophenol	67.81	5.0	*100*	*0*	*67.8*	*42-124*		*0*		
Surr: 2-Fluorobiphenyl	68.38	5.0	*100*	*0*	*68.4*	*48-120*		*0*		
Surr: 2-Fluorophenol	80.68	5.0	*100*	*0*	*80.7*	*20-120*		*0*		
Surr: 4-Terphenyl-d14	78.23	5.0	*100*	*0*	*78.2*	*51-135*		*0*		
Surr: Nitrobenzene-d5	75.02	5.0	*100*	*0*	*75*	*41-120*		*0*		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **71254** Instrument ID **SV-3** Method: **SW8270**

Surr: Phenol-d6	84.37	5.0	*100*	*0*	*84.4*	*20-120*	*0*

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71254** Instrument ID **SV-3** Method: **SW8270**

LCSD Sample ID: **SLCSDW1-130703-71254** Units: **µg/L** Analysis Date: **7/3/2013 01:51 PM**

Client ID: Run ID: **SV-3_130703A** SeqNo: **3279558** Prep Date: **7/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	34.02	5.0	50	0	68	50-120	32.66	4.05	20	
1-Methylnaphthalene	37.34	5.0	50	0	74.7	55-120	35.97	3.74	20	
2,4,5-Trichlorophenol	63.87	5.0	100	0	63.9	50-120	61.88	3.17	20	
2,4,6-Trichlorophenol	61.58	5.0	100	0	61.6	50-120	59.33	3.74	20	
2,4-Dinitrotoluene	34.24	5.0	50	0	68.5	50-120	33.03	3.59	20	
2-Methylnaphthalene	35.38	5.0	50	0	70.8	55-120	34.54	2.41	20	
2-Methylphenol	76.09	5.0	100	0	76.1	50-120	75.01	1.42	20	
2-Nitroaniline	43.78	5.0	50	0	87.6	55-125	44.76	2.21	20	
2-Nitrophenol	68.91	5.0	100	0	68.9	55-120	67.19	2.52	20	
3&4-Methylphenol	117.2	5.0	150	0	78.2	45-120	116.3	0.827	20	
3-Nitroaniline	14.19	5.0	50	0	28.4	25-120	16.95	17.8	20	
4-Nitroaniline	26.05	5.0	50	0	52.1	50-120	26.85	3.04	20	
4-Nitrophenol	76.21	5.0	100	0	76.2	45-120	78.89	3.45	20	
Acenaphthene	35.06	5.0	50	0	70.1	55-120	35.13	0.204	20	
Acenaphthylene	35.4	5.0	50	0	70.8	55-120	36.2	2.24	20	
Aniline	22.93	5.0	50	0	45.9	30-120	21.59	6.05	20	
Anthracene	36.95	5.0	50	0	73.9	55-120	36.76	0.526	20	
Benz(a)anthracene	34.94	5.0	50	0	69.9	55-120	33.98	2.8	20	
Benzidine	6.621	5.0	50	0	13.2	10-120	6.753	1.97	20	
Hexachlorobenzene	32.55	5.0	50	0	65.1	55-120	31.63	2.86	20	
Hexachloroethane	35.22	5.0	50	0	70.4	55-120	34.14	3.1	20	
Indeno(1,2,3-cd)pyrene	32.92	5.0	50	0	65.8	55-120	28.76	13.5	20	
Isophorone	36.19	5.0	50	0	72.4	55-120	35.06	3.19	20	
Naphthalene	36.54	5.0	50	0	73.1	55-120	35.81	2.03	20	
Nitrobenzene	36.8	5.0	50	0	73.6	55-120	36.11	1.91	20	
N-Nitrosodimethylamine	35.54	5.0	50	0	71.1	45-120	33.57	5.71	20	
N-Nitrosodi-n-propylamine	39.51	5.0	50	0	79	50-120	39.77	0.671	20	
N-Nitrosodiphenylamine	37.25	5.0	50	0	74.5	55-120	35.9	3.69	20	
Pentachlorophenol	68.57	5.0	100	0	68.6	55-120	64.26	6.49	20	
Phenanthrene	36.39	5.0	50	0	72.8	55-120	36.6	0.568	20	
Phenol	77.4	5.0	100	0	77.4	50-120	76.26	1.48	20	
Pyrene	40.7	5.0	50	0	81.4	55-120	36.84	9.94	20	
Pyridine	27.64	5.0	50	0	55.3	35-120	25.94	6.33	20	
Surr: 2,4,6-Tribromophenol	67.51	5.0	*100*	*0*	*67.5*	*42-124*	*67.81*	*0.449*	*20*	
Surr: 2-Fluorobiphenyl	64.93	5.0	*100*	*0*	*64.9*	*48-120*	*68.38*	*5.19*	*20*	
Surr: 2-Fluorophenol	82.59	5.0	*100*	*0*	*82.6*	*20-120*	*80.68*	*2.35*	*20*	
Surr: 4-Terphenyl-d14	82.4	5.0	*100*	*0*	*82.4*	*51-135*	*78.23*	*5.19*	*20*	
Surr: Nitrobenzene-d5	73.38	5.0	*100*	*0*	*73.4*	*41-120*	*75.02*	*2.22*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **71254** Instrument ID **SV-3** Method: **SW8270**

Surr: Phenol-d6	84.04	5.0	*100*	*0*	*84*	*20-120*	*84.37*	*0.39*	*20*

The following samples were analyzed in this batch: 1307042-01F

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150118** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-130707-R150118** Units: **µg/L** Analysis Date: **7/7/2013 12:22 PM**

Client ID: Run ID: **VOA1_130707A** SeqNo: **3280506** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	49.64	5.0	*50*	*0*	*99.3*	*70-125*		*0*		
Surr: 4-Bromofluorobenzene	49.36	5.0	*50*	*0*	*98.7*	*72-125*		*0*		
Surr: Dibromofluoromethane	52.68	5.0	*50*	*0*	*105*	*71-125*		*0*		
Surr: Toluene-d8	48.95	5.0	*50*	*0*	*97.9*	*75-125*		*0*		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150118** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-130707-R150118** Units: **µg/L** Analysis Date: **7/7/2013 11:07 AM**

Client ID: Run ID: **VOA1_130707A** SeqNo: **3280505** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	47.23	5.0	50	0	94.5	80-120				
1,1,2,2-Tetrachloroethane	46.05	5.0	50	0	92.1	72-120				
1,1,2-Trichloroethane	44.76	5.0	50	0	89.5	80-120				
1,1-Dichloroethane	47.64	5.0	50	0	95.3	76-120				
1,1-Dichloroethene	50.04	5.0	50	0	100	73-124				
1,2-Dichloroethane	44.56	5.0	50	0	89.1	78-120				
2-Butanone	102.6	10	100	0	103	58-132				
2-Chloroethyl vinyl ether	83.88	10	100	0	83.9	74-120				
2-Hexanone	99.9	10	100	0	99.9	61-130				
4-Methyl-2-pentanone	97.23	10	100	0	97.2	65-127				
Acetone	111	10	100	0	111	59-137				
Benzene	47.49	5.0	50	0	95	73-121				
Bromodichloromethane	45.89	5.0	50	0	91.8	75-125				
Bromoform	53.56	5.0	50	0	107	70-130				
Bromomethane	46.86	5.0	50	0	93.7	60-145				
Carbon disulfide	96.8	10	100	0	96.8	68-141				
Carbon tetrachloride	50.15	5.0	50	0	100	75-125				
Chlorobenzene	48.4	5.0	50	0	96.8	80-120				
Chloroethane	51.29	5.0	50	0	103	70-130				
Chloroform	47.7	5.0	50	0	95.4	70-130				
Chloromethane	50.53	5.0	50	0	101	67-123				
cis-1,3-Dichloropropene	47.63	5.0	50	0	95.3	80-120				
Dibromochloromethane	50.94	5.0	50	0	102	80-120				
Ethylbenzene	47.32	5.0	50	0	94.6	80-120				
m,p-Xylene	91.83	10	100	0	91.8	78-121				
Methylene chloride	46.18	10	50	0	92.4	65-133				
Styrene	48.91	5.0	50	0	97.8	80-120				
Tetrachloroethene	46.69	5.0	50	0	93.4	79-120				
Toluene	48.21	5.0	50	0	96.4	80-120				
trans-1,3-Dichloropropene	46.66	5.0	50	0	93.3	80-120				
Trichloroethene	46.15	5.0	50	0	92.3	80-120				
Vinyl acetate	91.39	10	100	0	91.4	67-139				
Vinyl chloride	49.7	2.0	50	0	99.4	70-127				
Xylenes, Total	140.9	15	150	0	93.9	80-120				
Surr: 1,2-Dichloroethane-d4	47.65	5.0	*50*	*0*	*95.3*	*70-125*		*0*		
Surr: 4-Bromofluorobenzene	47.09	5.0	*50*	*0*	*94.2*	*72-125*		*0*		
Surr: Dibromofluoromethane	49.5	5.0	*50*	*0*	*99*	*71-125*		*0*		
Surr: Toluene-d8	48.29	5.0	*50*	*0*	*96.6*	*75-125*		*0*		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150118** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1307106-08AMS** Units: **µg/L** Analysis Date: **7/7/2013 01:36 PM**

Client ID: Run ID: **VOA1_130707A** SeqNo: **3280509** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.13	5.0	50	0	92.3	80-120				
1,1,2,2-Tetrachloroethane	45.61	5.0	50	0	91.2	72-120				
1,1,2-Trichloroethane	47.98	5.0	50	0	96	80-120				
1,1-Dichloroethane	48.94	5.0	50	0	97.9	76-120				
1,1-Dichloroethene	47.26	5.0	50	0	94.5	73-124				
1,2-Dichloroethane	49.63	5.0	50	0	99.3	78-120				
2-Butanone	102.2	10	100	0	102	58-132				
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120				S
2-Hexanone	110.3	10	100	0	110	61-130				
4-Methyl-2-pentanone	110	10	100	0	110	65-127				
Acetone	116	10	100	6.409	110	59-137				
Benzene	47.52	5.0	50	0	95	73-121				
Bromodichloromethane	46.56	5.0	50	0	93.1	75-125				
Bromoform	52.62	5.0	50	0	105	70-130				
Bromomethane	31.82	5.0	50	0	63.6	60-145				
Carbon disulfide	89.89	10	100	0	89.9	68-141				
Carbon tetrachloride	45	5.0	50	0	90	75-125				
Chlorobenzene	47.19	5.0	50	0	94.4	80-120				
Chloroethane	50.63	5.0	50	0	101	70-130				
Chloroform	46.47	5.0	50	0	92.9	70-130				
Chloromethane	40.11	5.0	50	0	80.2	67-123				
cis-1,3-Dichloropropene	43.61	5.0	50	0	87.2	80-120				
Dibromochloromethane	48.88	5.0	50	0	97.8	80-120				
Ethylbenzene	45.18	5.0	50	0	90.4	80-120				
m,p-Xylene	88.7	10	100	0	88.7	78-121				
Methylene chloride	45.7	10	50	0	91.4	65-133				
Styrene	46.62	5.0	50	0	93.2	80-120				
Tetrachloroethene	43.62	5.0	50	0	87.2	79-120				
Toluene	45.75	5.0	50	0	91.5	80-120				
trans-1,3-Dichloropropene	47.51	5.0	50	0	95	80-120				
Trichloroethene	43.42	5.0	50	0	86.8	80-120				
Vinyl acetate	98.22	10	100	0	98.2	67-139				
Vinyl chloride	47.43	2.0	50	0	94.9	70-127				
Xylenes, Total	134.2	15	150	0	89.4	80-120				
Surr: 1,2-Dichloroethane-d4	47.66	5.0	*50*	*0*	*95.3*	*70-125*		*0*		
Surr: 4-Bromofluorobenzene	48.19	5.0	*50*	*0*	*96.4*	*72-125*		*0*		
Surr: Dibromofluoromethane	50.74	5.0	*50*	*0*	*101*	*71-125*		*0*		
Surr: Toluene-d8	50.96	5.0	*50*	*0*	*102*	*75-125*		*0*		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150118** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1307106-08AMSD** Units: **µg/L** Analysis Date: **7/7/2013 02:01 PM**

Client ID: Run ID: **VOA1_130707A** SeqNo: **3280510** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.68	5.0	50	0	97.4	80-120	46.13	5.38	20	
1,1,2,2-Tetrachloroethane	47.05	5.0	50	0	94.1	72-120	45.61	3.11	20	
1,1,2-Trichloroethane	46.2	5.0	50	0	92.4	80-120	47.98	3.77	20	
1,1-Dichloroethane	46.83	5.0	50	0	93.7	76-120	48.94	4.42	20	
1,1-Dichloroethene	51.93	5.0	50	0	104	73-124	47.26	9.42	20	
1,2-Dichloroethane	47.91	5.0	50	0	95.8	78-120	49.63	3.53	20	
2-Butanone	98.64	10	100	0	98.6	58-132	102.2	3.5	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	105.8	10	100	0	106	61-130	110.3	4.17	20	
4-Methyl-2-pentanone	108.9	10	100	0	109	65-127	110	1.03	20	
Acetone	116	10	100	6.409	110	59-137	116	0.0304	20	
Benzene	46.45	5.0	50	0	92.9	73-121	47.52	2.28	20	
Bromodichloromethane	49.77	5.0	50	0	99.5	75-125	46.56	6.66	20	
Bromoform	52.4	5.0	50	0	105	70-130	52.62	0.427	20	
Bromomethane	35.97	5.0	50	0	71.9	60-145	31.82	12.3	20	
Carbon disulfide	95.8	10	100	0	95.8	68-141	89.89	6.36	20	
Carbon tetrachloride	49.12	5.0	50	0	98.2	75-125	45	8.77	20	
Chlorobenzene	47.2	5.0	50	0	94.4	80-120	47.19	0.0303	20	
Chloroethane	46.14	5.0	50	0	92.3	76-121	50.63	9.28	20	
Chloroform	46.84	5.0	50	0	93.7	70-130	46.47	0.798	20	
Chloromethane	41.02	5.0	50	0	82	67-123	40.11	2.24	20	
cis-1,3-Dichloropropene	45.49	5.0	50	0	91	80-120	43.61	4.22	20	
Dibromochloromethane	49.14	5.0	50	0	98.3	80-120	48.88	0.525	20	
Ethylbenzene	44.6	5.0	50	0	89.2	80-120	45.18	1.31	20	
m,p-Xylene	90.46	10	100	0	90.5	78-121	88.7	1.96	20	
Methylene chloride	45.23	10	50	0	90.5	65-133	45.7	1.04	20	
Styrene	48.01	5.0	50	0	96	80-120	46.62	2.92	20	
Tetrachloroethene	43.63	5.0	50	0	87.3	79-120	43.62	0.0174	20	
Toluene	45.02	5.0	50	0	90	80-120	45.75	1.6	20	
trans-1,3-Dichloropropene	47.46	5.0	50	0	94.9	80-120	47.51	0.108	20	
Trichloroethene	46.87	5.0	50	0	93.7	80-120	43.42	7.64	20	
Vinyl acetate	99.58	10	100	0	99.6	67-139	98.22	1.38	20	
Vinyl chloride	48.43	2.0	50	0	96.9	70-127	47.43	2.07	20	
Xylenes, Total	136.9	15	150	0	91.2	78-121	134.2	1.99	20	
Surr: 1,2-Dichloroethane-d4	46.03	5.0	*50*	*0*	*92.1*	*70-125*	*47.66*	*3.48*	*20*	
Surr: 4-Bromofluorobenzene	47.15	5.0	*50*	*0*	*94.3*	*72-125*	*48.19*	*2.18*	*20*	
Surr: Dibromofluoromethane	50.44	5.0	*50*	*0*	*101*	*71-125*	*50.74*	*0.588*	*20*	
Surr: Toluene-d8	49.2	5.0	*50*	*0*	*98.4*	*75-125*	*50.96*	*3.52*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150118** Instrument ID **VOA1** Method: **SW8260**

The following samples were analyzed in this batch: 1307042-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R149885** Instrument ID **ManTech01** Method: **SW9040** **(Dissolve)**

LCS Sample ID: **LCS-PH-R149885** Units: **pH units** Analysis Date: **7/2/2013 10:46 AM**

Client ID: Run ID: **MANTECH01_130702A** SeqNo: **3275512** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.02	0.10	6	0	100	90-110				

DUP Sample ID: **1307042-01CDUP** Units: **pH units** Analysis Date: **7/2/2013 10:59 AM**

Client ID: **WW Effluent** Run ID: **MANTECH01_130702A** SeqNo: **3275515** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.55	0.10					7.53	0.265	20	H
Temp Deg C @pH	22.32	0					22.31	0.0448		H

The following samples were analyzed in this batch: 1307042-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R149886** Instrument ID **ManTech01** Method: **M2510 B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-130702-R149886** Units: **µmhos/cm** Analysis Date: **7/2/2013 10:37 AM**
Client ID: Run ID: **MANTECH01_130702B** SeqNo: **3275537** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **LCS-COND-R149886** Units: **µmhos/cm** Analysis Date: **7/2/2013 10:48 AM**
Client ID: Run ID: **MANTECH01_130702B** SeqNo: **3275540** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1396	1.0	1413	0	98.8	80-120				

DUP Sample ID: **1307042-01DDUP** Units: **µmhos/cm** Analysis Date: **7/2/2013 10:59 AM**
Client ID: **WW Effluent** Run ID: **MANTECH01_130702B** SeqNo: **3275542** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	7535	1.0					7535	0	20	

The following samples were analyzed in this batch: 1307042-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R149890** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-130702-R149890** Units: **mg/L** Analysis Date: **7/2/2013 10:37 AM**
Client ID: Run ID: **MANTECH01_130702D** SeqNo: **3275608** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	6.0								
Alkalinity, Carbonate (As CaCO3)	ND	6.0								
Alkalinity, Total (As CaCO3)	ND	6.0								

LCS Sample ID: **WLCSW1-130702-R149890** Units: **mg/L** Analysis Date: **7/2/2013 10:43 AM**
Client ID: Run ID: **MANTECH01_130702D** SeqNo: **3275609** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1133	6.0	1000	0	113	80-120				

DUP Sample ID: **1307042-01DDUP** Units: **mg/L** Analysis Date: **7/2/2013 10:59 AM**
Client ID: **WW Effluent** Run ID: **MANTECH01_130702D** SeqNo: **3275613** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	194.1	6.0					194.5	0.232	0	
Alkalinity, Carbonate (As CaCO3)	ND	6.0					0	0	0	
Alkalinity, Total (As CaCO3)	194.1	6.0					194.5	0.232	20	

DUP Sample ID: **13061194-01BDUP** Units: **mg/L** Analysis Date: **7/2/2013 11:17 AM**
Client ID: Run ID: **MANTECH01_130702D** SeqNo: **3275620** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	389.1	6.0					385	1.05	0	
Alkalinity, Carbonate (As CaCO3)	ND	6.0					0	0	0	
Alkalinity, Total (As CaCO3)	389.1	6.0					385	1.05	20	

The following samples were analyzed in this batch: 1307042-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150069** Instrument ID **WetChem** Method: **SW1010** **(Dissolve)**

LCS Sample ID: **LCS-R150069-R150069** Units: **°F** Analysis Date: **7/5/2013 02:40 PM**

Client ID: Run ID: **WETCHEM_130705H** SeqNo: **3279441** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	84	50	84	0	100	80-120				

DUP Sample ID: **1307042-01CDUP** Units: **°F** Analysis Date: **7/5/2013 02:40 PM**

Client ID: **WW Effluent** Run ID: **WETCHEM_130705H** SeqNo: **3280576** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	ND	50					0	0	25	

The following samples were analyzed in this batch: 1307042-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150088** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-070313-R150088** Units: **mg/L** Analysis Date: **7/3/2013 12:40 PM**
Client ID: Run ID: **BALANCE1_130703E** SeqNo: **3279789** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **WLCS-070313-R150088** Units: **mg/L** Analysis Date: **7/3/2013 12:40 PM**
Client ID: Run ID: **BALANCE1_130703E** SeqNo: **3279790** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1036	10	1000	0	104	85-115				

DUP Sample ID: **13061143-04FDUP** Units: **mg/L** Analysis Date: **7/3/2013 12:40 PM**
Client ID: Run ID: **BALANCE1_130703E** SeqNo: **3279772** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	794	10					794	0	20	

DUP Sample ID: **13061143-05FDUP** Units: **mg/L** Analysis Date: **7/3/2013 12:40 PM**
Client ID: Run ID: **BALANCE1_130703E** SeqNo: **3279774** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	384	10					374	2.64	20	

The following samples were analyzed in this batch: 1307042-01E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1307042
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R150152** Instrument ID **ICS2100** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R150152** Units: **mg/L** Analysis Date: **7/8/2013 12:27 PM**
Client ID: Run ID: **ICS2100_130708A** SeqNo: **3281090** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	ND	0.10								
Chloride	ND	0.50								
Fluoride	ND	0.10								
Sulfate	ND	0.50								
Surr: Selenate (surr)	5.342	0.10	*5*	*0*	*107*	*85-115*		*0*		

LCS Sample ID: **WLCSW1-R150152** Units: **mg/L** Analysis Date: **7/8/2013 12:12 PM**
Client ID: Run ID: **ICS2100_130708A** SeqNo: **3281088** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	4.301	0.10	4	0	108	90-110				
Chloride	21.01	0.50	20	0	105	90-110				
Fluoride	4.297	0.10	4	0	107	90-110				
Sulfate	21.25	0.50	20	0	106	90-110				
Surr: Selenate (surr)	4.815	0.10	*5*	*0*	*96.3*	*85-115*		*0*		

MS Sample ID: **1307042-01DMS** Units: **mg/L** Analysis Date: **7/8/2013 01:32 PM**
Client ID: **WW Effluent** Run ID: **ICS2100_130708A** SeqNo: **3281094** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	213.5	10	200	0	107	80-120				
Chloride	1267	50	1000	283	98.4	80-120				
Fluoride	220.2	10	200	2.83	109	80-120				
Sulfate	4729	50	1000	3564	116	80-120				
Surr: Selenate (surr)	496.9	10	*500*	*0*	*99.4*	*85-115*		*0*		

MSD Sample ID: **1307042-01DMSD** Units: **mg/L** Analysis Date: **7/8/2013 01:46 PM**
Client ID: **WW Effluent** Run ID: **ICS2100_130708A** SeqNo: **3281095** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	217.7	10	200	0	109	80-120	213.5	1.94	20	
Chloride	1288	50	1000	283	100	80-120	1267	1.61	20	
Fluoride	224.8	10	200	2.83	111	80-120	220.2	2.06	20	
Sulfate	4750	50	1000	3564	119	80-120	4729	0.456	20	
Surr: Selenate (surr)	506.6	10	*500*	*0*	*101*	*85-115*	*496.9*	*1.95*	*20*	

The following samples were analyzed in this batch: 1307042-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: **1307042**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
%	
°F	Farenheit degrees
µmhos/cm	
meq/L	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **28-Jun-13 09:20**

Work Order: **1307042** Received by: **RDH**

Checklist completed by Paresh M. Giga (eSignature) 01-Jul-13 (Date) Reviewed by: Sonia West (eSignature) 02-Jul-13 (Date)

Matrices: Liquid
Carrier name: FedEx

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☑	☐	☐
Custody seals intact on sample bottles?	☐	☐	☑
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

Temperature(s)/Thermometer(s): 1.2c/1.2c C/U IR1

Cooler(s)/Kit(s): 3493

Date/Time sample(s) sent to storage: 7/1/13 17:30

	Yes	No		
Water - VOA vials have zero headspace?	☑	☐	No VOA vials submitted	☐
Water - pH acceptable upon receipt?	☑	☐	N/A	☐
pH adjusted?	☐	☐	N/A	☑

pH adjusted by: -

Login Notes: Trip Blank sample was received but was not listed on the COC. This sample has been placed on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

☑ ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

1307042

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Copany	Bill To Company	Navajo Refining Copany	C	Total Metals (6020/7470) Heavy Metals Including As & Hg
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	Total Metals (200.8) Ca, K, Mg, Na
Address	501 East Main	Address	501 East Main	E	Anions (300) F, Cl, SO4, Br
				F	Alkalinity (Bicarbonate & Carbonate)
City/State/Zip	Artesia, NM 88210	City/State/Zip	Artesia, NM 88210	G	pH & Temperature
Phone	(575) 748-3311	Phone	(575) 748-3311	H	Conductivity
Fax	(575) 746-5451	Fax	(575) 746-5451	I	TDS, Cation/Anion Balance
e-Mail Address	aaron.strange@hollyfrontier.com	e-Mail Address	aaron.strange@hollyfrontier.com	J	RCI, Specific Gravity

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW Effluent	06/27/13	2:15 PM	Liquid	Yes	10	X	X	X	X	X	X	X	X	X	X	
2	Trip Blank																
3	Temperature Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign
Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
[signature]	6/27/2013	16:15		
Relinquished by:	Date:	Time:	Received by (Laboratory): [signature] 6/28/13 8:20	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

X	Level II: Standard QC	TRRP-Checklist
	Level III: Std QC + Raw Data	TRRP Level IV
	Level IV: SW846 CLP-Like	
	Other: _____	

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	Injection Well Quarterly
Samplers Name	Aaron Strange
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	6/27/2013 @ 14:10
End Date and Time	6/27/2013 @ 14:20

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall / Sample Location: Waste water effluent pumps to injection wells.

☐ P-849 sample point
☑ P-854 sample point
☐ P-856 sample point
☐ P-857 sample point

Containers	Size	Material	# of Containers	Preservatives: Neat (None)	HCL	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1	40-mL	VOA	3		X							VOC (8260) Select
2	1L	Amber Glass	2	X								SVOC (8270) Select
3	500-mL	Plastic	1			X						Total Metals (6020 / 7470) Heavy Metals Including As & Hg Total Metals 200.8 Ca, K, Mg, Na
4	1L	Plastic	2	X								R.C.I. Profile, and Conductivity
5	1L	Plastic	1	X								Anions (300) Cl, F, SO4, Br
6		with Anions										Alkalinity - EPA 310.1
7		with Anions										TDS
8	500-mL	Plastic	1	X								Specific Gravity
9												
10												

Field Data (Weather, Observations, Etc): 6/27/2012 14:15 Tmp. 102.2, Humidity 8%, Wind Dir. SSE, Wind Speed 15 mph, Conditions Clear
Date and Time:

Gave 2 40-mL glas VOAs to Baker Chemical to analyze for ORP and pH.

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

ORIGIN ID: ROWA (575) 748-3311

NAVAJO ARTESIA
501 E MAIN

ARTESIA , NM 882109440
UNITED STATES US

SHIP DATE: 27JUN13
ACTWGT: 54.0 LB MAN
CAD: 634483/CAFE2608

BILL RECIPIENT

TO SONIA WEST
ALS LABORATORY GROUP
10450 STANCLIFF RD., SUITE 210

HOUSTON TX 77099
(281) 530-5656 REF:
INV:
PO: DEPT:

512C1/0777/CF68

FedEx Express

J12131210958125

FRI - 28 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0201 5614 5589 0735

AB SGRA

77099
TX-US IAH

Part # 156047-404 REV 08/12

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 6-27-13 Time: 16:15
Name: Aaron Strouse
Company: Navajo Refining Co.

Seal Broken By:
Date: 6/28/13

ALS Group USA, Corp

Date: 05-Jul-13

Client: ALS Environmental
Project: 1307042
Work Order: **1307031**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1307031-01	1307042-01G	Liquid		6/27/2013 14:15	7/2/2013 09:00	☐

Client: ALS Environmental
Project: 1307042
WorkOrder: **1307031**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
TDL	Target Detection Limit
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
mg/Kg	Milligrams per Kilogram
none	

ALS Group USA, Corp

Date: *05-Jul-13*

Client: ALS Environmental
Project: 1307042
Sample ID: 1307042-01G
Collection Date: 6/27/2013 02:15 PM

Work Order: 1307031
Lab ID: 1307031-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **CH**
Cyanide, Reactive	ND		40.0	mg/Kg	1	7/3/2013 11:00 AM
SPECIFIC GRAVITY			**D5057-90**			Analyst: **CH**
Specific Gravity	**1.0103**			**none**	**1**	7/3/2013 11:20 AM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **CH**
Sulfide, Reactive	ND		40.0	mg/Kg	1	7/3/2013 11:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 05-Jul-13

Client: ALS Environmental
Work Order: 1307031
Project: 1307042

QC BATCH REPORT

Batch ID: **R123148** Instrument ID **WETCHEM** Method: **SW7.3.4.2**

MBLK Sample ID: **MB-R123148-R123148** Units: **mg/Kg** Analysis Date: **7/3/2013 11:00 AM**

Client ID: Run ID: **WETCHEM_130703H** SeqNo: **2369067** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

LCS Sample ID: **LCS-R123148-R123148** Units: **mg/Kg** Analysis Date: **7/3/2013 11:00 AM**

Client ID: Run ID: **WETCHEM_130703H** SeqNo: **2369068** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	828	40	1075	0	77	60-120		0		

The following samples were analyzed in this batch: 1307031-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Work Order: 1307031
Project: 1307042

QC BATCH REPORT

Batch ID: **R123149** Instrument ID **WETCHEM** Method: **SW7.3.3.2**

MBLK Sample ID: **MB-R123149-R123149** Units: **mg/Kg** Analysis Date: **7/3/2013 11:00 AM**
Client ID: Run ID: **WETCHEM_130703I** SeqNo: **2369077** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: **LCS-R123149-R123149** Units: **mg/Kg** Analysis Date: **7/3/2013 11:00 AM**
Client ID: Run ID: **WETCHEM_130703I** SeqNo: **2369078** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125		0		

MS Sample ID: **1307058-02D MS** Units: **mg/Kg** Analysis Date: **7/3/2013 11:00 AM**
Client ID: Run ID: **WETCHEM_130703I** SeqNo: **2369082** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	278.4	40	250	0	111	50-150		0		

MSD Sample ID: **1307058-02D MSD** Units: **mg/Kg** Analysis Date: **7/3/2013 11:00 AM**
Client ID: Run ID: **WETCHEM_130703I** SeqNo: **2369083** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	278.4	40	250	0	111	50-150	278.4	0	35	

The following samples were analyzed in this batch: 1307031-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 01-Jul-13
COC ID: 14352
Due Date 05-Jul-13

1307031

Salesperson: Houston House Acct

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1307042	A	Specific Gravity Sub to ALS Michigan
Work Order		Project Number		B	Reactive Cyanide (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	Reactive Sulfide (SW-846)
Send Report To	Sonia West	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	Sonia.West@alsglobal.com	eMail CC		J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1307042-01G (WW Effluent)	Liquid	27/Jun/2013 14:15	(1) 1LPNEAT	X	X	X							

Comments:

Please analyze for reactive cyanide, reactive sulfide & Specific Gravity. Due on 4/5/13. Send report to sonia.west@alsglobal.com & cc : results tojumoke.lawal@alsglobal.com & luke.hernandez@alsglobal.com

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
[signature] FEDEX	7/1/13 1800	FEDEX			Std
Relinquished by:	Date/Time	Received by:	Date/Time		
FEDEX	7/2/13 0400	[signature]			

5.0°C

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **02-Jul-13 09:00**

Work Order: **1307031** Received by: **AB**

Checklist completed by Ashley Beard (eSignature) 02-Jul-13 (Date) Reviewed by: Tom Bramish (eSignature) 02-Jul-13 (Date)

Matrices: liquid
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	5.0c		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	7/2/2013 9:50:17 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 7.1.13 Time:
Name: P. Gill
Company: ALS Hou

Seal Broken By:
Date:

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 7.1.13 Time:
Name: P. Gill
Company: ALS Hou

Seal Broken By:
Date:

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 01JUL13
ACTWGT: 21.5 LB
CAD: 300130/CAFE2608
DIMS: 19x16x13 IN

BILL SENDER

TO JEFF GLASER
ALS ENVIRONMENTAL
3352 128TH AVE.

HOLLAND MI 49424
(281) 530-5656
REF: (SUBCONTRACT) PMG

FedEx Express

TRK# 0201 4340 2176 3354

TUE - 02 JUL 10:30A
PRIORITY OVERNIGHT

NA GRRA

49424,
MI-US GRR

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	Quarterly Injection Well
Samplers Name	Aaron Strange
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	9/27/2013 @ 11:50
End Date and Time	9/27/2013 @ 12:00

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall / Sample Location: Waste water effluent pumps to injection wells.

☐ P-849 sample point
☑ P-854 sample point
☐ P-856 sample point
☐ P-857 sample point
☐ Other _____

Container	Size	Material	# of Containers	Preservatives: Neat (None)	HCL	HNO3	H2SO4	NaOH	Na2S2O3	Na2SO4	Other	Analysis and/or Method Requested
1		VOA	1		X							VOC (8260c)
2		Amber Glass	2	X								SVOC (8270B)
3		Plastic	1			X						Metals/SW-846 Mthd 6020, 7063, 7470 Ca, K, Mg, Na/40 CFR 136.3
4		Plastic	3	X								R.C.I. HCO3, CO3, Cl, SO4, TDS, pH, cond./40 CFR 136.3
5		Plastic	2	X								Trip Blank
6		Plastic	1	X								Temperature Blank
7												
8												
9												
10												

Field Data (Weather, Observations, Etc) Date and Time	9/27/2013 11:55 Tmp. 77.0, Humidity 61%, Wind Dir. SSE, Wind Speed 10.4 mph, Conditions Mostly Cloudy

Sample pH 8.14
Sample temperature 108.2 F

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

23-Oct-2013

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-6733
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: **1310062**

Dear Aaron,

ALS Environmental received 1 sample on 28-Sep-2013 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 15.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Jumoke M. Lawal

Sonia West
Project Manager

Certificate No: T104704231-13-12

ALS Environmental

Date: 23-Oct-13

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1310062**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1310062-01	WDW-3 WW Effluent	Liquid		9/27/2013 11:55	9/28/2013 09:30	☐

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1310062

Case Narrative

Batch R154963, Nitrate 300, Sample WDW-3 WW Effluent (1310062-01A): Due to a laboratory error this sample was analyzed outside of the holding time. Also, this sample was analyzed at a dilution due to matrix interference from target analytes.

Batch 73548, Total Metals 200.8, Sample 1310038-01B: MS/MSD are for an unrelated sample.

ALS Environmental

Date: *23-Oct-13*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: WDW-3 WW Effluent
Collection Date: 9/27/2013 11:55 AM

Work Order: 1310062
Lab ID: 1310062-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TOTAL RECOVERABLE METALS			**E200.8**		E200.8		Analyst: **SKS**
Calcium	**59.0**		**0.500**	**mg/L**	1	10/3/2013	10/3/2013 04:05 PM
Magnesium	**15.3**		**5.00**	**mg/L**	10	10/3/2013	10/3/2013 07:58 PM
Potassium	**83.3**		**0.500**	**mg/L**	1	10/3/2013	10/3/2013 04:05 PM
Sodium	**2,580**		**20.0**	**mg/L**	100	10/3/2013	10/3/2013 08:01 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**302**		**2.50**	**mg/L**	5		10/8/2013 01:16 AM
Fluoride	**19.5**		**0.500**	**mg/L**	5		10/8/2013 01:16 AM
Nitrogen, Nitrate (As N)	ND	H	0.500	mg/L	5		10/8/2013 01:16 AM
Sulfate	**4,270**		**50.0**	**mg/L**	100		10/8/2013 12:02 PM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**578**		**6.00**	**mg/L**	1		10/2/2013 12:50 PM
Alkalinity, Carbonate (As CaCO3)	**116**		**6.00**	**mg/L**	1		10/2/2013 12:50 PM
Alkalinity, Total (As CaCO3)	**694**		**6.00**	**mg/L**	1		10/2/2013 12:50 PM
SPECIFIC CONDUCTIVITY			**M2510 B**				Analyst: **KL**
Specific Conductivity	**10,700**		**1.00**	**µmhos/cm**	1		10/2/2013 12:50 PM
PH - SW9040C			**SW9040**				Analyst: **KL**
pH	**8.54**	H	**0.100**	**pH units**	1		10/2/2013 12:50 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**8,000**		**10.0**	**mg/L**	1		10/4/2013 11:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Work Order: 1310062
Client: Navajo Refining Company
Project: Injection Well Quarterly

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 73548	**Test Name:** Total Recoverable Metals					
1310062-01B	WDW-3 WW Effluent	Liquid	9/27/2013 11:55:00 AM		10/3/2013 10:00 AM	10/3/2013 04:05 PM
					10/3/2013 10:00 AM	10/3/2013 07:58 PM
					10/3/2013 10:00 AM	10/3/2013 08:01 PM
Batch ID R154681	**Test Name:** Alkalinity-SM2320B					
1310062-01A	WDW-3 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/2/2013 12:50 PM
Batch ID R154684	**Test Name:** pH - SW9040C					
1310062-01A	WDW-3 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/2/2013 12:50 PM
Batch ID R154685	**Test Name:** Specific Conductivity					
1310062-01A	WDW-3 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/2/2013 12:50 PM
Batch ID R154960	**Test Name:** Total Dissolved Solids					
1310062-01A	WDW-3 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/4/2013 11:00 AM
Batch ID R154963	**Test Name:** Anions - EPA 300.0 (1993)					
1310062-01A	WDW-3 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/8/2013 01:16 AM
						10/8/2013 12:02 PM

ALS Environmental

Date: 23-Oct-13

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **73548** Instrument ID **ICPMS05** Method: **E200.8**

MBLK Sample ID: **MBLKW1-100313-73548** Units: **µg/L** Analysis Date: **10/3/2013 03:17 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3380091** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	ND	500								
Magnesium	ND	500								
Potassium	ND	500								
Sodium	ND	200								

LCS Sample ID: **MLCSW1-100313-73548** Units: **µg/L** Analysis Date: **10/3/2013 03:19 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3380092** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5380	500	5000	0	108	85-115				
Magnesium	5516	500	5000	0	110	85-115				
Potassium	5454	500	5000	0	109	85-115				
Sodium	5428	200	5000	0	109	85-115				

MS Sample ID: **1310038-01BMS** Units: **µg/L** Analysis Date: **10/3/2013 03:38 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3380100** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	59820	500	5000	55810	80.2	70-130				O
Magnesium	102800	500	5000	96660	122	70-130				O
Potassium	35860	500	5000	30820	101	70-130				O
Sodium	ND	200	5000	0	0	70-130				SX

MSD Sample ID: **1310038-01BMSD** Units: **µg/L** Analysis Date: **10/3/2013 03:41 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3380101** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	60220	500	5000	55810	88.2	70-130	59820	0.66	20	O
Magnesium	103200	500	5000	96660	132	70-130	102800	0.478	20	SO
Potassium	36170	500	5000	30820	107	70-130	35860	0.87	20	O
Sodium	ND	200	5000	0	0	70-130	0	0	20	SX

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **73548** Instrument ID **ICPMS05** Method: **E200.8**

DUP Sample ID: **1310038-01BDUP** Units: **µg/L** Analysis Date: **10/3/2013 03:36 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3380099** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	54330	500					55810	2.69	20	
Potassium	30070	500					30820	2.44	20	

DUP Sample ID: **1310038-01BDUP** Units: **µg/L** Analysis Date: **10/3/2013 07:46 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3380647** Prep Date: **10/3/2013** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Magnesium	84510	5,000					87840	3.87	20	
Sodium	727200	2,000					769300	5.63	20	

The following samples were analyzed in this batch: 1310062-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R154681** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-131002-R154681** Units: **mg/L** Analysis Date: **10/2/2013 11:53 AM**
Client ID: Run ID: **MANTECH01_131002A** SeqNo: **3378199** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	6.00								
Alkalinity, Carbonate (As CaCO3)	ND	6.00								
Alkalinity, Total (As CaCO3)	ND	6.00								

LCS Sample ID: **WLCSW1-131002-R154681** Units: **mg/L** Analysis Date: **10/2/2013 11:59 AM**
Client ID: Run ID: **MANTECH01_131002A** SeqNo: **3378200** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1163	6.00	1000	0	116	80-120				

DUP Sample ID: **1310013-01EDUP** Units: **mg/L** Analysis Date: **10/2/2013 12:15 PM**
Client ID: Run ID: **MANTECH01_131002A** SeqNo: **3378204** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	129.5	6.00					129.1	0.271	0	
Alkalinity, Carbonate (As CaCO3)	ND	6.00					0	0	0	
Alkalinity, Total (As CaCO3)	129.5	6.00					129.1	0.271	20	

The following samples were analyzed in this batch: 1310062-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R154684** Instrument ID **ManTech01** Method: **SW9040** **(Dissolve)**

LCS Sample ID: **LCS-PH-R154684** Units: **pH units** Analysis Date: **10/2/2013 12:02 PM**

Client ID: Run ID: **MANTECH01_131002C** SeqNo: **3378270** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	5.93	0.100	6	0	98.8	98-102				

DUP Sample ID: **1310013-01ZDUP** Units: **pH units** Analysis Date: **10/2/2013 12:15 PM**

Client ID: Run ID: **MANTECH01_131002C** SeqNo: **3378273** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.77	0.100					7.75	0.258	10	

The following samples were analyzed in this batch: 1310062-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R154685** Instrument ID **ManTech01** Method: **M2510 B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-131002-R154685** Units: **µmhos/cm** Analysis Date: **10/2/2013 11:53 AM**

Client ID: Run ID: **MANTECH01_131002D** SeqNo: **3378295** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.00								

LCS Sample ID: **LCS-COND-R154685** Units: **µmhos/cm** Analysis Date: **10/2/2013 12:03 PM**

Client ID: Run ID: **MANTECH01_131002D** SeqNo: **3378298** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1453	1.00	1413	0	103	80-120				

DUP Sample ID: **1310013-01EDUP** Units: **µmhos/cm** Analysis Date: **10/2/2013 12:15 PM**

Client ID: Run ID: **MANTECH01_131002D** SeqNo: **3378300** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	424.2	1.00					430.3	1.42	20	

The following samples were analyzed in this batch: 1310062-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R154960** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-100413-R154960** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3383673** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10.0								

LCS Sample ID: **WLCS-100413-R154960** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3383674** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1022	10.0	1000	0	102	85-115				

DUP Sample ID: **1310036-01DDUP** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3383670** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	8180	10.0					7880	3.74	20	

DUP Sample ID: **1310672-01ADUP** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3393235** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	8180	10.0					0			

The following samples were analyzed in this batch: 1310062-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310062
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R154963** Instrument ID **ICS3000** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R154963** Units: **mg/L** Analysis Date: **10/7/2013 11:11 AM**
Client ID: Run ID: **ICS3000_131007A** SeqNo: **3383702** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Fluoride	ND	0.100								
Nitrogen, Nitrate (As N)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-R154963** Units: **mg/L** Analysis Date: **10/7/2013 11:37 AM**
Client ID: Run ID: **ICS3000_131007A** SeqNo: **3383703** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.88	0.500	20	0	94.4	90-110				
Fluoride	3.794	0.100	4	0	94.8	90-110				
Nitrogen, Nitrate (As N)	3.918	0.100	4	0	98	90-110				
Sulfate	18.77	0.500	20	0	93.8	90-110				

MS Sample ID: **13091341-01AMS** Units: **mg/L** Analysis Date: **10/7/2013 12:56 PM**
Client ID: Run ID: **ICS3000_131007A** SeqNo: **3383705** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.116	0.500	10	0	91.2	80-120				
Fluoride	1.92	0.100	2	0	96	80-120				
Nitrogen, Nitrate (As N)	1.879	0.100	2	0	94	80-120				H
Sulfate	9.15	0.500	10	0.086	90.6	80-120				

MSD Sample ID: **13091341-01AMSD** Units: **mg/L** Analysis Date: **10/7/2013 01:22 PM**
Client ID: Run ID: **ICS3000_131007A** SeqNo: **3383706** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.131	0.500	10	0	91.3	80-120	9.116	0.164	20	
Fluoride	1.922	0.100	2	0	96.1	80-120	1.92	0.104	20	
Nitrogen, Nitrate (As N)	1.881	0.100	2	0	94	80-120	1.879	0.106	20	H
Sulfate	9.13	0.500	10	0.086	90.4	80-120	9.15	0.219	20	

The following samples were analyzed in this batch: 1310062-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: **1310062**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
µmhos/cm	
mg/L	Milligrams per Liter
pH units	

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **28-Sep-13 09:30**

Work Order: **1310062** Received by:

Checklist completed by _____ eSignature | Date Reviewed by: _____ eSignature | Date

Matrices:
Carrier name:

Shipping container/cooler in good condition?	Yes ☐	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☐
Chain of custody present?	Yes ☐	No ☑	
Chain of custody signed when relinquished and received?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☐	No ☑	
Sample containers intact?	Yes ☐	No ☑	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☐	No ☑	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	
Temperature(s)/Thermometer(s):			
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

1310062

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

ALS Project Manager: Sonia West

Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	WDW-3 Qtrly Inj Well	A	HCO3, CO3, Cl, SO4, TDS, pH, cond./40 CFR 136.3
Work Order		Project Number		B	Fl, Cation/anion balance, Br / 40 CFR 136.3
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Ca, K, Mg, Na / 40 CFR 136.3
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	
Address	P. O. Box 159	Address	501 East Main	E	
				F	
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	
Phone	(575) 748-3311	Phone	(575) 748-3311	H	
Fax	(575) 746-5451	Fax	(575) 746-5451	I	
e-Mail Address	Aaron.Strange@hollyfrontier.com	e-Mail Address	Aaron.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WDW-3 WW Effluent	9/27/13	11:55	Liquid	Neat	1	X	X									
2	WDW-3 WW Effluent	9/27/13	11:55	Liquid	2	1			X								
3	Temperature Blank			Liquid	Neat	1											
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Aaron Strange	9/27/13	16:15		Report these results separately from all other Chain of Custody kits provided.
Relinquished by:	Date:	Time:	Received by (Laboratory): 9/27/13 0930	Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

X	Level II: Standard QC	TRRP-Checklist
	Level III: Std QC + Raw Data	TRRP Level IV
	Level IV: SW846 CLP-Like	
	Other: _____	

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

Navajo Refining Company, LLC
501 E. Main
Artesia, NM 88210
(Tel) 575.748.3311
(Fax) 575.746.5451

Injection Well Quarterly Sample Details Attachment

HOLLYFRONTIER
The HollyFrontier Companies

Project Name	Quarterly Injection Well
Samplers Name	Aaron Strange
Samplers Affiliation	Navajo Refining Co. LLC
Start Date and Time	9/27/2013 @ 11:50
End Date and Time	9/27/2013 @ 12:00

Sample Type	
Grab	☑
Time Weighted Composite	☐
Flow Weighted Composite	☐

Parts / Sample Intervals	One

Physical Property	
Solid	☐
Liquid	☑
Sludge	☐

Type of Sampler	Directly to sample jars

Outfall / Sample Location: Waste water effluent pumps to injection wells.

☐ P-849 sample point
☑ P-854 sample point
☐ P-856 sample point
☐ P-857 sample point
☐ Other _____

				Preservatives								
Container	Size	Material	# of Containers	Neat (None)	HCL	HNO3	H2SO4	NaOH	Na2S2O3	NaHSO4	Other	Analysis and/or Method Requested
1		VOA	1		X							VOC (8260c)
2		Amber Glass	2	X								SVOC (8270B)
3		Plastic	1			X						Metals/SW-846 Mthd 6020, 7063, 7470 Ca, K, Mg, Na/40 CFR 136.3
4		Plastic	3	X								R.C.I. HCO3, CO3, Cl, SO4, TDS, pH, cond./40 CFR 136.3
5		Plastic	2	X								Trip Blank
6		Plastic	1	X								Temperature Blank
7												
8												
9												
10												

Field Data (Weather, Observations, Etc): 9/27/2013 11:55 Tmp. 77.0, Humidity 61%, Wind Dir. SSE, Wind Speed 10.4 mph, Conditions Mostly Cloudy
Date and Time:

Sample pH 8.14
Sample temperature 108.2 F

Storage Method	
Ice	☑
Refrigerated	☐
Other	☐

Shipping Media	
Ice	☑
Other	☐

31-Oct-2013

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-6733
Fax: (575) 746-5421

Re: WDW 1 & 2 Qtrly Inj Well 136 Work Order: **1310672**

Dear Aaron,

ALS Environmental received 1 sample on 28-Sep-2013 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Dayna.Fisher

Sonia West
Project Manager

Certificate No: T104704231-13-12

ALS Environmental

Date: 31-Oct-13

Client: Navajo Refining Company
Project: WDW 1 & 2 Qtrly Inj Well 136
Work Order: **1310672**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1310672-01	WDW-1&2 WW Effluent	Liquid	1310036-01C	9/27/2013 11:55	9/28/2013 09:30	☐

Client: Navajo Refining Company
Project: WDW 1 & 2 Qtrly Inj Well 136
Work Order: 1310672

Case Narrative

Batch 73890, Total Metals 200.8, Sample 1310014-01C-01C: MS/MSD are for an unrelated sample.

ALS Environmental

Date: *31-Oct-13*

Client: Navajo Refining Company
Project: WDW 1 & 2 Qtrly Inj Well 136
Sample ID: WDW-1&2 WW Effluent
Collection Date: 9/27/2013 11:55 AM

Work Order: 1310672
Lab ID: 1310672-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
TOTAL RECOVERABLE METALS			**E200.8**		E200.8		Analyst: **SKS**
Calcium	**56.7**		**0.500**	**mg/L**	1	10/3/2013	10/3/2013 07:01 PM
Magnesium	**16.7**		**0.500**	**mg/L**	1	10/3/2013	10/3/2013 07:01 PM
Potassium	**81.1**		**0.500**	**mg/L**	1	10/3/2013	10/3/2013 07:01 PM
Sodium	**2,470**		**10.0**	**mg/L**	50	10/3/2013	10/4/2013 06:36 PM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**303**		**2.50**	**mg/L**	5		10/8/2013 12:50 AM
Fluoride	**19.6**		**0.500**	**mg/L**	5		10/8/2013 12:50 AM
Nitrogen, Nitrate (As N)	ND	H	0.500	mg/L	5		10/8/2013 12:50 AM
Sulfate	**4,220**		**50.0**	**mg/L**	100		10/8/2013 11:36 AM
ALKALINITY-SM2320B			**SM2320B**				Analyst: **KL**
Alkalinity, Bicarbonate (As CaCO3	**582**	H	**6.00**	**mg/L**	1		10/16/2013 10:30 AM
Alkalinity, Carbonate (As CaCO3)	**121**	H	**6.00**	**mg/L**	1		10/16/2013 10:30 AM
Alkalinity, Total (As CaCO3)	**704**	H	**6.00**	**mg/L**	1		10/16/2013 10:30 AM
SPECIFIC CONDUCTIVITY			**M2510 B**				Analyst: **KL**
Specific Conductivity	**10,700**		**1.00**	**µmhos/cm**	1		10/15/2013 10:00 AM
PH - SW9040C			**SW9040**				Analyst: **KL**
pH	**8.55**	H	**0.100**	**pH units**	1		10/15/2013 11:00 AM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**7,880**		**10.0**	**mg/L**	1		10/4/2013 11:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Work Order: 1310672
Client: Navajo Refining Company
Project: WDW 1 & 2 Qtrly Inj Well 136

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 73890	**Test Name:** Total Recoverable Metals					
1310672-01B	WDW-1&2 WW Effluent	Liquid	9/27/2013 11:55:00 AM		10/3/2013 10:00 AM	10/3/2013 07:01 PM
					10/3/2013 10:00 AM	10/4/2013 06:36 PM
Batch ID R154960	**Test Name:** Total Dissolved Solids					
1310672-01A	WDW-1&2 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/4/2013 11:00 AM
Batch ID R155434	**Test Name:** Specific Conductivity					
1310672-01A	WDW-1&2 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/15/2013 10:00 AM
Batch ID R155436	**Test Name:** pH - SW9040C					
1310672-01A	WDW-1&2 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/15/2013 11:00 AM
Batch ID R155532	**Test Name:** Alkalinity-SM2320B					
1310672-01A	WDW-1&2 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/16/2013 10:30 AM
Batch ID R155542	**Test Name:** Anions - EPA 300.0 (1993)					
1310672-01A	WDW-1&2 WW Effluent	Liquid	9/27/2013 11:55:00 AM			10/8/2013 12:50 AM
						10/8/2013 11:36 AM

ALS Environmental

Date: 31-Oct-13

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **73890** Instrument ID **ICPMS05** Method: **E200.8**

MBLK Sample ID: **MBLKW2-100313-73890** Units: **µg/L** Analysis Date: **10/3/2013 06:15 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3395864** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	ND	500								
Magnesium	ND	500								
Potassium	ND	500								
Sodium	ND	200								

LCS Sample ID: **MLCSW2-100313-73890** Units: **µg/L** Analysis Date: **10/3/2013 06:18 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3395865** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5297	500	5000	0	106	85-115				
Magnesium	5319	500	5000	0	106	85-115				
Potassium	5186	500	5000	0	104	85-115				
Sodium	5315	200	5000	0	106	85-115				

MS Sample ID: **1310014-01CMS** Units: **µg/L** Analysis Date: **10/3/2013 06:42 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3395875** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	122700	500	5000	118700	80.1	70-130				O
Magnesium	10260	500	5000	5154	102	70-130				
Potassium	18340	500	5000	13240	102	70-130				
Sodium	127900	200	5000	123100	95.6	70-130				O

MSD Sample ID: **1310014-01CMSD** Units: **µg/L** Analysis Date: **10/3/2013 06:44 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3395876** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	119500	500	5000	118700	15.9	70-130	122700	2.65	20	SO
Magnesium	10080	500	5000	5154	98.4	70-130	10260	1.82	20	
Potassium	17940	500	5000	13240	94.1	70-130	18340	2.22	20	
Sodium	126600	200	5000	123100	68.3	70-130	127900	1.07	20	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **73890** Instrument ID **ICPMS05** Method: **E200.8**

DUP Sample ID: **1310014-01CDUP** Units: **µg/L** Analysis Date: **10/3/2013 06:39 PM**

Client ID: Run ID: **ICPMS05_131003A** SeqNo: **3395874** Prep Date: **10/3/2013** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	118300	500					118700	0.307	20	
Magnesium	5207	500					5154	1.04	20	
Potassium	13510	500					13240	2.03	20	
Sodium	124200	200					123100	0.821	20	

The following samples were analyzed in this batch: 1310672-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **R154960** Instrument ID **Balance1** Method: **M2540C** **(Dissolve)**

MBLK Sample ID: **WBLK-100413-R154960** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3383673** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	ND	10.0								

LCS Sample ID: **WLCS-100413-R154960** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3383674** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1022	10.0	1000	0	102	85-115				

DUP Sample ID: **1310036-01DDUP** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: Run ID: **BALANCE1_131004G** SeqNo: **3383670** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	8180	10.0					7880	3.74	20	

DUP Sample ID: **1310672-01ADUP** Units: **mg/L** Analysis Date: **10/4/2013 11:00 AM**
Client ID: **WDW-1&2 WW Effluent** Run ID: **BALANCE1_131004G** SeqNo: **3393235** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	8180	10.0					0			

The following samples were analyzed in this batch: 1310672-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **R155434** Instrument ID **ManTech01** Method: **M2510 B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-131015-R155434** Units: **µmhos/cm** Analysis Date: **10/15/2013 10:33 AM**

Client ID: Run ID: **MANTECH01_131015A** SeqNo: **3393342** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.00								

LCS Sample ID: **LCS-COND-R155434** Units: **µmhos/cm** Analysis Date: **10/15/2013 10:35 AM**

Client ID: Run ID: **MANTECH01_131015A** SeqNo: **3393345** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1466	1.00	1413	0	104	80-120				

DUP Sample ID: **1310458-08ZDUP** Units: **µmhos/cm** Analysis Date: **10/15/2013 10:38 AM**

Client ID: Run ID: **MANTECH01_131015A** SeqNo: **3393348** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	12630	1.00					12720	0.692	20	

The following samples were analyzed in this batch: 1310672-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **R155436** Instrument ID **ManTech01** Method: **SW9040** **(Dissolve)**

LCS Sample ID: **LCS-PH-R155436** Units: **pH units** Analysis Date: **10/15/2013 12:10 PM**

Client ID: Run ID: **MANTECH01_131015B** SeqNo: **3393379** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.02	0.100	6	0	100	98-102				

DUP Sample ID: **1310446-05ZDUP** Units: **pH units** Analysis Date: **10/15/2013 12:27 PM**

Client ID: Run ID: **MANTECH01_131015B** SeqNo: **3393382** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.78	0.100					6.8	0.295	10	

The following samples were analyzed in this batch: 1310672-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **R155532** Instrument ID **ManTech01** Method: **SM2320B** **(Dissolve)**

MBLK Sample ID: **WBLKW1-131016-R155532** Units: **mg/L** Analysis Date: **10/16/2013 11:15 AM**

Client ID: Run ID: **MANTECH01_131016D** SeqNo: **3395284** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	6.00								
Alkalinity, Carbonate (As CaCO3)	ND	6.00								
Alkalinity, Total (As CaCO3)	ND	6.00								

LCS Sample ID: **WLCSW1-131016-R155532** Units: **mg/L** Analysis Date: **10/16/2013 11:21 AM**

Client ID: Run ID: **MANTECH01_131016D** SeqNo: **3395285** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1140	6.00	1000	0	114	80-120				

DUP Sample ID: **1310683-01CDUP** Units: **mg/L** Analysis Date: **10/16/2013 11:38 AM**

Client ID: Run ID: **MANTECH01_131016D** SeqNo: **3395289** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	582.6	6.00					586.5	0.657	0	
Alkalinity, Carbonate (As CaCO3)	6.43	6.00					3.16	68.2	0	
Alkalinity, Total (As CaCO3)	589.1	6.00					589.6	0.095	20	

The following samples were analyzed in this batch: 1310672-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1310672
Project: WDW 1 & 2 Qtrly Inj Well 136

QC BATCH REPORT

Batch ID: **R155542** Instrument ID **ICS3000** Method: **E300** **(Dissolve)**

MBLK Sample ID: **WBLKW1-R155542** Units: **mg/L** Analysis Date: **10/7/2013 11:11 AM**
Client ID: Run ID: **ICS3000_131007D** SeqNo: **3395522** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.500								
Fluoride	ND	0.100								
Nitrogen, Nitrate (As N)	ND	0.100								
Sulfate	ND	0.500								

LCS Sample ID: **WLCSW1-R155542** Units: **mg/L** Analysis Date: **10/7/2013 11:37 AM**
Client ID: Run ID: **ICS3000_131007D** SeqNo: **3395523** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.88	0.500	20	0	94.4	90-110				
Fluoride	3.794	0.100	4	0	94.8	90-110				
Nitrogen, Nitrate (As N)	3.918	0.100	4	0	98	90-110				
Sulfate	18.77	0.500	20	0	93.8	90-110				

MS Sample ID: **13091341-01AMSZ** Units: **mg/L** Analysis Date: **10/7/2013 12:56 PM**
Client ID: Run ID: **ICS3000_131007D** SeqNo: **3395525** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.116	0.500	10	0	91.2	80-120				
Fluoride	1.92	0.100	2	0	96	80-120				
Nitrogen, Nitrate (As N)	1.879	0.100	2	0	94	80-120				H
Sulfate	9.15	0.500	10	0.086	90.6	80-120				

MSD Sample ID: **13091341-01AMSDZ** Units: **mg/L** Analysis Date: **10/7/2013 01:22 PM**
Client ID: Run ID: **ICS3000_131007D** SeqNo: **3395526** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.131	0.500	10	0	91.3	80-120	9.116	0.164	20	
Fluoride	1.922	0.100	2	0	96.1	80-120	1.92	0.104	20	
Nitrogen, Nitrate (As N)	1.881	0.100	2	0	94	80-120	1.879	0.106	20	H
Sulfate	9.13	0.500	10	0.086	90.4	80-120	9.15	0.219	20	

The following samples were analyzed in this batch: 1310672-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: WDW 1 & 2 Qtrly Inj Well 136
WorkOrder: **1310672**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
µmhos/cm	
mg/L	Milligrams per Liter
pH units	

Sample Receipt Checklist

Client Name: Date/Time Received: **#Error**

Work Order: Received by:

Checklist completed by _____ eSignature | Date Reviewed by: _____ eSignature | Date

Matrices:
Carrier name:

Shipping container/cooler in good condition?	Yes ☐	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☐
Chain of custody present?	Yes ☐	No ☐	
Chain of custody signed when relinquished and received?	Yes ☐	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☐	
Samples in proper container/bottle?	Yes ☐	No ☐	
Sample containers intact?	Yes ☐	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☐	
All samples received within holding time?	Yes ☐	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☐	
Temperature(s)/Thermometer(s):			
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

1310672

NAVAJO REFINING: Navajo Refining Company

Project: WDW 1 & 2 Qtrly Inj Well 136

☑ ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

☐ (Tel) 616.399.1000
(Fax) 616.399.6185

ALS Project Manager: Sonia West

Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	WDW-1 & 2 Qtrly Inj Well 136	A	Fl, Cation/anion balance, Br / 40 CFR 136.3
Work Order		Project Number		B	**See Notes Below**
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	
Send Report To	Aaron Strange	Invoice Attn:	Aaron Strange	D	
Address	P. O. Box 159	Address	501 East Main	E	
				F	
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	
Phone	(575) 748-3311	Phone	(575) 748-3311	H	
Fax	(575) 746-5451	Fax	(575) 746-5451	I	
e-Mail Address	Aaron.Strange@hollyfrontier.com	e-Mail Address	Aaron.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WDW-1 & 2 WW Effluent	9/27/13	11:55	Liquid	Neat	1	X										
2	Temperature Blank			Liquid	Neat	1											
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
[signature]	9/27/13	16:15		Report these results separately from all other Chain of Custody kits provided.
Relinquished by:	Date:	Time:	Received by (Laboratory): [signature] 9/28/13	Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

X	Level II: Standard QC	TRRP-Checklist
	Level III: Std QC + Raw Data	TRRP Level IV
	Level IV: SW846 CLP-Like	
	Other: _____	

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

TRK# 0201 5614 5589 2370

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO SGRA

77099
TX-US
IAH

942426 28Sep 01:42 MEMH +5121/9256/CF60

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5687

CUSTODY SEAL

Date: 9-27-13 Time: 16:05
Name: Haven Strange
Company: Navajo Refining Co.

Seal Broken By: AOH
Date: 9/28/13

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 28, 2014

Mike Holder
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
TEL: (575) 748-3311
FAX

RE: WDW-1, 2, & 3 Qtrly Inj Well OrderNo.: 1312B24

Dear Mike Holder:

Hall Environmental Analysis Laboratory received 2 sample(s) on 12/23/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Case Narrative

WO#: **1312B24**
Date: **1/28/2014**

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

The following compounds were also scanned for by NIST library search and not detected. The detection level for these compounds would be ~10ppb:
Allyl alcohol
t-amyl ethyl ether
Bis(2-chloroethyl)sulfide
Bromoacetone
Chloral hydrate
1-chlorobutane
1-chlorohexane
2-chloroethanol
Crotonaldehyde
Cis-1,4-Dichloro-2butene
1,3-Dichloro-2-propanol
1,2,3,4-Depoxybutane
Ethanol
Ethylene oxide
Malonitrile
Methanol
Methyl acrylate
2-Nitropropane
Paraldehyde
Pentafluorobenzene
2-Pentanone
2-picoline
1-propanol
2-propanol
Propargyl alcohol
Beta-propiolactone
n-propylamine

Analytical Report
Lab Order **1312B24**
Date Reported: **1/28/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**JRR**
Fluoride	6.3	0.50	*	mg/L	5	12/24/2013 9:22:17 PM	R15740
Chloride	450	50		mg/L	100	12/27/2013 9:00:57 PM	R15790
Nitrogen, Nitrite (As N)	ND	0.50		mg/L	5	12/24/2013 9:22:17 PM	R15740
Bromide	1.3	0.50		mg/L	5	12/24/2013 9:22:17 PM	R15740
Nitrogen, Nitrate (As N)	ND	0.50		mg/L	5	12/24/2013 9:22:17 PM	R15740
Phosphorus, Orthophosphate (As P)	ND	2.5		mg/L	5	12/24/2013 9:22:17 PM	R15740
Sulfate	3000	50		mg/L	100	12/27/2013 9:00:57 PM	R15790
EPA METHOD 7470: MERCURY						Analyst:	**JML**
Mercury	ND	0.00020		mg/L	1	12/27/2013 1:48:34 PM	11002
MERCURY, TCLP						Analyst:	**JML**
Mercury	ND	0.020		mg/L	1	12/27/2013 3:04:26 PM	11004
EPA METHOD 6010B: TCLP METALS						Analyst:	**JLF**
Arsenic	ND	5.0		mg/L	1	12/30/2013 6:27:04 PM	11005
Barium	ND	100		mg/L	1	12/30/2013 6:27:04 PM	11005
Cadmium	ND	1.0		mg/L	1	12/30/2013 6:27:04 PM	11005
Chromium	ND	5.0		mg/L	1	12/30/2013 6:27:04 PM	11005
Lead	ND	5.0		mg/L	1	12/30/2013 6:27:04 PM	11005
Selenium	ND	1.0		mg/L	1	12/30/2013 6:27:04 PM	11005
Silver	ND	5.0		mg/L	1	12/30/2013 6:27:04 PM	11005
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Aluminum	2.6	0.10		mg/L	5	1/2/2014 8:24:16 AM	11005
Antimony	ND	0.050		mg/L	1	1/2/2014 8:21:34 AM	11005
Arsenic	0.036	0.020		mg/L	1	1/2/2014 8:21:34 AM	11005
Barium	0.044	0.020		mg/L	1	1/2/2014 8:21:34 AM	11005
Beryllium	ND	0.0030		mg/L	1	1/2/2014 8:21:34 AM	11005
Cadmium	ND	0.0020		mg/L	1	1/2/2014 8:21:34 AM	11005
Calcium	140	5.0		mg/L	5	1/2/2014 8:24:16 AM	11005
Chromium	ND	0.0060		mg/L	1	1/2/2014 8:21:34 AM	11005
Cobalt	ND	0.0060		mg/L	1	1/2/2014 8:21:34 AM	11005
Copper	0.011	0.0060		mg/L	1	1/2/2014 8:21:34 AM	11005
Iron	3.8	0.25		mg/L	5	1/2/2014 8:24:16 AM	11005
Lead	ND	0.0050		mg/L	1	1/2/2014 8:21:34 AM	11005
Magnesium	38	1.0		mg/L	1	1/2/2014 8:21:34 AM	11005
Manganese	0.11	0.0020		mg/L	1	1/2/2014 8:21:34 AM	11005
Nickel	0.017	0.010		mg/L	1	1/2/2014 8:21:34 AM	11005
Potassium	32	1.0		mg/L	1	1/2/2014 8:21:34 AM	11005
Selenium	0.26	0.050		mg/L	1	1/2/2014 8:21:34 AM	11005

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 6010B: TOTAL METALS						Analyst:	**ELS**
Silver	0.0087	0.0050		mg/L	1	1/2/2014 8:21:34 AM	11005
Sodium	1600	20	B	mg/L	20	1/2/2014 8:30:05 AM	11005
Thallium	ND	0.050		mg/L	1	1/2/2014 8:21:34 AM	11005
Vanadium	ND	0.050		mg/L	1	1/2/2014 8:21:34 AM	11005
Zinc	0.050	0.020		mg/L	1	1/2/2014 8:21:34 AM	11005
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Acetonitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Allyl chloride	ND	0.500		µg/L	1	1/6/2014	R16282
Chloroprene	ND	0.500		µg/L	1	1/6/2014	R16282
Cyclohexane	ND	0.500		µg/L	1	1/6/2014	R16282
Diethyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
Diisopropyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
Epichlorohydrin	ND	5.00		µg/L	1	1/6/2014	R16282
Ethyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
Ethyl methacrylate	ND	0.500		µg/L	1	1/6/2014	R16282
Freon-113	ND	0.500		µg/L	1	1/6/2014	R16282
Isobutanol	ND	50.0		µg/L	1	1/6/2014	R16282
Isopropyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
Methacrylonitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Methyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
Methyl ethyl ketone	2.68	2.50		µg/L	1	1/6/2014	R16282
Methyl isobutyl ketone	ND	2.50		µg/L	1	1/6/2014	R16282
Methyl methacrylate	ND	0.500		µg/L	1	1/6/2014	R16282
Methylcyclohexane	ND	1.00		µg/L	1	1/6/2014	R16282
n-Amyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
n-Hexane	ND	0.500		µg/L	1	1/6/2014	R16282
Nitrobenzene	ND	5.00		µg/L	1	1/6/2014	R16282
Pentachloroethane	ND	5.00		µg/L	1	1/6/2014	R16282
p-isopropyltoluene	ND	0.500		µg/L	1	1/6/2014	R16282
Propionitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Tetrahydrofuran	ND	0.500		µg/L	1	1/6/2014	R16282
Benzene	ND	0.500		µg/L	1	1/6/2014	R16282
Toluene	ND	0.500		µg/L	1	1/6/2014	R16282
Ethylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Methyl tert-butyl ether (MTBE)	ND	10.0		µg/L	1	1/6/2014	R16282
1,2,4-Trimethylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,3,5-Trimethylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dichloroethane (EDC)	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dibromoethane (EDB)	ND	0.500		µg/L	1	1/6/2014	R16282

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Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Naphthalene	ND	0.500		µg/L	1	1/6/2014	R16282
Acetone	51.2	2.50		µg/L	1	1/6/2014	R16282
Bromobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Bromodichloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
Bromoform	ND	0.500		µg/L	1	1/6/2014	R16282
Bromomethane	ND	0.500		µg/L	1	1/6/2014	R16282
Carbon disulfide	0.810	0.500		µg/L	1	1/6/2014	R16282
Carbon Tetrachloride	ND	0.500		µg/L	1	1/6/2014	R16282
Chlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Chloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
Chloroform	ND	0.500		µg/L	1	1/6/2014	R16282
Chloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
2-Chlorotoluene	ND	0.500		µg/L	1	1/6/2014	R16282
4-Chlorotoluene	ND	0.500		µg/L	1	1/6/2014	R16282
cis-1,2-DCE	ND	0.500		µg/L	1	1/6/2014	R16282
cis-1,3-Dichloropropene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dibromo-3-chloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
Dibromochloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
Dibromomethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,3-Dichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,4-Dichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Dichlorodifluoromethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1-Dichloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1-Dichloroethene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
1,3-Dichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
2,2-Dichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1-Dichloropropene	ND	0.500		µg/L	1	1/6/2014	R16282
Hexachlorobutadiene	ND	0.500		µg/L	1	1/6/2014	R16282
2-Hexanone	ND	0.500		µg/L	1	1/6/2014	R16282
Isopropylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Methylene Chloride	ND	2.50		µg/L	1	1/6/2014	R16282
n-Butylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
n-Propylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
sec-Butylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Styrene	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Butylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,1,1,2-Tetrachloroethane	ND	0.500		µg/L	1	1/6/2014	R16282

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
1,1,2,2-Tetrachloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
Tetrachloroethene (PCE)	ND	0.500		µg/L	1	1/6/2014	R16282
trans-1,2-DCE	ND	0.500		µg/L	1	1/6/2014	R16282
trans-1,3-Dichloropropene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2,3-Trichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2,4-Trichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,1,1-Trichloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1,2-Trichloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
Trichloroethene (TCE)	ND	0.500		µg/L	1	1/6/2014	R16282
Trichlorofluoromethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,2,3-Trichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
Vinyl chloride	ND	0.500		µg/L	1	1/6/2014	R16282
Xylenes, Total	ND	1.00		µg/L	1	1/6/2014	R16282
mp-Xylenes	ND	0.500		µg/L	1	1/6/2014	R16282
o-Xylene	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Amyl methyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Butyl ethyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Butyl alcohol	ND	2.50		µg/L	1	1/6/2014	R16282
Acrolein	ND	0.500		µg/L	1	1/6/2014	R16282
Acrylonitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Bromochloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
2-Chloroethyl vinyl ether	ND	1.00		µg/L	1	1/6/2014	R16282
Iodomethane	ND	0.500		µg/L	1	1/6/2014	R16282
trans-1,4-Dichloro-2-butene	ND	0.500		µg/L	1	1/6/2014	R16282
Vinyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
1,4-Dioxane	ND	20.0		µg/L	1	1/6/2014	R16282
Surr: 1,2-Dichloroethane-d4	115	70-130		%REC	1	1/6/2014	R16282
Surr: 4-Bromofluorobenzene	106	70-130		%REC	1	1/6/2014	R16282
Surr: Toluene-d8	101	70-130		%REC	1	1/6/2014	R16282
EPA 8270C: SEMIVOLATILES						Analyst:	**SUB**
1,1-Biphenyl	ND	1.00		µg/L	1	1/6/2014	R16282
4-Chloroaniline	ND	10.0		µg/L	1	1/6/2014	R16282
Atrazine	ND	1.00		µg/L	1	1/6/2014	R16282
Benzaldehyde	ND	1.00		µg/L	1	1/6/2014	R16282
Bis(2-chloroisopropyl)ether	ND	10.0		µg/L	1	1/6/2014	R16282
Caprolactam	ND	0.100		µg/L	1	1/6/2014	R16282
Carbazole	ND	10.0		µg/L	1	1/6/2014	R16282
N-Nitroso-di-n-butylamine	ND	1.00		µg/L	1	1/6/2014	R16282
Acenaphthene	ND	10.0		µg/L	1	1/6/2014	R16282

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Qualifiers:

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S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES						Analyst:	**SUB**
Acenaphthylene	ND	10.0		µg/L	1	1/6/2014	R16282
Acetophenone	ND	10.0		µg/L	1	1/6/2014	R16282
Anthracene	ND	10.0		µg/L	1	1/6/2014	R16282
Benzo(g,h,i)perylene	ND	10.0		µg/L	1	1/6/2014	R16282
Bis(2-chloroethoxy)methane	ND	10.0		µg/L	1	1/6/2014	R16282
Bis(2-chloroethyl)ether	ND	10.0		µg/L	1	1/6/2014	R16282
4-Bromophenyl phenyl ether	ND	10.0		µg/L	1	1/6/2014	R16282
Butyl benzyl phthalate	ND	10.0		µg/L	1	1/6/2014	R16282
4-Chloro-3-methylphenol	ND	5.00		µg/L	1	1/6/2014	R16282
2-Chloronaphthalene	ND	10.0		µg/L	1	1/6/2014	R16282
2-Chlorophenol	ND	10.0		µg/L	1	1/6/2014	R16282
4-Chlorophenyl phenyl ether	ND	10.0		µg/L	1	1/6/2014	R16282
1-Methylnaphthalene	ND	10.0		µg/L	1	1/6/2014	R16282
Dibenzofuran	ND	10.0		µg/L	1	1/6/2014	R16282
2,4-Dichlorophenol	ND	10.0		µg/L	1	1/6/2014	R16282
2,4-Dimethylphenol	ND	10.0		µg/L	1	1/6/2014	R16282
4,6-Dinitro-2-methylphenol	ND	10.0		µg/L	1	1/6/2014	R16282
2,4-Dinitrophenol	ND	10.0		µg/L	1	1/6/2014	R16282
2,4-Dinitrotoluene	ND	10.0		µg/L	1	1/6/2014	R16282
2-Methylphenol	ND	10.0		µg/L	1	1/6/2014	R16282
2,6-Dinitrotoluene	ND	10.0		µg/L	1	1/6/2014	R16282
3,3'-Dichlorobenzidine	ND	10.0		µg/L	1	1/6/2014	R16282
Benz(a)anthracene	ND	1.00		µg/L	1	1/6/2014	R16282
Di-n-octyl phthalate	ND	10.0		µg/L	1	1/6/2014	R16282
Benzo(a)pyrene	ND	1.00		µg/L	1	1/6/2014	R16282
Benzo(b)fluoranthene	ND	1.00		µg/L	1	1/6/2014	R16282
Benzo(k)fluoranthene	ND	1.00		µg/L	1	1/6/2014	R16282
Bis(2-ethylhexyl)phthalate	ND	5.00		µg/L	1	1/6/2014	R16282
Chrysene	ND	0.100		µg/L	1	1/6/2014	R16282
Dibenz(a,h)anthracene	ND	1.00		µg/L	1	1/6/2014	R16282
Diethyl phthalate	ND	10.0		µg/L	1	1/6/2014	R16282
Dimethyl phthalate	ND	10.0		µg/L	1	1/6/2014	R16282
Hexachlorobenzene	ND	1.00		µg/L	1	1/6/2014	R16282
Di-n-butyl phthalate	ND	10.0		µg/L	1	1/6/2014	R16282
Hexachlorobutadiene	ND	10.0		µg/L	1	1/6/2014	R16282
Fluoranthene	ND	10.0		µg/L	1	1/6/2014	R16282
Hexachlorocyclopentadiene	ND	10.0		µg/L	1	1/6/2014	R16282
Fluorene	ND	10.0		µg/L	1	1/6/2014	R16282
Hexachloroethane	ND	10.0		µg/L	1	1/6/2014	R16282

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Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
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O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
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S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA 8270C: SEMIVOLATILES						Analyst:	**SUB**
Indeno(1,2,3-cd)pyrene	ND	1.00		µg/L	1	1/6/2014	R16282
Isophorone	ND	10.0		µg/L	1	1/6/2014	R16282
2-Methylnaphthalene	ND	10.0		µg/L	1	1/6/2014	R16282
Naphthalene	ND	10.0		µg/L	1	1/6/2014	R16282
2-Nitroaniline	ND	10.0		µg/L	1	1/6/2014	R16282
3-Nitroaniline	ND	10.0		µg/L	1	1/6/2014	R16282
4-Nitroaniline	ND	10.0		µg/L	1	1/6/2014	R16282
Nitrobenzene	ND	10.0		µg/L	1	1/6/2014	R16282
2-Nitrophenol	ND	10.0		µg/L	1	1/6/2014	R16282
4-Nitrophenol	ND	10.0		µg/L	1	1/6/2014	R16282
N-Nitrosodi-n-propylamine	ND	10.0		µg/L	1	1/6/2014	R16282
N-Nitrosodiphenylamine	ND	5.00		µg/L	1	1/6/2014	R16282
o-Toluidine	ND	1.00		µg/L	1	1/6/2014	R16282
Pentachlorophenol	ND	10.0		µg/L	1	1/6/2014	R16282
Phenanthrene	ND	10.0		µg/L	1	1/6/2014	R16282
Phenol	ND	5.00		µg/L	1	1/6/2014	R16282
Pyrene	ND	10.0		µg/L	1	1/6/2014	R16282
Pyridine	ND	1.00		µg/L	1	1/6/2014	R16282
1,2,4,5-Tetrachlorobenzene	ND	10.0		µg/L	1	1/6/2014	R16282
2,3,4,6-Tetrachlorophenol	ND	10.0		µg/L	1	1/6/2014	R16282
2,4,5-Trichlorophenol	ND	10.0		µg/L	1	1/6/2014	R16282
2,4,6-Trichlorophenol	ND	10.0		µg/L	1	1/6/2014	R16282
Surr: 2,4,6-Tribromophenol	84.7	10-123		%REC	1	1/6/2014	R16282
Surr: 2-Fluorobiphenyl	87.4	19-130		%REC	1	1/6/2014	R16282
Surr: 2-Fluorophenol	79.1	21-110		%REC	1	1/6/2014	R16282
Surr: 4-Terphenyl-d14	96.4	33-141		%REC	1	1/6/2014	R16282
Surr: Nitrobenzene-d5	105	25-130		%REC	1	1/6/2014	R16282
Surr: Phenol-d5	84.4	10-125		%REC	1	1/6/2014	R16282
CORROSIVITY						Analyst:	**SUB**
pH	7.34	0.100		pH Units	1	1/8/2014	R16282
IGNITABILITY METHOD 1010						Analyst:	**SUB**
Ignitability	>200	0		°F	1	1/7/2014	R16282
CYANIDE, REACTIVE						Analyst:	**SUB**
Cyanide, Reactive	ND	1.00		mg/L	1	1/10/2014	R16282
SULFIDE, REACTIVE						Analyst:	**SUB**
Reactive Sulfide	2.8	1.0		mg/L	1	1/6/2014	R16282
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JML**

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-001 **Matrix:** AQUEOUS

Client Sample ID: WDW-1, 2, & 3 Effluent
Collection Date: 12/23/2013 8:40:00 AM
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2510B: SPECIFIC CONDUCTANCE						Analyst:	**JML**
Conductivity	7700	0.010		µmhos/cm	1	12/26/2013 2:07:17 PM	R15744
SM4500-H+B: PH						Analyst:	**JML**
pH	7.27	1.68	H	pH units	1	12/26/2013 2:07:17 PM	R15744
SM2320B: ALKALINITY						Analyst:	**JML**
Bicarbonate (As CaCO3)	370	20		mg/L CaCO3	1	12/26/2013 2:07:17 PM	R15744
Carbonate (As CaCO3)	ND	2.0		mg/L CaCO3	1	12/26/2013 2:07:17 PM	R15744
Total Alkalinity (as CaCO3)	370	20		mg/L CaCO3	1	12/26/2013 2:07:17 PM	R15744
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst:	**KS**
Total Dissolved Solids	5650	40.0	*	mg/L	1	12/30/2013 12:59:00 PM	11011

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-002
Matrix: TRIP BLANK
Client Sample ID: Trip Blank
Collection Date:
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst:	**SUB**
Acetonitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Allyl chloride	ND	0.500		µg/L	1	1/6/2014	R16282
Chloroprene	ND	0.500		µg/L	1	1/6/2014	R16282
Cyclohexane	ND	0.500		µg/L	1	1/6/2014	R16282
Diethyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
Diisopropyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
Epichlorohydrin	ND	5.00		µg/L	1	1/6/2014	R16282
Ethyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
Ethyl methacrylate	ND	0.500		µg/L	1	1/6/2014	R16282
Freon-113	ND	0.500		µg/L	1	1/6/2014	R16282
Isobutanol	ND	50.0		µg/L	1	1/6/2014	R16282
Isopropyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
Methacrylonitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Methyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
Methyl ethyl ketone	ND	2.50		µg/L	1	1/6/2014	R16282
Methyl isobutyl ketone	ND	2.50		µg/L	1	1/6/2014	R16282
Methyl methacrylate	ND	0.500		µg/L	1	1/6/2014	R16282
Methylcyclohexane	ND	1.00		µg/L	1	1/6/2014	R16282
n-Amyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
n-Hexane	ND	0.500		µg/L	1	1/6/2014	R16282
Nitrobenzene	ND	5.00		µg/L	1	1/6/2014	R16282
Pentachloroethane	ND	5.00		µg/L	1	1/6/2014	R16282
p-isopropyltoluene	ND	0.500		µg/L	1	1/6/2014	R16282
Propionitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Tetrahydrofuran	ND	0.500		µg/L	1	1/6/2014	R16282
Benzene	ND	0.500		µg/L	1	1/6/2014	R16282
Toluene	ND	0.500		µg/L	1	1/6/2014	R16282
Ethylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Methyl tert-butyl ether (MTBE)	ND	10.0		µg/L	1	1/6/2014	R16282
1,2,4-Trimethylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,3,5-Trimethylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dichloroethane (EDC)	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dibromoethane (EDB)	ND	0.500		µg/L	1	1/6/2014	R16282
Naphthalene	ND	0.500		µg/L	1	1/6/2014	R16282
Acetone	ND	2.50		µg/L	1	1/6/2014	R16282
Bromobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Bromodichloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
Bromoform	ND	0.500		µg/L	1	1/6/2014	R16282
Bromomethane	ND	0.500		µg/L	1	1/6/2014	R16282

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-002

Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK **Received Date:** 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
Carbon disulfide	ND	0.500		µg/L	1	1/6/2014	R16282
Carbon Tetrachloride	ND	0.500		µg/L	1	1/6/2014	R16282
Chlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Chloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
Chloroform	ND	0.500		µg/L	1	1/6/2014	R16282
Chloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
2-Chlorotoluene	ND	0.500		µg/L	1	1/6/2014	R16282
4-Chlorotoluene	ND	0.500		µg/L	1	1/6/2014	R16282
cis-1,2-DCE	ND	0.500		µg/L	1	1/6/2014	R16282
cis-1,3-Dichloropropene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dibromo-3-chloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
Dibromochloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
Dibromomethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,3-Dichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,4-Dichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Dichlorodifluoromethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1-Dichloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1-Dichloroethene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2-Dichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
1,3-Dichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
2,2-Dichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1-Dichloropropene	ND	0.500		µg/L	1	1/6/2014	R16282
Hexachlorobutadiene	ND	0.500		µg/L	1	1/6/2014	R16282
2-Hexanone	ND	0.500		µg/L	1	1/6/2014	R16282
Isopropylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Methylene Chloride	ND	2.50		µg/L	1	1/6/2014	R16282
n-Butylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
n-Propylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
sec-Butylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
Styrene	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Butylbenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,1,1,2-Tetrachloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1,2,2-Tetrachloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
Tetrachloroethene (PCE)	ND	0.500		µg/L	1	1/6/2014	R16282
trans-1,2-DCE	ND	0.500		µg/L	1	1/6/2014	R16282
trans-1,3-Dichloropropene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2,3-Trichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282
1,2,4-Trichlorobenzene	ND	0.500		µg/L	1	1/6/2014	R16282

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well
Lab ID: 1312B24-002
Client Sample ID: Trip Blank
Collection Date:
Matrix: TRIP BLANK
Received Date: 12/23/2013 3:00:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES							Analyst: **SUB**
1,1,1-Trichloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,1,2-Trichloroethane	ND	0.500		µg/L	1	1/6/2014	R16282
Trichloroethene (TCE)	ND	0.500		µg/L	1	1/6/2014	R16282
Trichlorofluoromethane	ND	0.500		µg/L	1	1/6/2014	R16282
1,2,3-Trichloropropane	ND	0.500		µg/L	1	1/6/2014	R16282
Vinyl chloride	ND	0.500		µg/L	1	1/6/2014	R16282
Xylenes, Total	ND	1.00		µg/L	1	1/6/2014	R16282
mp-Xylenes	ND	0.500		µg/L	1	1/6/2014	R16282
o-Xylene	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Amyl methyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Butyl ethyl ether	ND	0.500		µg/L	1	1/6/2014	R16282
tert-Butyl alcohol	ND	2.50		µg/L	1	1/6/2014	R16282
Acrolein	ND	0.500		µg/L	1	1/6/2014	R16282
Acrylonitrile	ND	0.500		µg/L	1	1/6/2014	R16282
Bromochloromethane	ND	0.500		µg/L	1	1/6/2014	R16282
2-Chloroethyl vinyl ether	ND	1.00		µg/L	1	1/6/2014	R16282
Iodomethane	ND	0.500		µg/L	1	1/6/2014	R16282
trans-1,4-Dichloro-2-butene	ND	0.500		µg/L	1	1/6/2014	R16282
Vinyl acetate	ND	0.500		µg/L	1	1/6/2014	R16282
1,4-Dioxane	ND	20.0		µg/L	1	1/6/2014	R16282
Surr: 1,2-Dichloroethane-d4	104	70-130		%REC	1	1/6/2014	R16282
Surr: 4-Bromofluorobenzene	99.2	70-130		%REC	1	1/6/2014	R16282
Surr: Toluene-d8	99.2	70-130		%REC	1	1/6/2014	R16282

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

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E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Schultz, Michele

From: Strange, Aaron
Sent: Wednesday, January 29, 2014 9:27 AM
To: Schultz, Michele
Subject: Injection Wells

Micki,

I did get a field temperature and pH for the Injection well samples on 12/23/13. The temp was 90.1F and the pH was 7.33.

Thank you,
Aaron

Aaron Strange
Environmental Specialist 1
Environmental Department
Navajo Refining Co, LLC
Artesia NM
Cell: (575) 703-5057
Off: (575) 746-5468

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**
28-Jan-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/24/2013** SeqNo: **454377** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.10	1.600	0	95.0	90	110			
Nitrogen, Nitrite (As N)	3.1	0.10	3.200	0	96.2	90	110			
Bromide	8.0	0.10	8.000	0	99.4	90	110			
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	103	90	110			
Phosphorus, Orthophosphate (As P	7.4	0.50	8.000	0	92.0	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/24/2013** SeqNo: **454379** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/24/2013** SeqNo: **454380** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.47	0.10	0.5000	0	93.0	90	110			
Nitrogen, Nitrite (As N)	0.93	0.10	1.000	0	92.5	90	110			
Bromide	2.5	0.10	2.500	0	98.0	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	98.9	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.3	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/24/2013** SeqNo: **454389** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.95	0.10	1.000	0	95.1	90	110			
Nitrogen, Nitrite (As N)	1.9	0.10	2.000	0	93.8	90	110			
Bromide	4.9	0.10	5.000	0	97.5	90	110			
Nitrogen, Nitrate (As N)	2.9	0.10	3.000	0	97.9	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.8	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/24/2013** SeqNo: **454401** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.10	1.600	0	97.0	90	110			
Nitrogen, Nitrite (As N)	3.1	0.10	3.200	0	96.1	90	110			
Bromide	7.9	0.10	8.000	0	99.2	90	110			
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	103	90	110			
Phosphorus, Orthophosphate (As P	7.7	0.50	8.000	0	95.7	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/24/2013** SeqNo: **454413** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.95	0.10	1.000	0	95.2	90	110			
Nitrogen, Nitrite (As N)	1.9	0.10	2.000	0	94.0	90	110			
Bromide	4.9	0.10	5.000	0	97.2	90	110			
Nitrogen, Nitrate (As N)	2.9	0.10	3.000	0	98.0	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.4	90	110			

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/25/2013** SeqNo: **454425** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.5	0.10	1.600	0	96.2	90	110			
Nitrogen, Nitrite (As N)	3.1	0.10	3.200	0	96.2	90	110			
Bromide	7.9	0.10	8.000	0	99.2	90	110			
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	103	90	110			
Phosphorus, Orthophosphate (As P	7.7	0.50	8.000	0	96.2	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**
Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**
Prep Date: Analysis Date: **12/25/2013** SeqNo: **454437** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.0	0.10	1.000	0	99.6	90	110			
Nitrogen, Nitrite (As N)	1.9	0.10	2.000	0	94.1	90	110			
Bromide	4.9	0.10	5.000	0	97.4	90	110			
Nitrogen, Nitrate (As N)	2.9	0.10	3.000	0	98.2	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	94.1	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**

Prep Date: Analysis Date: **12/25/2013** SeqNo: **454449** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	1.6	0.10	1.600	0	99.5	90	110			
Nitrogen, Nitrite (As N)	3.1	0.10	3.200	0	96.5	90	110			
Bromide	8.0	0.10	8.000	0	99.6	90	110			
Nitrogen, Nitrate (As N)	4.9	0.10	4.800	0	103	90	110			
Phosphorus, Orthophosphate (As P	7.8	0.50	8.000	0	97.1	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15740** RunNo: **15740**

Prep Date: Analysis Date: **12/25/2013** SeqNo: **454455** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.98	0.10	1.000	0	98.4	90	110			
Nitrogen, Nitrite (As N)	1.9	0.10	2.000	0	94.1	90	110			
Bromide	4.9	0.10	5.000	0	97.4	90	110			
Nitrogen, Nitrate (As N)	3.0	0.10	3.000	0	98.4	90	110			
Phosphorus, Orthophosphate (As P	4.7	0.50	5.000	0	93.8	90	110			

Sample ID **A6** SampType: **CCV_6** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455748** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	12	0.50	12.00	0	101	90	110			
Sulfate	31	0.50	30.00	0	103	90	110			

Sample ID **MB** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455751** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								

Sample ID **LCS** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455752** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.6	0.50	5.000	0	92.1	90	110			
Sulfate	9.4	0.50	10.00	0	93.5	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455761** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.1	90	110			
Sulfate	12	0.50	12.50	0	95.4	90	110			

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455773** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	7.7	0.50	8.000	0	96.7	90	110			
Sulfate	20	0.50	20.00	0	98.4	90	110			

Sample ID **A4** SampType: **CCV_4** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455785** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	4.7	0.50	5.000	0	94.0	90	110			
Sulfate	12	0.50	12.50	0	95.3	90	110			

Sample ID **A5** SampType: **CCV_5** TestCode: **EPA Method 300.0: Anions**

Client ID: **BatchQC** Batch ID: **R15790** RunNo: **15790**

Prep Date: Analysis Date: **12/27/2013** SeqNo: **455797** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	7.8	0.50	8.000	0	97.0	90	110			
Sulfate	20	0.50	20.00	0	98.5	90	110			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **1312b24-001a dup** SampType: **dup** TestCode: **SM2510B: Specific Conductance**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **R15744** RunNo: **15744**

Prep Date: Analysis Date: **12/26/2013** SeqNo: **454554** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	7700	0.010						0.365	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-11002** SampType: **MBLK** TestCode: **EPA Method 7470: Mercury**
Client ID: **PBW** Batch ID: **11002** RunNo: **15766**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **455051** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID **LCS-11002** SampType: **LCS** TestCode: **EPA Method 7470: Mercury**
Client ID: **LCSW** Batch ID: **11002** RunNo: **15766**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **455052** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

Sample ID **1312B24-001BMS** SampType: **MS** TestCode: **EPA Method 7470: Mercury**
Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **11002** RunNo: **15766**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **455056** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	93.8	75	125			

Sample ID **1312B24-001BMSD** SampType: **MSD** TestCode: **EPA Method 7470: Mercury**
Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **11002** RunNo: **15766**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **455058** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0047	0.00020	0.005000	0	94.2	75	125	0.332	20	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID	**MB-11004**	SampType:	**MBLK**		TestCode:	**MERCURY, TCLP**					
Client ID:	**PBW**	Batch ID:	**11004**		RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455102**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

Sample ID	**LCS-11004**	SampType:	**LCS**		TestCode:	**MERCURY, TCLP**					
Client ID:	**LCSW**	Batch ID:	**11004**		RunNo:	**15770**					
Prep Date:	**12/26/2013**	Analysis Date:	**12/27/2013**		SeqNo:	**455103**	Units:	**mg/L**			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020	0.005000	0	96.6	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-11005** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **PBW** Batch ID: **11005** RunNo: **15777**

Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **455301** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID **LCS-11005** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**

Client ID: **LCSW** Batch ID: **11005** RunNo: **15777**

Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **455302** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.4	80	120			
Barium	ND	100	0.5000	0	92.9	80	120			
Cadmium	ND	1.0	0.5000	0	98.7	80	120			
Chromium	ND	5.0	0.5000	0	93.2	80	120			
Lead	ND	5.0	0.5000	0	93.1	80	120			
Selenium	ND	1.0	0.5000	0	94.4	80	120			
Silver	ND	5.0	0.1000	0	98.3	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-11005** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW** Batch ID: **11005** RunNo: **15777**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **456705** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	ND	0.050								
Arsenic	ND	0.020								
Barium	ND	0.020								
Beryllium	ND	0.0030								
Cadmium	ND	0.0020								
Calcium	ND	1.0								
Chromium	ND	0.0060								
Cobalt	ND	0.0060								
Copper	ND	0.0060								
Iron	ND	0.050								
Lead	ND	0.0050								
Magnesium	ND	1.0								
Manganese	ND	0.0020								
Nickel	ND	0.010								
Potassium	ND	1.0								
Selenium	ND	0.050								
Silver	ND	0.0050								
Thallium	ND	0.050								
Vanadium	ND	0.050								
Zinc	ND	0.020								

Sample ID **LCS-11005** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **11005** RunNo: **15777**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Antimony	0.48	0.050	0.5000	0	96.8	80	120			
Arsenic	0.47	0.020	0.5000	0	93.4	80	120			
Barium	0.46	0.020	0.5000	0	92.9	80	120			
Beryllium	0.50	0.0030	0.5000	0	99.2	80	120			
Cadmium	0.49	0.0020	0.5000	0	98.7	80	120			
Calcium	45	1.0	50.00	0	90.1	80	120			
Chromium	0.47	0.0060	0.5000	0	93.2	80	120			
Cobalt	0.46	0.0060	0.5000	0	92.7	80	120			
Copper	0.51	0.0060	0.5000	0	102	80	120			
Iron	0.47	0.050	0.5000	0	94.1	80	120			
Lead	0.47	0.0050	0.5000	0	93.1	80	120			
Magnesium	46	1.0	50.00	0	92.0	80	120			
Manganese	0.48	0.0020	0.5000	0	95.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company
Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **LCS-11005** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **11005** RunNo: **15777**
Prep Date: **12/26/2013** Analysis Date: **12/27/2013** SeqNo: **456706** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Nickel	0.45	0.010	0.5000	0	90.0	80	120			
Potassium	45	1.0	50.00	0	89.1	80	120			
Selenium	0.47	0.050	0.5000	0	94.4	80	120			
Silver	0.098	0.0050	0.1000	0	98.3	80	120			
Thallium	0.49	0.050	0.5000	0	98.4	80	120			
Vanadium	0.48	0.050	0.5000	0	96.6	80	120			
Zinc	0.46	0.020	0.5000	0	92.9	80	120			

Sample ID **MB-11005** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW** Batch ID: **11005** RunNo: **15807**
Prep Date: **12/26/2013** Analysis Date: **12/30/2013** SeqNo: **456709** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	ND	0.020								

Sample ID **LCS-11005** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **11005** RunNo: **15807**
Prep Date: **12/26/2013** Analysis Date: **12/30/2013** SeqNo: **456710** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Aluminum	0.59	0.020	0.5000	0	119	80	120			

Sample ID **MB-11005** SampType: **MBLK** TestCode: **EPA 6010B: Total Metals**
Client ID: **PBW** Batch ID: **11005** RunNo: **15868**
Prep Date: **12/26/2013** Analysis Date: **1/2/2014** SeqNo: **457613** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	1.1	1.0								

Sample ID **LCS-11005** SampType: **LCS** TestCode: **EPA 6010B: Total Metals**
Client ID: **LCSW** Batch ID: **11005** RunNo: **15868**
Prep Date: **12/26/2013** Analysis Date: **1/2/2014** SeqNo: **457614** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	60	1.0	50.00	0	119	80	120			B

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **1312b24-001a dup** SampType: **dup** TestCode: **SM4500-H+B: pH**

Client ID: **WDW-1, 2, & 3 Efflu** Batch ID: **R15744** RunNo: **15744**

Prep Date: Analysis Date: **12/26/2013** SeqNo: **454560** Units: **pH units**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	7.30	1.68								H

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **mb-1**	SampType: **mblk**			TestCode: **SM2320B: Alkalinity**						
Client ID: **PBW**	Batch ID: **R15744**			RunNo: **15744**						
Prep Date:	Analysis Date: **12/26/2013**			SeqNo: **454539**			Units: **mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	ND	20								

Sample ID **lcs-1**	SampType: **lcs**			TestCode: **SM2320B: Alkalinity**						
Client ID: **LCSW**	Batch ID: **R15744**			RunNo: **15744**						
Prep Date:	Analysis Date: **12/26/2013**			SeqNo: **454540**			Units: **mg/L CaCO3**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Alkalinity (as CaCO3)	79	20	80.00	0	98.6	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1312B24**

28-Jan-14

Client: Navajo Refining Company

Project: WDW-1, 2, & 3 Qtrly Inj Well

Sample ID **MB-11011** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **PBW** Batch ID: **11011** RunNo: **15802**

Prep Date: **12/27/2013** Analysis Date: **12/30/2013** SeqNo: **455988** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID **LCS-11011** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**

Client ID: **LCSW** Batch ID: **11011** RunNo: **15802**

Prep Date: **12/27/2013** Analysis Date: **12/30/2013** SeqNo: **455989** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1010	20.0	1000	0	101	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: NAVAJO REFINING COM Work Order Number: 1312B24 RcptNo: 1

Received by/date: AF 12/23/13

Logged By: **Lindsay Mangin** 12/23/2013 3:00:00 PM

Completed By: **Lindsay Mangin** 12/24/2013 9:32:57 AM

Reviewed By:

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☑ No ☐ No VOA Vials ☐
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? Yes ☑ No ☐
    (Note discrepancies on chain of custody)
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? Yes ☑ No ☐
    (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 22 (<2 or >12 unless noted)
Adjusted? NO
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.5	Good	Yes			

Chain-of-Custody Record

vajo Refining Co.

ddress: P.O. Box 159 Artesia,

-0159

575-748-3311

ax#: 575-746-5451

ckage:

ard ☐ Level 4 (Full Validation)

Type) _____

☑ Standar ~~Rush Next Day~~

Project Name:

WDW-1, 2, & 3 Qtrly Inj Well

Project #:

Project Manager:

Mike Holder

Sampler: Aaron Strange

On Ice: ☑ Yes ☐ No

Sample Temperature:

HALL ENVIRONMEN ANALYSIS LABORAT

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	HCO3, CO3, Cl, SO4, TDS, pH, cond.,Fl, Cation/anion bal., Br, Eh/40 CFR 136.3	VOCs/SW-846 Method 8260C (see attached list 'VOCs')	SVOCs/SW-846 Method 8270B (see attached list 'SVOCs')	R,C,I/40 CFR part 261	Metals/SW-846 Mthd 6020, 7063, 7470 (see attached list 'Metals')	Ca, K, Mg, Na/40 CFR 136.3	TCLP Metals, only /40 CFR Part 261/ SW-846 Method 1311					
13	8:40	Liquid	WDW-1, 2, & 3 Effluent	3	Neat	-001	X			X			X					
13	8:40	Liquid	WDW-1, 2, & 3 Effluent	1	HNO3						X	X						
13	8:40	Liquid	WDW-1, 2, & 3 Effluent	3	HCL			X										
13	8:40	Liquid	WDW-1, 2, & 3 Effluent	2	Neat				X									
		Liquid	Trip Blank	2	Neat	-002		X										
		Liquid	Temperature Blank	1	Neat													

Time:	Relinquished by:	Received by:	Date Time
13 10:00	Aaron Strange		12/23/13 1500
Time:	Relinquished by:	Received by:	Date Time

Remarks: Report these results separately from all other Chain of Custody kits provided.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Classification	Analyte name	Method	Units	RL
Inorganics	Mercury	SW-846 Method 7470		
Inorganics	Arsenic	SW-846 Method 7063		
Inorganics	Silver	SW-846 Method 6010		
Inorganics	Aluminum	SW-846 Method 6020		
Inorganics	Barium	SW-846 Method 6020		
Inorganics	Beryllium	SW-846 Method 6020		
Inorganics	Calcium	SW-846 Method 6020		
Inorganics	Cadmium	SW-846 Method 6020		
Inorganics	Cobalt	SW-846 Method 6020		
Inorganics	Chromium	SW-846 Method 6020		
Inorganics	Copper	SW-846 Method 6020		
Inorganics	Iron	SW-846 Method 6020		
Inorganics	Mercury	SW-846 Method 6020		
Inorganics	Potassium	SW-846 Method 6020		
Inorganics	Magnesium	SW-846 Method 6020		
Inorganics	Manganese	SW-846 Method 6020		
Inorganics	Sodium	SW-846 Method 6020		
Inorganics	Nickel	SW-846 Method 6020		
Inorganics	Lead	SW-846 Method 6020		
Inorganics	Antimony	SW-846 Method 6020		
Inorganics	Selenium	SW-846 Method 6020		
Inorganics	Thallium	SW-846 Method 6020		
Inorganics	Vanadium	SW-846 Method 6020		
Inorganics	Zinc	SW-846 Method 6020		

(1) 23 TAL Metals

WOW-1, 2 & 3 Qtrly Inj well

1- Aq set

2-1L unpres. P
1-125ml H_2SO_4 P
4-40ml HCl VOAs
2-1L Ambers unpres.
1-500ml unpres. P
1-500ml NaOH P
1-500ml NaOH/Znacetate P
1-500ml HNO_3 P

+ TB

classification	analyte name	Method	units	R
Volatile or	Acetone	SW-846 Method 8260C	µg/L	10
Volatile or	Acetonitrile	SW-846 Method 8260C	µg/L	
Volatile or	Acrolein	SW-846 Method 8260C	µg/L	
Volatile or	Allyl alcohol	SW-846 Method 8260C	µg/L	
Volatile or	Allyl chloride	SW-846 Method 8260C	µg/L	
Volatile or	t-Amyl ethyl ether (TAEE)	SW-846 Method 8260C	µg/L	
Volatile or	t-Amyl methyl ether (TAME)	SW-846 Method 8260C	µg/L	
Volatile or	Benzene	SW-846 Method 8260C	µg/L	1
Volatile or	Benzyl chloride	SW-846 Method 8260C	µg/L	
Volatile or	Bis(2-chloroethyl)sulfide	SW-846 Method 8260C	µg/L	
Volatile or	Bromoacetone	SW-846 Method 8260C	µg/L	
Volatile or	Bromobenzene	SW-846 Method 8260C	µg/L	
Volatile or	Bromochloromethane	SW-846 Method 8260C	µg/L	5
Volatile or	Bromodichloromethane	SW-846 Method 8260C	µg/L	1
Volatile or	4-Bromofluorobenzene (surr)	SW-846 Method 8260C	µg/L	
Volatile or	Bromoform	SW-846 Method 8260C	µg/L	4
Volatile or	Bromomethane	SW-846 Method 8260C	µg/L	2
Volatile or	n-Butanol	SW-846 Method 8260C	µg/L	
Volatile or	2-Butanone (MEK)	SW-846 Method 8260C	µg/L	10
Volatile or	n-Butylbenzene	SW-846 Method 8260C	µg/L	
Volatile or	sec-Butylbenzene	SW-846 Method 8260C	µg/L	
Volatile or	tert-Butylbenzene	SW-846 Method 8260C	µg/L	
Volatile or	t-Butyl alcohol	SW-846 Method 8260C	µg/L	
Volatile or	Carbon disulfide	SW-846 Method 8260C	µg/L	2
Volatile or	Carbon tetrachloride	SW-846 Method 8260C	µg/L	1
Volatile or	Chloral hydrate	SW-846 Method 8260C	µg/L	
Volatile or	Chlorobenzene	SW-846 Method 8260C	µg/L	1
Volatile or	Chlorobenzene-d5 (IS)	SW-846 Method 8260C	µg/L	
Volatile or	1-Chlorobutane	SW-846 Method 8260C	µg/L	
Volatile or	Chlorodibromomethane	SW-846 Method 8260C	µg/L	
Volatile or	1-Chlorohexane	SW-846 Method 8260C	µg/L	
Volatile or	Chloroethane	SW-846 Method 8260C	µg/L	1
Volatile or	2-Chloroethanol	SW-846 Method 8260C	µg/L	
Volatile or	2-Chloroethyl vinyl ether	SW-846 Method 8260C	µg/L	
Volatile or	Chloroform	SW-846 Method 8260C	µg/L	1
Volatile or	Chloromethane	SW-846 Method 8260C	µg/L	1
Volatile or	Chloroprene	SW-846 Method 8260C	µg/L	
Volatile or	4-Chlorotoluene	SW-846 Method 8260C	µg/L	
Volatile or	Crotonaldehyde	SW-846 Method 8260C	µg/L	
Volatile or	Cyclohexane	SW-846 Method 8260C	µg/L	5
Volatile or	1,2-Dibromo-3-chloropropane	SW-846 Method 8260C	µg/L	10
Volatile or	1,2-Dibromoethane	SW-846 Method 8260C	µg/L	2
Volatile or	Dibromochloromethane	SW-846 Method 8260C	µg/L	1
Volatile or	Dibromomethane	SW-846 Method 8260C	µg/L	
Volatile or	1,2-Dichlorobenzene	SW-846 Method 8260C	µg/L	1

Volatile or	1,3-Dichlorobenzene	SW-846 Method 8260C	µg/L	1
Volatile or	1,4-Dichlorobenzene	SW-846 Method 8260C	µg/L	1
Volatile or	1,4-Dichlorobenzene-d4 (IS)	SW-846 Method 8260C	µg/L	
Volatile or	cis-1,4-Dichloro-2-butene	SW-846 Method 8260C	µg/L	
Volatile or	trans-1,4-Dichloro-2-butene	SW-846 Method 8260C	µg/L	
Volatile or	Dichlorodifluoromethane	SW-846 Method 8260C	µg/L	5
Volatile or	1,1-Dichloroethane	SW-846 Method 8260C	µg/L	1
Volatile or	1,2-Dichloroethane	SW-846 Method 8260C	µg/L	1
Volatile or	1,2-Dichloroethane-d4 (surr)	SW-846 Method 8260C	µg/L	
Volatile or	1,1-Dichloroethene	SW-846 Method 8260C	µg/L	1
Volatile or	cis-1,2-Dichloroethene	SW-846 Method 8260C	µg/L	1
Volatile or	trans-1,2-Dichloroethene	SW-846 Method 8260C	µg/L	1
Volatile or	1,2-Dichloropropane	SW-846 Method 8260C	µg/L	1
Volatile or	1,3-Dichloropropane	SW-846 Method 8260C	µg/L	
Volatile or	2,2-Dichloropropane	SW-846 Method 8260C	µg/L	
Volatile or	1,1-Dichloropropene	SW-846 Method 8260C	µg/L	
Volatile or	1,3-Dichloro-2-propanol	SW-846 Method 8260C	µg/L	
Volatile or	cis-1,3-Dichloropropene	SW-846 Method 8260C	µg/L	1
Volatile or	trans-1,3-Dichloropropene	SW-846 Method 8260C	µg/L	1
Volatile or	1,2,3,4-Depoxybutane	SW-846 Method 8260C	µg/L	
Volatile or	Diethyl ether	SW-846 Method 8260C	µg/L	
Volatile or	Diisopropyl either (DIPE)	SW-846 Method 8260C	µg/L	
Volatile or	1,4-Difluorobenzene (IS)	SW-846 Method 8260C	µg/L	
Volatile or	1,4-Dioxane	SW-846 Method 8260C	µg/L	130
Volatile or	Epichlorohydrin	SW-846 Method 8260C	µg/L	
Volatile or	Ethanol	SW-846 Method 8260C	µg/L	
Volatile or	Ethyl acetate	SW-846 Method 8260C	µg/L	
Volatile or	Ethylbenzene	SW-846 Method 8260C	µg/L	1
Volatile or	Ethylene oxide	SW-846 Method 8260C	µg/L	
Volatile or	Ethyl methacrylate	SW-846 Method 8260C	µg/L	
Volatile or	Fluorobenzene (IS)	SW-846 Method 8260C	µg/L	
Volatile or	Freon 113	SW-846 Method 8260C	µg/L	5
Volatile or	Ethyl tert-butyl ether (ETBE)	SW-846 Method 8260C	µg/L	
Volatile or	Hexachlorobutadiene	SW-846 Method 8260C	µg/L	
Volatile or	Hexachloroethane	SW-846 Method 8260C	µg/L	
Volatile or	2-Hexanone	SW-846 Method 8260C	µg/L	5
Volatile or	Iodomethane	SW-846 Method 8260C	µg/L	
Volatile or	Isobutyl alcohol	SW-846 Method 8260C	µg/L	
Volatile or	Isopropylbenzene	SW-846 Method 8260C	µg/L	2
Volatile or	p-Isopropyltoluene	SW-846 Method 8260C	µg/L	
Volatile or	Malononitrile	SW-846 Method 8260C	µg/L	
Volatile or	Methacrylonitrile	SW-846 Method 8260C	µg/L	
Volatile or	Methanol	SW-846 Method 8260C	µg/L	
Volatile or	Methyl acetate	SW-846 Method 8260C	µg/L	5
Volatile or	Methylcyclohexane	SW-846 Method 8260C	µg/L	5
Volatile or	Methyl acrylate	SW-846 Method 8260C	µg/L	
Volatile or	Methylene chloride	SW-846 Method 8260C	µg/L	2

Volatile or	Methyl methacrylate	SW-846 Method 8260C	µg/L	
Volatile or	4-Methyl-2-pentanone (MIBK)	SW-846 Method 8260C	µg/L	5
Volatile or	Methyl tert-butyl ether (MTBE)	SW-846 Method 8260C	µg/L	1
Volatile or	Naphthalene	SW-846 Method 8260C	µg/L	
Volatile or	Nitrobenzene	SW-846 Method 8260C	µg/L	
Volatile or	2-Nitropropane	SW-846 Method 8260C	µg/L	
Volatile or	N-Nitroso-di-n-butylamine	SW-846 Method 8260C	µg/L	
Volatile or	Paraldehyde	SW-846 Method 8260C	µg/L	
Volatile or	Pentachloroethane	SW-846 Method 8260C	µg/L	
Volatile or	Pentafluorobenzene	SW-846 Method 8260C	µg/L	
Volatile or	2-Pentanone	SW-846 Method 8260C	µg/L	
Volatile or	2-Picoline	SW-846 Method 8260C	µg/L	
Volatile or	1-Propanol	SW-846 Method 8260C	µg/L	
Volatile or	2-Propanol	SW-846 Method 8260C	µg/L	
Volatile or	Propargyl alcohol	SW-846 Method 8260C	µg/L	
Volatile or	beta-Propiolactone	SW-846 Method 8260C	µg/L	
Volatile or	Propionitrile	SW-846 Method 8260C	µg/L	
Volatile or	n-Propylamine	SW-846 Method 8260C	µg/L	
Volatile or	n-Propylbenzene	SW-846 Method 8260C	µg/L	
Volatile or	Pyridine	SW-846 Method 8260C	µg/L	
Volatile or	Styrene	SW-846 Method 8260C	µg/L	5
Volatile or	1,1,1,2-Tetrachloroethane	SW-846 Method 8260C	µg/L	
Volatile or	1,1,2,2-Tetrachloroethane	SW-846 Method 8260C	µg/L	1
Volatile or	Tetrachloroethene (PCE)	SW-846 Method 8260C	µg/L	1
Volatile or	Toluene	SW-846 Method 8260C	µg/L	1
Volatile or	Toluene-d8 (surr)	SW-846 Method 8260C	µg/L	
Volatile or	o-Toluidine	SW-846 Method 8260C	µg/L	
Volatile or	1,2,3-Trichlorobenzene	SW-846 Method 8260C	µg/L	5
Volatile or	1,2,4-Trichlorobenzene	SW-846 Method 8260C	µg/L	5
Volatile or	1,1,1-Trichloroethane	SW-846 Method 8260C	µg/L	1
Volatile or	1,1,2-Trichloroethane	SW-846 Method 8260C	µg/L	1
Volatile or	Trichloroethene (TCE)	SW-846 Method 8260C	µg/L	1
Volatile or	Trichlorofluoromethane	SW-846 Method 8260C	µg/L	5
Volatile or	1,2,3-Trichloropropane	SW-846 Method 8260C	µg/L	
Volatile or	1,2,4-Trimethylbenzene	SW-846 Method 8260C	µg/L	
Volatile or	1,3,5-Trimethylbenzene	SW-846 Method 8260C	µg/L	
Volatile or	Vinyl acetate	SW-846 Method 8260C	µg/L	
Volatile or	Vinyl chloride	SW-846 Method 8260C	µg/L	1
Volatile or	o-Xylene	SW-846 Method 8260C	µg/L	1
Volatile or	m-Xylene	SW-846 Method 8260C	µg/L	1
Volatile or	p-Xylene	SW-846 Method 8260C	µg/L	1
Volatile or	Xylene, total	SW-846 Method 8260C	µg/L	1

(surr) - Surrogate

(IS) - Internal Standard

Method 8260C Volatile Organic Compounds by Gas Chromatograhy/Mass Spectrometry (GC/MS) (EPA, Revi

Constituents with RLs are on the VOC Target Compound List (TCL) (SOMO 1.1)

Classification	Analyte name	Method	Units
Semivolatile organics	1,1'-Biphenyl	SW-864 Method 8270B	µg/L
Semivolatile organics	1,2,4,5-Tetrachlorobenzene	SW-864 Method 8270B	µg/L
Semivolatile organics	2-Chloronaphthalene	SW-864 Method 8270B	µg/L
Semivolatile organics	2-Chlorophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2-Methylphenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2-Nitroaniline	SW-864 Method 8270B	µg/L
Semivolatile organics	2-Nitrophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,3,4,6-Tetrachlorophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,4-Dichlorophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,4-Dimethylphenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,4-Dinitrophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,4-Dinitrotoluene	SW-864 Method 8270B	µg/L
Semivolatile organics	2,4,5-Trichlorophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,4,6-Trichlorophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	2,6-Dinitrotoluene	SW-864 Method 8270B	µg/L
Semivolatile organics	3-Nitroaniline	SW-864 Method 8270B	µg/L
Semivolatile organics	3,3'-Dichlrobenzidine	SW-864 Method 8270B	µg/L
Semivolatile organics	4-Bromophenyl-phenylether	SW-864 Method 8270B	µg/L
Semivolatile organics	4-Chloro-3-methylphenol	SW-864 Method 8270B	µg/L
Semivolatile organics	4-Chloroaniline	SW-864 Method 8270B	µg/L
Semivolatile organics	4-Chlorophenyl-phenyl ether	SW-864 Method 8270B	µg/L
Semivolatile organics	4-Nitroaniline	SW-864 Method 8270B	µg/L
Semivolatile organics	4-Nitrophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	4,6-Dinitro-2-methylphenol	SW-864 Method 8270B	µg/L
Semivolatile organics	Acetophenone	SW-864 Method 8270B	µg/L
Semivolatile organics	Acenaphthene	SW-864 Method 8270B	µg/L
Semivolatile organics	Acenaphthylene	SW-864 Method 8270B	µg/L
Semivolatile organics	Anthracene	SW-864 Method 8270B	µg/L
Semivolatile organics	Atrazine	SW-864 Method 8270B	µg/L
Semivolatile organics	Benzaldehyde	SW-864 Method 8270B	µg/L
Semivolatile organics	Benzo(a)anthracene	SW-864 Method 8270B	µg/L
Semivolatile organics	Benzo(a)pyrene	SW-864 Method 8270B	µg/L
Semivolatile organics	Benzo(b)fluoranthene	SW-864 Method 8270B	µg/L
Semivolatile organics	Benzo(g,h,i)perylene	SW-864 Method 8270B	µg/L
Semivolatile organics	Benzo(k)fluoranthene	SW-864 Method 8270B	µg/L
Semivolatile organics	bis(2-Chloroethoxy)-methane	SW-864 Method 8270B	µg/L
Semivolatile organics	bis(2-Chloroethyl) ether	SW-864 Method 8270B	µg/L
Semivolatile organics	bis(2-Chloroisopropyl) ether	SW-864 Method 8270B	µg/L
Semivolatile organics	bis(2-Ethylhexyl)phthalate	SW-864 Method 8270B	µg/L
Semivolatile organics	Butylbenzylphthalate	SW-864 Method 8270B	µg/L
Semivolatile organics	Carbazole	SW-864 Method 8270B	µg/L
Semivolatile organics	Caprolactam	SW-864 Method 8270B	µg/L
Semivolatile organics	Chrysene	SW-864 Method 8270B	µg/L
Semivolatile organics	Di-n-butylphthalate	SW-864 Method 8270B	µg/L
Semivolatile organics	Di-n-octylphthalate	SW-864 Method 8270B	µg/L

Semivolatile organics	Dibenz(a,h)anthracene	SW-864 Method 8270B	µg/L
Semivolatile organics	Dibenzofuran	SW-864 Method 8270B	µg/L
Semivolatile organics	Diethylphthalate	SW-864 Method 8270B	µg/L
Semivolatile organics	Dimethylphthalate	SW-864 Method 8270B	µg/L
Semivolatile organics	Fluroanthene	SW-864 Method 8270B	µg/L
Semivolatile organics	Fluorene	SW-864 Method 8270B	µg/L
Semivolatile organics	Hexachlorobenzene	SW-864 Method 8270B	µg/L
Semivolatile organics	Hexachlorobutadiene	SW-864 Method 8270B	µg/L
Semivolatile organics	Hexachlorocyclopentadiene	SW-864 Method 8270B	µg/L
Semivolatile organics	Hexachloroethane	SW-864 Method 8270B	µg/L
Semivolatile organics	Indeno(1,2,3-cd)peryline	SW-864 Method 8270B	µg/L
Semivolatile organics	Isophorone	SW-864 Method 8270B	µg/L
Semivolatile organics	1-Methylnaphthalene	SW-864 Method 8270B	µg/L
Semivolatile organics	2-Methylnaphthalene	SW-864 Method 8270B	µg/L
Semivolatile organics	N-Nitroso-di-n-propylamine	SW-864 Method 8270B	µg/L
Semivolatile organics	N-Nitrosodiphenylamine	SW-864 Method 8270B	µg/L
Semivolatile organics	Napthtalene	SW-864 Method 8270B	µg/L
Semivolatile organics	Nitrobenzene	SW-864 Method 8270B	µg/L
Semivolatile organics	Pentachlorophenol	SW-864 Method 8270B	µg/L
Semivolatile organics	Phenanthrene	SW-864 Method 8270B	µg/L
Semivolatile organics	Phenol	SW-864 Method 8270B	µg/L
Semivolatile organics	Pyrene	SW-864 Method 8270B	µg/L

Target Compound List 1.5 for SVOCs by SW-846 Method 8270

APPENDIX D

Quarterly Well Annulus Monitoring System (WAMS) Reports

Navajo Refining Company, L.L.C.

2013 FIRST QUARTER WEEKLY WAMS LEVEL TABLE

	1/7/13	1/14/13	1/21/13	1/28/13	2/4/13	2/13/13	2/18/13	2/25/13	3/4/13	3/11/13	3/18/13	3/25/13
WDW -1[1]	135	135	135	135	135	135	135	135	135	135	135	135
WDW-2[1]	145	145	145	145	145	145	145	145	145	145	145	145
WDW-3[1]	145	145	145	145	145	145	145	145	145	145	145	145
Comments:												

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

Navajo Refining Company, L.L.C.

2013 SECOND QUARTER WEEKLY WAMS LEVEL TABLE

	4/2/13	4/10/13	4/17/13	4/22/13	4/29/13	5/6/13	5/14/13	5/21/13	5/28/13	6/3/13	6/10/13	6/17/13	6/24/13
WDW -1[1]	135	135	135	135	135	125	125	125	125	125	125	125	125
WDW-2[1]	145	145	145	145	145	145	145	145	145	145	145	145	145
WDW-3[1]	145	145	145	145	145	135	135	135	135	135	135	135	135
Comments:													

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

Navajo Refining Company, L.L.C.

2013 THIRD QUARTER WEEKLY WAMS LEVEL TABLE

	7/1/13	7/8/13	7/15/13	7/22/13	7/29/13	8/5/13	8/12/13	8/19/13	8/26/13	9/3/13	9/9/13	9/16/13	9/23/13	9/30/13
WDW -1[1]	125	125	125	125	125	125	125	125	125	125	125	125	110	110
WDW-2[1]	135	135	135	135	135	135	135	135	135	135	135	135	135	135
WDW-3[1]	145	145	145	145	145	145	145	145	145	145	145	145	145	145
Comments:														

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

Navajo Refining Company, L.L.C.

2013 FOURTH QUARTER WEEKLY WAMS LEVEL TABLE

	10/8/13	10/14/13	10/21/13	10/28/13	11/4/13	11/11/13	11/18/13	12/2/13	12/9/13	12/17/13	12/23/13	12/30/13		
WDW -1[1]	100	50	50	160	160	160	160	155	150	150	150	145		
WDW-2[1]	135	100	100	100	100	100	100	100	100	100	100	100		
WDW-3[1]	145	145	145	145	145	145	145	145	145	145	145	145		
Comments:														

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

Chavez, Carl J, EMNRD

Subject: FW: OCD/NMED Mtg
Location: Santa Fe

Start: Tue 5/31/2011 10:00 AM
End: Tue 5/31/2011 12:00 PM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: Lackey, Johnny

Johnny Lackey, et al.:

Re: Today's Meeting Summary

The New Mexico Oil Conservation Division (OCD) would like to thank the Navajo Refining Company and New Mexico Environment Department for participating in the meeting this morning. OCD Director Bailey was pleased to be able to meet you and requested a briefing of the meeting.

I'm writing to provide a basic summary and/or briefing of the meeting based on the agenda (see below) and other items that were discussed based on our communication this morning.

Agenda

A. Recovery System Upgrade

1. Project Scope
2. Drawings
3. Completion Schedule

B. Underground Line Testing

1. Status
2. Percentage Tested in 2010 (Lovington & Artesia)
3. Praxair Methods
    a. Long Range Guided Wave Ultrasonic Pipe Screening
    b. Tracer Tight Pipeline Testing
    c. Navajo Requests OCD approval to utilize both methods for Underground line testing in lieu of hydrotesting.

C. Injection Wells Fall Off Test Requirements (Any decision on one well per year?)

1. One well per year
2. All 3 wells inject into the same formation
3. View graph

Agenda Briefing:

A) Recovery System Upgrade:

OCD responded to the phase separated hydrocarbon recovery system report in March of 2011. The only changes to the original report were: Double walled tanks will be singled walled an set into fiberglass tubs for secondary containment. OCD requested to know if there were other changes from the original report that was reviewed by the OCD and NMED? The June 2011 deadline for completion of Phase I was moved back to December 15, 2011.

OCD requested that Navajo Engineers review the pipeline specs submitted by the consultant to ensure that lines (similar to last design that failed) are of proper size to allow pumps to operate efficiently etc. Also, Navajo indicated that the lines would be accessible during clean-outs when scale blocks flow and is required to be removed to maintain flow rates over time.

Issue: 24 hr. shut-down notification issues when system shut-down due to weather conditions and/or when product recovery wells automatically shut-off due to lack of product of specified thickness. Also, there may be periods of no flow even though the OCD expects flow to occur 24/7 for 365 days per year. There may be segments of the recovery system that go down periodically for more than 24 hours and/or the system may be shut-in due to weather conditions. The tanks are not insulated. OCD requires notification when the above occurs, and if the agencies notice the system is ineffective by the quarterly or annual reporting requirements, then corrective actions to the system must be undertaken. Thus, free-phase recovery well analysis will not be needed at each recovery well location with product.

Recent MW-94 product discovery in well shall be included in Phase I.

NMED and OCD were ok with Navajo moving forward with its Phase I, II and III Plans.

B) Underground Line Testing:

The 14 pipelines that are considered arteries to the refining process and would result in shutting-down units within the refinery to MIT the lines with water must be submitted to the OCD with identification and corresponding units. The refinery would like to use the Prax-Air Tracer Test and Ultrasonic Wave Technology on buried metal lines to identify corrosion spots within the line per Prax-Air QA/QC wall thickness methods and will conserve on water use at the facility. OCD will address this request upon receipt of the line information and communicate with Navajo on an acceptable approach to monitoring and replacement of identified corroded lines in the process. The benefit of the process is that all 14 lines could be tested at one time and during the Prax-Air Tracer Method for the above ground tank leak detection method.

C) Injection Well/Fall-Off Tests (FOTs):

1) OCD requests a Certified PE down-hole analysis from the recent 2010 Fall-Off Tests that supports Navajo's request for reduced FOTing on wells on wells seated in the same injection zone and that are shown to be connected by pressure differentials of offset Class I Wells during the FOT. By Federal Law, all UIC Class I Wells must undergo a FOT.annually. WDWs 2 and 3 are within ½ mile of each other, but are over a mile away from WDW-1. OCD noticed that no professional analysis of the bottom-hole pressure data from off-set UIC Class I Wells was provided in the FOT reports for WDWs 1, 2 and 3. Navajo indicated that their down-hole consultant should have an analysis prepared and submitted to the OCD by June 30th or early July 2011.

2) OCD requested that a Certified PE provide an opinion on the variable annulus pressure observed in WDWs 1, 2 and 3 to determine why annulus pressure is oscillating in the wells. Navajo indicated that instrument calibrations and pump stabilizations have been undertaken to prevent the fluctuating annulus pressure from occurring in the wells. Also, Navajo noted that during MITs on the wells, they passed and bradenhead tests were also performed that passed. OCD indicated that the 30 min. MIT is a snap shot in time of well's MIT and that the oscillating annulus pressures should not be occurring, but that an expert opinion or analysis was needed for the OCD and EPA to consider based on the phenomena. Navajo will have a signed certified PE analysis with an opinion to the OCD by COB on 6/10/2011.

Miscellaneous:

The OCD requested a new pipeline MIT procedure and report format for the new fiberglass effluent line from the refinery to the 2 UIC Class I (Non-Hazardous) disposal wells east of the refinery. The OCD received the recent MIT charts, but a procedure and report format with conclusions was not submitted for review by the OCD. Therefore, similar to past pipeline MIT reports from Navajo Refining Company's Consultant, the OCD needs to receive a report that summarizes the process with diagrams with any conclusions by the third-party consultant to ensure that an independent expert certifies that the MIT passed the test. Please submit the new procedure with report outline to the OCD by September 1, 2011.

The RO Reject effluent allowed for good cause by the OCD in the past is in questions based on recent annual reporting of the quality of the effluent. OCD noted from the annual report that Iron and Sulfates were exceeding 20.6.2 NMAC. Why did OCD allow the discharge onto the farm fields? OCD believes the data may have warranted the discharge at the time, but recent sampling indicates exceedances that violate the discharge permit. NMED is reviewing the recent Annual Report and will work with OCD on the response letter to give Navajo some guidance going forward to assess any impacts to ground water, etc. Navajo is looking into any process change that may have elevated the sulfate in the reject water and

	NAVAJO REFINING COMPANY MEETIN (5/31/2011)		
	SANTA FE, NEW MEXICO OIL CONSERVATION DIVISION		
Name	**Company**	**Title**	**Phone**
Carl Chavez	NMOCD	Env. Engr.	505-476-3490
Darrell Moore	Navajo Refining	Env. Mgr	575-746-5281
JOHNNY LACKEY	NAVAJO REFINING	ENV. MGR	575-746-5490
Michael Whatley	NAVAJO REFINING	REF MGR	575-748-6743
Hope Monzeglio Petrie	HWB	Project Leader	505-476-6045
LEONA TSINNAJINNIE	HWB		(505)476-6057
Dave Cobrain	HWB	Staff Mgr	505-476-6055

May 31, 2011

NMED/OCD Meeting Agenda

A. Recovery System Upgrade

1. Project Scope
2. Drawings
3. Completion Schedule

B. Underground Line Testing

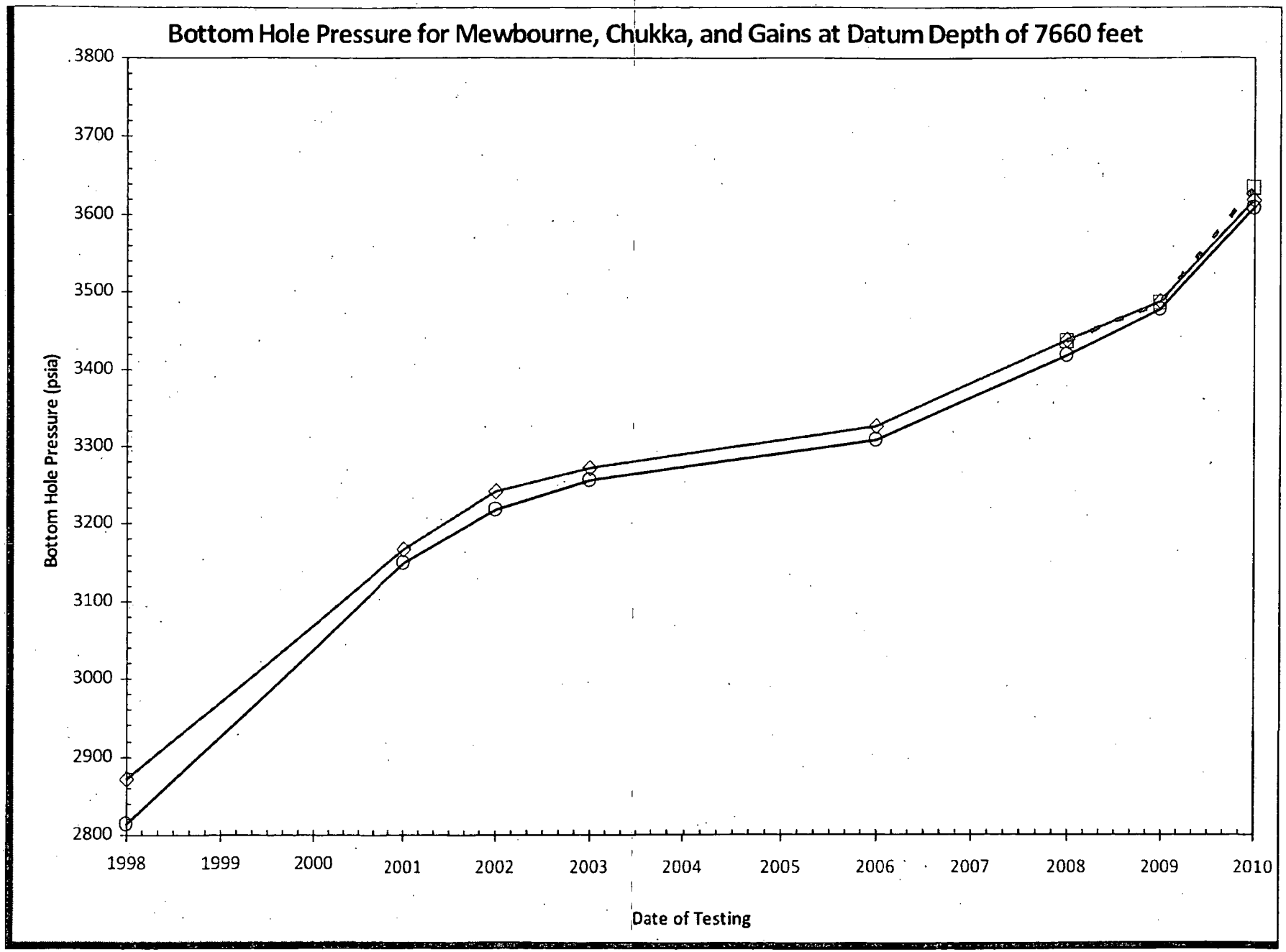
1. Status
2. Percentage Tested in 2010 (Lovington & Artesia)
3. Praxair Methods
    a. Long Range Guided Wave Ultrasonic Pipe Screening
    b. Tracer Tight Pipeline Testing
    c. Navajo Requests OCD approval to utilize both methods for Underground line testing in lieu of hydrotesting.

C. Injection Wells Fall Off Test Requirements (Any decision on one well per year?)

1. One well per year
2. All 3 wells inject into the same formation
3. View graph

A brief PowerPoint presentation during discussion

Fall Off Test


Bottom Hole Pressure for Mewbourne, Chukka, and Gains at Datum Depth of 7660 feet
Bottom Hole Pressure (psia)
3800
3700
3600
3500
3400
3300
3200
3100
3000
2900
2800
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Date of Testing

The previous graph shows clearly that all three wells are in communication and supports Navajo's position that performing one fall off test per year is sufficient.

Discuss State's concerns

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, July 01, 2011 8:48 AM
To: 'Lackey, Johnny'; 'Moore, Darrell'
Cc: Sanchez, Daniel J., EMNRD; Dade, Randy, EMNRD
Subject: FW: UICI-8 MIT Explanation Due
Attachments: UICI-8 MIT Explanation Due

Johnny and Darrell:

Good morning. The OCD has not received a response to its request for a signed PE opinion on the anomalous differential annulus pressures occurring in WDWs 1, 2 and 3. At the /31 meeting in Santa Fe OCD requested this information by COB on 6/10. Was this sent? If not, when can Navajo Refining Company have its down hole PE Expert provide an opinion for OCD review?

Also, OCD requested a response to the annual Fall-Off Test (FOT) performed in 2010 related to your request for a reduced FOT schedule for the aforementioned WDWs. The response was expected by 6/30 or early July 2011 (5/31 Mtg. in Santa Fe). When can OCD expect to receive this?

Please contact me if you have questions. Thank you.

File: OCD Online WDWs "Annual Report" and "FOT" Thumbnails

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
"Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

Subject: UICI-8 MIT Explanation Due
Location: Office

Start: Fri 6/10/2011 4:00 PM
End: Fri 6/10/2011 4:30 PM

Recurrence: (none)

Organizer: Chavez, Carl J, EMNRD

OCD requested PE explanation for variation in annulus pressure in WDWs 1, 2 & 3 due by today that would explain why OCD should not consider wells failing MIT.

Mr. Carl Chavez
NM Oil Conservation Division
Environmental Bureau
1220 S. St. Francis
Santa Fe, NM 87505-5472

505-476-3490

RECEIVED OCD
2011 FEB -2 P 1:14

ANNUAL CLASS 1 WELL REPORT
NAVAJO REFINING COMPANY, LLC
Permit Numbers UICCL1-008, UICCLI-008-0, UICCL1-008-1
API No. 30-015-27592 (008), 30-015-20894 (008-0) and 30-015-26575 (008-01)

January 31, 2011

Darrell Moore
Environmental Manager for Water and Waste

Navajo Refining Company, LLC

EXECUTIVE SUMMARY

Navajo Refining Company, LLC (Navajo) operates three class 1 wells in Eddy County NM. These wells are used to dispose wastewater from our refinery in Artesia, NM. Daily, Navajo sends approximately 16,000 bbls total of wastewater down these three wells with the volume to each well determined by its ability to take water. During 2010, there was no major work on any of the wells. We did perform fall-off tests on each well along with the annual MIT's which will both be discussed later in this report. There has been an issue with the WAMS (Water Annulus Measuring System) unit on WDW-3 in that there seems to be a very small leak of ethylene glycol from this unit somewhere downhole. However, there has been no loss of fluid during the last two quarters of 2010. Navajo has worked with OCD to come up with a plan for monitoring this leak. That plan will be discussed later in this report. We also have had several leaks on the pipeline that takes the effluent to the wells. Navajo is laying a new fiberglas pipeline to the wells so that the current line can be taken out of service.

VOLUMES

During 2010, a total of 5,734,166 bbls of wastewater were pumped down the three wells total. This is broken down as follows: WDW-1 1,625,608 bbls, WDW-2 1,747,643 bbls, and WDW-3 2,360,915 bbls.

WDW-1 and WDW-2 were put into operation in 1998. Since that time, a total of 29,272,663 bbls have been injected into WDW-1 and a total of 15,872,314 bbls have been injected into WDW-2. WDW-3 was put online in 2007. In that time, a total of 6,920,236 bbls have been injected into this well.

Total fluids injected into all three wells at the end of 2010 is 52,065,213 bbls. I have attached a spreadsheet (Fig 1) that shows all values for all three wells.

The **average injection pressure** into WDW-1 for 2010 was 597 psi., for WDW-2 it was 605 psi., and for WDW-3 it was 614 psi. The pressures have steadily increased, making it harder to inject into the wells. We have scheduled an acid job on each well that will start on February 7, 2011. This should alleviate the pressures on each well.

The **maximum injection pressure** into WDW-1 for 2010 was 688 psi, for WDW-2 was 625 psi., and for WDW-3 it was 637 psi. All of these pressures are well below the maximum permitted pressure for each well.

CHEMICAL ANALYSIS

FIGURE 1

2010 SUMMARY OF QUARTERLY MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

		Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMMULATIVE Volume (barrels)
	WDW-1													Previous Year	27,647,056
1st qtr	Jan-10	597	688	569	149	274	131	169	268	46	5,108	9,401	4,478	158,333	27,805,389
	Feb-10	582	627	429	134	145	109	206	407	99	4,578	4,971	3,737	128,195	27,933,584
	Mar-10	605	636	582	131	135	125	414	528	271	4,492	4,638	4,286	139,254	28,072,838
2nd qtr	Apr-10	605	653	517	127	135	112	343	535	203	4,364	4,611	3,846	135,279	28,208,117
	May-10	548	659	366	130	139	111	462	592	245	4,472	4,749	3,792	138,633	28,346,751
	Jun-10	532	622	297	131	136	126	315	456	214	4,493	4,661	4,303	134,777	28,481,528
3rd qtr	Jul-10	615	765	367	129	136	98	349	585	182	4,412	4,668	3,348	136,768	28,618,296
	Aug-10	644	766	352	130	133	125	313	376	255	4,442	4,554	4,293	137,695	28,755,991
	Sep-10	691	691	691	130	130	130	425	425	425	4,460	4,460	4,460	133,791	28,889,783
4th qtr	Oct-10	684	777	628	128	142	124	242	366	77	4,385	4,865	4,263	135,942	29,025,724
	Nov-10	641	693	280	121	129	76	137	256	15	4,140	4,430	2,616	124,193	29,149,917
	Dec-10	634	748	283	115	140	71	420	650	209	3,960	4,814	2,431	122,746	29,272,663
	All 2009	**615**	**777**	**280**	**130**	**274**	**71**	**316**	**650**	**15**	**4,442**	**9,401**	**2,431**	**1,625,608**	**29,272,663**
	WDW-2													Previous Year	14,124,671
1st qtr	Jan-10	605	625	560	149	153	142	210	346	128	5,122	5,252	4,882	158,777	14,283,448
	Feb-10	568	625	442	145	149	130	346	530	257	4,963	5,097	4,465	138,969	14,422,416
	Mar-10	625	650	598	145	153	142	499	616	360	4,988	5,240	4,857	154,635	14,577,051
2nd qtr	Apr-10	624	672	502	142	145	128	442	652	251	4,854	4,988	4,404	150,481	14,727,532
	May-10	660	926	523	135	142	123	396	551	252	4,630	4,866	4,227	143,524	14,871,056
	Jun-10	648	668	583	138	143	135	322	537	124	4,735	4,889	4,625	142,053	15,013,110
3rd qtr	Jul-10	647	679	401	138	143	116	570	744	159	4,719	4,886	3,960	146,279	15,159,388
	Aug-10	688	709	661	140	141	138	387	608	182	4,785	4,824	4,736	148,339	15,307,727
	Sep-10	684	795	469	139	150	118	349	727	197	4,753	5,153	4,060	142,588	15,450,315
4th qtr	Oct-10	639	713	150	136	141	98	482	780	175	4,650	4,843	3,368	144,147	15,594,462
	Nov-10	628	707	279	133	138	96	291	576	130	4,565	4,733	3,300	136,954	15,731,416
	Dec-10	591	683	293	133	142	105	503	728	267	4,545	4,852	3,601	140,898	15,872,314
	All 2009	**634**	**926**	**150**	**139**	**153**	**96**	**400**	**780**	**124**	**4,776**	**5,252**	**3,300**	**1,747,643**	**15,872,314**
	WDW-3													Previous Year	4,559,320
1st qtr	Jan-10	614	637	572	199	208	183	262	357	223	6,828	7,120	6,275	211,672	4,770,992
	Feb-10	587	639	422	200	212	170	320	403	251	6,871	7,275	5,834	192,376	4,963,368
	Mar-10	633	657	570	209	217	187	379	529	236	7,171	7,446	6,406	222,303	5,185,671
2nd qtr	Apr-10	635	668	507	204	217	184	371	538	263	7,004	7,452	6,314	217,122	5,402,793
	May-10	620	688	460	169	195	128	324	448	253	5,807	6,678	4,374	180,017	5,582,809
	Jun-10	655	679	596	179	187	154	338	435	251	6,139	6,402	5,287	184,185	5,766,994
3rd qtr	Jul-10	657	705	366	179	189	159	323	460	104	6,126	6,490	5,464	189,917	5,956,911
	Aug-10	694	712	678	179	182	174	304	412	194	6,144	6,253	5,953	190,453	6,147,365
	Sep-10	663	727	279	179	189	168	284	427	9	6,154	6,497	5,764	184,619	6,331,983
4th qtr	Oct-10	687	790	275	189	211	161	258	424	10	6,490	7,248	5,516	201,178	6,533,161
	Nov-10	666	724	284	186	193	180	227	356	137	6,363	6,627	6,167	190,880	6,724,041
	Dec-10	630	696	285	185	194	146	338	624	197	6,329	6,660	4,997	196,195	6,920,236
	All 2009	**645**	**790**	**275**	**188**	**217**	**128**	**311**	**624**	**9**	**6,452**	**7,452**	**4,374**	**2,360,915**	**6,920,236**
														Total Injected fluids:	52,065,213

Included in this report are the analysis from the four quarterly sampling events that we do every year. (Attachment 1) There are no results in this years samples that would raise a concern. The TDS results show a steady rise throughout the year but then drop dramatically in the last quarter due to improved waste water management.

MECHANICAL INTEGRITY TESTS

Navajo performed Mechanical Integrity Tests (MIT's) on all three of our wells during 2010. Since we had some issues with WDW-3 concerning the WAMS unit, OCD requested that we run an MIT on the well in June, 2010. That was done on June 30, 2010 and showed the well had good integrity. There were no leaks. We also did a bradenhead test on the same date, June 30, 2010, and found no pressure on any of the bradenheads. The quarterly bradenheads were done on September 14, 2010 and December 16, 2010. These also showed no pressure buildup on either bradenhead. Those test sheets are included in this report. On August 12, 2010 we ran MIT's on the other two wells and found no issues with either one. OCD was notified of these tests but no representative attended. A hot oil unit from O K Hot Oil pressured the wells up and provided a calibrated chart. In all three instances, the wells were pressured up for 30 minutes at about 500 psi. All three wells were well within OCD's guidelines of 10% loss/gain during the 30 minute duration of the test.

There has been an issue with the WAMS unit on WDW-3. On August 19, 2009, Navajo officially notified OCD that there was a failure in the WAMS unit. A very small amount of annulus fluid had leaked out. There were no above ground leaks so it was assumed that the leak had to be underground. The problem is that the leak is so small, identifying it is almost impossible. For reference, the well passed the annual MIT. On December 4, 2009, OCD issued its "path forward" for this well. This included: 1)Quarterly Bradenhead monitoring to coincide with the annual MIT, 2) Continued WAMS fluid monitoring. The OCD then wrote a "minor modification" to Section 22(E) of the Discharge Permit for WDW-3 to require that "Bradenhead test(s) shall be performed quarterly to coincide with the annual casing-tubing annulus test." The quarterly bradenheads were done on June 30, 2010, September 14, 2010 and December 16, 2010. These also showed no pressure buildup on either bradenhead. Those test sheets are included in this report.

The 2010 Quarterly Weekly WAMS Level Table is also included in Attachment 2. This spreadsheet shows the volume of liquid in gallons in the tanks on each well's WAMS unit. It also shows when any fluid has been added to any tank.. For the Third and Fourth Quarters, WDW-3 has held constant with regards to the fluid in the WAMS tank. Although fluid was added on 12/28/10, this was NOT in response to any significant loss of fluid. Just a routine maintenance procedure.

FALL OFF TESTS AND AREA OF REVIEW

In 2010, we also performed Fall Off tests on each well. The falloff testing was done according to a test plan that was submitted to and approved by OCD. The falloff testing results show that all three wells are in communication with each other and the permit parameters for the three wells remain conservative. It is recommended that because the wells are in communication, that in future years Navajo be allowed to perform falloff tests on each well every third year instead of all three wells annually. Testing all three wells annually is unnecessary. Further, when testing a well, once radial flow is reached, the test should be considered complete. Monitoring a well that has "flatlined" adds unnecessary "noise" to any set of data without giving anything that is useful.

In conjunction with our falloff testing, an area of review (AOR) was done to document well changes within a one-mile radius of the three wells. This current update includes all existing wells within the AOR and any changes that have occurred to these wells since 2009.

No new fresh water wells were reported within the search area. There were five new wells drilled in the AOR of which none penetrated any injection zone of Navajo's three wells. The owner had changed on six (6) wells. Thirteen (13) wells had been plugged and abandoned. Three (3) wells had been placed into temporary abandoned classification. Three (3) wells were found that had been recompleted in an upper interval. All plugged and abandoned wells were successfully isolated form Navajo's injection interval according to current OCD records.

FACILITY TRAINING

Annual training for the operation of the injection wells is done by the environmental department of Navajo. The annual training was done on December 13, 2010. Attached, (Attachment 3) is the sign in sheet along with an outline of the subjects covered during the training.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant

penalties for submitting false information including the possibility of fine or imprisonment.

Michael Whatley, Vice President and Refinery Manager

ATTACHMENT 1
CHEMICAL ANALYSIS

ATTACHMENT 1
CHEMICAL ANALYSIS

ALS Laboratory Group

Date: *09-Mar-10*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 2/25/2010 09:37 AM

Work Order: 1002802
Lab ID: 1002802-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **3/2/2010**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	3/2/2010 02:48 PM
METALS			**SW6020**		Prep Date: **3/1/2010**	Analyst: **ALR**
Aluminum	**0.587**		**0.0100**	**mg/L**	1	3/2/2010 01:44 PM
Arsenic	**0.0502**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
Barium	**0.0243**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
Beryllium	ND		0.00200	mg/L	1	3/2/2010 01:44 PM
Boron	**0.159**		**0.0200**	**mg/L**	1	3/2/2010 01:44 PM
Cadmium	ND		0.00200	mg/L	1	3/1/2010 10:20 PM
Calcium	**151**		**0.500**	**mg/L**	1	3/1/2010 10:20 PM
Chromium	ND		0.00500	mg/L	1	3/1/2010 10:20 PM
Cobalt	ND		0.00500	mg/L	1	3/1/2010 10:20 PM
Copper	ND		0.00500	mg/L	1	3/1/2010 10:20 PM
Iron	**0.658**		**0.200**	**mg/L**	1	3/1/2010 10:20 PM
Lead	ND		0.00500	mg/L	1	3/1/2010 10:20 PM
Magnesium	**36.4**		**0.200**	**mg/L**	1	3/1/2010 10:20 PM
Manganese	**0.285**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
Molybdenum	**0.143**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
Nickel	**0.0109**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
Potassium	**80.5**		**0.200**	**mg/L**	1	3/1/2010 10:20 PM
Selenium	**0.189**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
Silver	ND		0.00500	mg/L	1	3/1/2010 10:20 PM
Sodium	**970**		**10.0**	**mg/L**	50	3/2/2010 01:39 PM
Vanadium	ND		0.00500	mg/L	1	3/1/2010 10:20 PM
Zinc	**1.60**		**0.00500**	**mg/L**	1	3/1/2010 10:20 PM
SEMIVOLATILES			**SW8270**		Prep Date: **3/2/2010**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
2-Methylphenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
2-Nitroaniline	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
2-Nitrophenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
3-Nitroaniline	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
4-Nitroaniline	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
4-Nitrophenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Acenaphthene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Acenaphthylene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *09-Mar-10*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 2/25/2010 09:37 AM

Work Order: 1002802
Lab ID: 1002802-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Anthracene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Benzidine	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Hexachloroethane	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Isophorone	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Naphthalene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Nitrobenzene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Pentachlorophenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Phenanthrene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Phenol	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Pyrene	ND		0.0050	mg/L	1	3/3/2010 06:15 PM
Surr: 2,4,6-Tribromophenol	*85.8*		*42-124*	*%REC*	1	3/3/2010 06:15 PM
Surr: 2-Fluorobiphenyl	*97.5*		*48-120*	*%REC*	1	3/3/2010 06:15 PM
Surr: 2-Fluorophenol	*86.0*		*20-120*	*%REC*	1	3/3/2010 06:15 PM
Surr: 4-Terphenyl-d14	*81.2*		*51-135*	*%REC*	1	3/3/2010 06:15 PM
Surr: Nitrobenzene-d5	*74.6*		*41-120*	*%REC*	1	3/3/2010 06:15 PM
Surr: Phenol-d6	*80.9*		*20-120*	*%REC*	1	3/3/2010 06:15 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
2-Butanone	ND		0.010	mg/L	1	3/1/2010 01:48 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	3/1/2010 01:48 PM
2-Hexanone	ND		0.010	mg/L	1	3/1/2010 01:48 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	3/1/2010 01:48 PM
Acetone	**0.015**		**0.010**	**mg/L**	1	3/1/2010 01:48 PM
Benzene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Bromodichloromethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Bromoform	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Bromomethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Carbon disulfide	ND		0.010	mg/L	1	3/1/2010 01:48 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	3/1/2010 01:48 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *09-Mar-10*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 2/25/2010 09:37 AM

Work Order: 1002802
Lab ID: 1002802-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Chloroethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Chloroform	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Chloromethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Dibromochloromethane	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Ethylbenzene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
m,p-Xylene	ND		0.010	mg/L	1	3/1/2010 01:48 PM
Methylene chloride	ND		0.010	mg/L	1	3/1/2010 01:48 PM
Styrene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Tetrachloroethene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Toluene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Trichloroethene	ND		0.0050	mg/L	1	3/1/2010 01:48 PM
Vinyl acetate	ND		0.010	mg/L	1	3/1/2010 01:48 PM
Vinyl chloride	ND		0.0020	mg/L	1	3/1/2010 01:48 PM
Xylenes, Total	ND		0.015	mg/L	1	3/1/2010 01:48 PM
Surr: 1,2-Dichloroethane-d4	*95.7*		*70-125*	*%REC*	1	3/1/2010 01:48 PM
Surr: 4-Bromofluorobenzene	*93.7*		*72-125*	*%REC*	1	3/1/2010 01:48 PM
Surr: Dibromofluoromethane	*99.6*		*71-125*	*%REC*	1	3/1/2010 01:48 PM
Surr: Toluene-d8	*93.7*		*75-125*	*%REC*	1	3/1/2010 01:48 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	3/2/2010
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	3/2/2010
ANIONS			**E300**			Analyst: **JBA**
Chloride	**327**		**25.0**	**mg/L**	50	2/28/2010 07:52 PM
Fluoride	**15.2**		**0.100**	**mg/L**	1	2/28/2010 04:24 AM
Sulfate	**2,470**		**25.0**	**mg/L**	50	2/28/2010 07:52 PM
Surr: Selenate (surr)	*87.3*		*85-115*	*%REC*	50	2/28/2010 07:52 PM
Surr: Selenate (surr)	*102*		*85-115*	*%REC*	1	2/28/2010 04:24 AM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**56.7**		**5.00**	**mg/L**	1	3/4/2010 12:00 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	3/4/2010 12:00 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	3/4/2010 12:00 PM
Alkalinity, Total (As CaCO3)	**56.7**		**5.00**	**mg/L**	1	3/4/2010 12:00 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **TDW**
Specific Conductivity	**6,050**		**1.00**	**µmhos/cm**	1	3/8/2010 02:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *09-Mar-10*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 2/25/2010 09:37 AM

Work Order: 1002802
Lab ID: 1002802-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
IGNITIBILITY			**SW1010**			Analyst: **JLC**
Ignitability	*>212*		50.0	°F	1	3/1/2010
PH			**SM4500H+ B**			Analyst: **JLC**
pH	**7.15**	H	**0.100**	pH units	1	3/1/2010
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **TDW**
Total Dissolved Solids (Residue, Filterable)	**4,200**		**10.0**	**mg/L**	1	3/2/2010 05:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *03-Mar-10*

Client: ALS Laboratory Group
Project: 1002802
Sample ID: 1002802-01F
Collection Date: 2/25/2010 09:37 AM

Work Order: 1003056
Lab ID: 1003056-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **EE**
Cyanide, Reactive	ND		40.0	mg/Kg	1	3/2/2010
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **EE**
Sulfide, Reactive	ND		40.0	mg/Kg	1	3/2/2010

Note: See Qualifiers page for a list of qualifiers and their definitions.

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Chain of Custody Form

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Page 1 of 1

ALS Project Manager: | ALS Work Order #: 1002802

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(575) 746-3311	Phone	(575) 746-3311	H	Conductivity
Fax	(575) 746-5421	Fax	(575) 746-5421	I	TDS
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj Well	2/25/10	0937	L	Y	9	X	X	X	X	X	X	X	X	X		
2	Temp Blank																
3	Trip Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ✓ Std 10 Wk Days | Other

Results Due Date:

Relinquished by: Aaron Strange | Date: 2/25/10 | Time: 1615 | Received by:

Notes: To Only TAI

Relinquished by: | Date: | Time: | Received by (Laboratory): 2/26/10 8:50

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
☐ Level II Std QC | ☐ TRRP Checklist
☐ Level III Std QC/Raw Data | ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Laboratory Group

Date: *07-Jun-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/19/2010 08:16 AM

Work Order: 1005694
Lab ID: 1005694-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **5/28/2010**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	5/28/2010 02:09 PM
METALS			**SW6020**		Prep Date: **6/3/2010**	Analyst: **ALR**
Aluminum	**0.132**		**0.0200**	**mg/L**	2	6/5/2010 02:42 PM
Arsenic	**0.0700**		**0.00500**	**mg/L**	1	6/5/2010 02:31 AM
Barium	**0.0235**		**0.0100**	**mg/L**	2	6/5/2010 02:42 PM
Beryllium	ND		0.00200	mg/L	1	6/5/2010 02:31 AM
Boron	**0.164**		**0.0400**	**mg/L**	2	6/7/2010 02:38 PM
Cadmium	ND		0.00400	mg/L	2	6/5/2010 02:42 PM
Calcium	**175**		**10.0**	**mg/L**	20	6/5/2010 02:25 AM
Chromium	ND		0.00500	mg/L	1	6/5/2010 02:31 AM
Cobalt	ND		0.00500	mg/L	1	6/5/2010 02:31 AM
Copper	ND		0.00500	mg/L	1	6/5/2010 02:31 AM
Iron	**0.545**		**0.400**	**mg/L**	2	6/5/2010 02:42 PM
Lead	ND		0.0100	mg/L	2	6/5/2010 02:42 PM
Magnesium	**53.6**		**4.00**	**mg/L**	20	6/5/2010 02:25 AM
Manganese	**0.0446**		**0.00500**	**mg/L**	1	6/5/2010 02:31 AM
Molybdenum	**0.114**		**0.0100**	**mg/L**	2	6/5/2010 02:42 PM
Nickel	**0.0136**		**0.0100**	**mg/L**	2	6/5/2010 02:42 PM
Potassium	**9.45**		**0.400**	**mg/L**	2	6/5/2010 02:42 PM
Selenium	**0.407**		**0.00500**	**mg/L**	1	6/5/2010 02:31 AM
Silver	ND		0.0100	mg/L	2	6/5/2010 02:42 PM
Sodium	**1,210**		**4.00**	**mg/L**	20	6/5/2010 02:25 AM
Vanadium	**0.0196**		**0.00500**	**mg/L**	1	6/5/2010 02:31 AM
Zinc	**1.92**		**0.100**	**mg/L**	20	6/5/2010 02:25 AM
SEMIVOLATILES			**SW8270**		Prep Date: **5/24/2010**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
2-Methylphenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
2-Nitroaniline	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
2-Nitrophenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
3-Nitroaniline	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
4-Nitroaniline	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
4-Nitrophenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Acenaphthene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Acenaphthylene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *07-Jun-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/19/2010 08:16 AM

Work Order: 1005694
Lab ID: 1005694-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Anthracene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Benzidine	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Hexachloroethane	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Isophorone	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Naphthalene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Nitrobenzene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Pentachlorophenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Phenanthrene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Phenol	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Pyrene	ND		0.0050	mg/L	1	6/3/2010 09:50 PM
Surr: 2,4,6-Tribromophenol	*81.7*		*42-124*	*%REC*	1	6/3/2010 09:50 PM
Surr: 2-Fluorobiphenyl	*77.6*		*48-120*	*%REC*	1	6/3/2010 09:50 PM
Surr: 2-Fluorophenol	*63.6*		*20-120*	*%REC*	1	6/3/2010 09:50 PM
Surr: 4-Terphenyl-d14	*77.8*		*51-135*	*%REC*	1	6/3/2010 09:50 PM
Surr: Nitrobenzene-d5	*65.7*		*41-120*	*%REC*	1	6/3/2010 09:50 PM
Surr: Phenol-d6	*61.1*		*20-120*	*%REC*	1	6/3/2010 09:50 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
2-Butanone	ND		0.010	mg/L	1	5/29/2010 04:39 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	5/29/2010 04:39 PM
2-Hexanone	ND		0.010	mg/L	1	5/29/2010 04:39 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	5/29/2010 04:39 PM
Acetone	**0.031**		**0.010**	**mg/L**	1	5/29/2010 04:39 PM
Benzene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Bromodichloromethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Bromoform	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Bromomethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Carbon disulfide	ND		0.010	mg/L	1	5/29/2010 04:39 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	5/29/2010 04:39 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *07-Jun-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/19/2010 08:16 AM

Work Order: 1005694
Lab ID: 1005694-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Chloroethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Chloroform	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Chloromethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Dibromochloromethane	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Ethylbenzene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
m,p-Xylene	ND		0.010	mg/L	1	5/29/2010 04:39 PM
Methylene chloride	ND		0.010	mg/L	1	5/29/2010 04:39 PM
Styrene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Tetrachloroethene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Toluene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Trichloroethene	ND		0.0050	mg/L	1	5/29/2010 04:39 PM
Vinyl acetate	ND		0.010	mg/L	1	5/29/2010 04:39 PM
Vinyl chloride	ND		0.0020	mg/L	1	5/29/2010 04:39 PM
Xylenes, Total	ND		0.015	mg/L	1	5/29/2010 04:39 PM
Surr: 1,2-Dichloroethane-d4	*82.5*		*70-125*	*%REC*	1	5/29/2010 04:39 PM
Surr: 4-Bromofluorobenzene	*86.0*		*72-125*	*%REC*	1	5/29/2010 04:39 PM
Surr: Dibromofluoromethane	*89.7*		*71-125*	*%REC*	1	5/29/2010 04:39 PM
Surr: Toluene-d8	*91.7*		*75-125*	*%REC*	1	5/29/2010 04:39 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	5/27/2010
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	5/27/2010
ANIONS			**E300**			Analyst: **IGF**
Chloride	**308**		**25.0**	**mg/L**	50	6/2/2010 10:16 AM
Sulfate	**3,510**		**25.0**	**mg/L**	50	6/2/2010 10:16 AM
Surr: Selenate (surr)	*87.0*		*85-115*	*%REC*	50	6/2/2010 10:16 AM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**312**		**5.00**	**mg/L**	1	5/24/2010 06:00 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	5/24/2010 06:00 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	5/24/2010 06:00 PM
Alkalinity, Total (As CaCO3)	**312**		**5.00**	**mg/L**	1	5/24/2010 06:00 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **IGF**
Specific Conductivity	**7,240**		**1.00**	**µmhos/cm**	1	6/2/2010 06:40 PM
IGNITIBILITY			**SW1010**			Analyst: **JLC**

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *07-Jun-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/19/2010 08:16 AM

Work Order: 1005694
Lab ID: 1005694-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Ignitability	> 212		50.0	°F	1	5/26/2010 11:00 AM
PH			**SM4500H+ B**			Analyst: **JLC**
pH	**7.29**	H	**0.100**	**pH units**	1	5/21/2010
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **TDW**
Total Dissolved Solids (Residue, Filterable)	**5,900**		**10.0**	**mg/L**	1	5/25/2010 05:00 PM

Note: *See Qualifiers Page for a list of qualifiers and their explanation.*

ALS Laboratory Group

Date: *01-Jun-10*

Client: ALS Laboratory Group
Project: 1005694
Sample ID: 1005694-01F
Collection Date: 5/19/2010 08:16 AM

Work Order: 1005516
Lab ID: 1005516-01
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **EE**
Cyanide, Reactive	ND		40.0	mg/Kg	1	5/27/2010
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **EE**
Sulfide, Reactive	ND		40.0	mg/Kg	1	5/27/2010

Note: See Qualifiers page for a list of qualifiers and their definitions.

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ALS Project Manager:

ALS Work Order #: 1105694

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	Injection Well Quarterly	A VOC (8260) Select
Work Order		Project Number		B SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D RCI Profile
Address	PO Box 159	Address	PO Box 159	E Anions (300) Cl, SO4
				F Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G pH
Phone	(575) 748-~~6733~~ 3311	Phone	(575) 748-6733	H Conductivity
Fax	(575) 746-~~5421~~ 5451	Fax	(575) 746-5421	I TDS
e-Mail Address		e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj Well	5-19-10	0816	L	Y	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temp. Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☐ Other ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
[signature]	5-19-10	1615	[signature]	10 Day TAT.
Relinquished by:	Date:	Time:	Received by (Laboratory): 5/20/10 10:06	Cooler ID / Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other _____
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Environmental

Date: *25-Aug-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 8/11/2010 12:40 PM

Work Order: 1008405
Lab ID: 1008405-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **8/19/2010**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	8/19/2010 03:13 PM
METALS			**SW6020**		Prep Date: **8/13/2010**	Analyst: **ALR**
Aluminum	**0.158**		**0.0500**	**mg/L**	5	8/14/2010 11:59 AM
Arsenic	**0.0393**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
Barium	**0.0218**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
Beryllium	ND		0.00200	mg/L	1	8/14/2010 05:12 AM
Boron	**0.145**		**0.0200**	**mg/L**	1	8/14/2010 05:12 AM
Cadmium	ND		0.00200	mg/L	1	8/14/2010 05:12 AM
Calcium	**127**		**0.500**	**mg/L**	1	8/14/2010 05:12 AM
Chromium	ND		0.00500	mg/L	1	8/14/2010 05:12 AM
Cobalt	ND		0.00500	mg/L	1	8/14/2010 05:12 AM
Copper	ND		0.00500	mg/L	1	8/14/2010 05:12 AM
Iron	**0.387**		**0.200**	**mg/L**	1	8/14/2010 05:12 AM
Lead	ND		0.00500	mg/L	1	8/14/2010 05:12 AM
Magnesium	**39.0**		**0.200**	**mg/L**	1	8/14/2010 05:12 AM
Manganese	**0.0706**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
Molybdenum	**0.120**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
Nickel	**0.0106**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
Potassium	**50.7**		**0.200**	**mg/L**	1	8/14/2010 05:12 AM
Selenium	**0.292**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
Silver	ND		0.00500	mg/L	1	8/14/2010 05:12 AM
Sodium	**683**		**1.00**	**mg/L**	5	8/14/2010 11:59 AM
Vanadium	ND		0.00500	mg/L	1	8/14/2010 05:12 AM
Zinc	**1.30**		**0.00500**	**mg/L**	1	8/14/2010 05:12 AM
SEMIVOLATILES			**SW8270**		Prep Date: **8/13/2010**	Analyst: **KMB**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
2-Methylphenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
2-Nitroaniline	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
2-Nitrophenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
3-Nitroaniline	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
4-Nitroaniline	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
4-Nitrophenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Acenaphthene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Acenaphthylene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *25-Aug-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 8/11/2010 12:40 PM

Work Order: 1008405
Lab ID: 1008405-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Anthracene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Benzidine	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Hexachloroethane	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Isophorone	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Naphthalene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Nitrobenzene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Pentachlorophenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Phenanthrene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Phenol	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Pyrene	ND		0.0050	mg/L	1	8/16/2010 03:00 PM
Surr: 2,4,6-Tribromophenol	*75.6*		*42-124*	*%REC*	1	8/16/2010 03:00 PM
Surr: 2-Fluorobiphenyl	*69.7*		*48-120*	*%REC*	1	8/16/2010 03:00 PM
Surr: 2-Fluorophenol	*53.7*		*20-120*	*%REC*	1	8/16/2010 03:00 PM
Surr: 4-Terphenyl-d14	*63.3*		*51-135*	*%REC*	1	8/16/2010 03:00 PM
Surr: Nitrobenzene-d5	*66.8*		*41-120*	*%REC*	1	8/16/2010 03:00 PM
Surr: Phenol-d6	*54.8*		*20-120*	*%REC*	1	8/16/2010 03:00 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
2-Butanone	ND		0.010	mg/L	1	8/22/2010 02:58 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	8/22/2010 02:58 PM
2-Hexanone	ND		0.010	mg/L	1	8/22/2010 02:58 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	8/22/2010 02:58 PM
Acetone	**0.016**		**0.010**	**mg/L**	1	8/22/2010 02:58 PM
Benzene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Bromodichloromethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Bromoform	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Bromomethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Carbon disulfide	ND		0.010	mg/L	1	8/22/2010 02:58 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	8/22/2010 02:58 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *25-Aug-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 8/11/2010 12:40 PM

Work Order: 1008405
Lab ID: 1008405-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Chloroethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Chloroform	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Chloromethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Dibromochloromethane	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Ethylbenzene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
m,p-Xylene	**0.011**		**0.010**	**mg/L**	1	8/22/2010 02:58 PM
Methylene chloride	ND		0.010	mg/L	1	8/22/2010 02:58 PM
Styrene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Tetrachloroethene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Toluene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Trichloroethene	ND		0.0050	mg/L	1	8/22/2010 02:58 PM
Vinyl acetate	ND		0.010	mg/L	1	8/22/2010 02:58 PM
Vinyl chloride	ND		0.0020	mg/L	1	8/22/2010 02:58 PM
Xylenes, Total	ND		0.015	mg/L	1	8/22/2010 02:58 PM
Surr: 1,2-Dichloroethane-d4	*105*		*70-125*	*%REC*	1	8/22/2010 02:58 PM
Surr: 4-Bromofluorobenzene	*104*		*72-125*	*%REC*	1	8/22/2010 02:58 PM
Surr: Dibromofluoromethane	*106*		*71-125*	*%REC*	1	8/22/2010 02:58 PM
Surr: Toluene-d8	*112*		*75-125*	*%REC*	1	8/22/2010 02:58 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	Neg		40.0	mg/Kg	1	8/19/2010 12:30 PM
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	Neg		40.0	mg/Kg	1	8/19/2010 12:30 PM
ANIONS			**E300**			Analyst: **DM**
Chloride	**195**		**5.00**	**mg/L**	10	8/18/2010 04:42 PM
Sulfate	**1,580**		**50.0**	**mg/L**	100	8/18/2010 04:57 PM
Surr: Selenate (surr)	*104*		*85-115*	*%REC*	1	8/12/2010 06:26 PM
Surr: Selenate (surr)	*93.9*		*85-115*	*%REC*	100	8/18/2010 04:57 PM
Surr: Selenate (surr)	*98.2*		*85-115*	*%REC*	10	8/18/2010 04:42 PM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**219**		**5.00**	**mg/L**	1	8/24/2010 02:00 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	8/24/2010 02:00 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	8/24/2010 02:00 PM
Alkalinity, Total (As CaCO3)	**219**		**5.00**	**mg/L**	1	8/24/2010 02:00 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **TDW**
Specific Conductivity	**3,860**		**1.00**	**µmhos/cm**	1	8/19/2010 01:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *25-Aug-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 8/11/2010 12:40 PM

Work Order: 1008405
Lab ID: 1008405-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PH			SM4500H+ B			Analyst: JLC
pH	7.12	H	0.100	pH units	1	8/12/2010
TOTAL DISSOLVED SOLIDS			M2540C			Analyst: JLC
Total Dissolved Solids (Residue, Filterable)	7,080		10.0	mg/L	1	8/12/2010

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 1006465

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(575) ~~748-3311~~ 748-3311	Phone	(575) 748-~~3311~~ 3311	H	Conductivity
Fax	(575) 748-~~5451~~ 5451	Fax	(575) 748-~~5451~~ 5451	I	TDS
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj Well	8-11-10	1240	L	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temp Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ✓ 10 Work Days | 5 Work Days | 3 Work Days | Other

Results Due Date:

Relinquished by: [signature] Date: 8-11-10 Time: 1615

Received by: [signature]

Notes: 10 Day TAT

Relinquished by: Date: Time:

Received by (Laboratory): [signature] 8/12/10 08:16

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Environmental

Date: *25-Aug-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj Well
Collection Date: 8/11/2010 12:40 PM

Work Order: 1008405
Lab ID: 1008405-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PH			**SM4500H+ B**			Analyst: **JLC**
pH	7.12	H	0.100	pH units	1	8/12/2010
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **JLC**
Total Dissolved Solids (Residue, Filterable)	7,080		10.0	mg/L	1	8/12/2010

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1008405

Case Narrative

The RCI profile consists of Reactive Sulfide, Reactive Cyanide, pH (corrositivity) and Ignitability. All parameters were analyzied for except for Ignitability which was due to an oversight on our part. Ignitability could not be analyzed due to the disposal of the sample prior to the time incident was found.

Reactive Cyanide and Reactive Sulfide was originally reported as ND (non-detect). Per request the result was changed to reflect a 'Neg' (Negative) result.

ALS Environmental

Date: *23-Aug-10*

Client: ALS Laboratory Group
Project: 1008405
Sample ID: 1008405-01E
Collection Date: 8/11/2010 12:40 PM

Work Order: 1008331
Lab ID: 1008331-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **EE**
Cyanide, Reactive	ND		40.0	mg/Kg	1	8/19/2010 12:30 PM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **EE**
Sulfide, Reactive	ND		40.0	mg/Kg	1	8/19/2010 12:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

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ALS Project Manager:

ALS Work Order #: 1008246

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	CHEM CARE - HS	Project Name		A	VAPOR PRESSURE
Work Order	CHEVRON - CEDAR BAYOU	Project Number		B	IGNITABLE
Company Name	UNIVAR USA INC	Bill To Company	UNIVAR USA INC.	C	FLORIDE
Send Report To	KATHRYN HORTON	Invoice Attn	MANDY DAVIS	D	AMMONIA
Address	777 BRISBANE ST	Address	PO BOX 84889	E	N BUTHYL ALCOHOL
				F	TOC
City/State/Zip	HOUSTON, TX, 77061	City/State/Zip	SEATTLE, WA 98124	G	
Phone	713-641-9445	Phone	713-644-1601	H	
Fax	713-641-5423	Fax	713-641-5423	I	
e-Mail Address	KATHRYN.HORTON@UNIVARUSA.COM	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	1592 LOADING RACK CP-191	08-09-10	0830	LIQUID	NEAT	4	X										24HR T/A
2	PAO SPILL CP-192	08-09-10	1000	LIQUID	NEAT	1		X	X	X	X	X					24HR T/A
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JONATHAN TYLER

Shipment Method

Required Turnaround Time: (Check Box) ☐ Other _____ ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 8-11-10	Time: 1000	Received by:	Notes: 8-11-10
Relinquished by:	Date: 8-11-10	Time: 1105	Received by (Laboratory): 8/11/10 1105	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Date
- ☐ Level IV SW846/CLP
- ☐ Other _____
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Environmental

Date: *10-Nov-10*

Client:	Navajo Refining Company		
Project:	Injection Well Quarterly	**Work Order:**	1011354
Sample ID:	Injection Well	**Lab ID:**	1011354-01
Collection Date:	11/9/2010 03:10 PM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
IGNITIBILITY			**SW1010**			Analyst: **JLC**
Ignitability	*> 212*		50.0	°F	1	11/10/2010 11:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

☑ **ALS Laboratory Group**
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page ___ of ___

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 1011354

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	Ignitability
Work Order		Project Number		B	
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	
Address	P.O. Box 159	Address	P.O. Box 159	E	
				F	
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	
Phone	575 748-3311	Phone	748-3311	H	
Fax	575 746-5451	Fax	746-5451	I	
e-Mail Address	dpoyer@CESI-NM.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj. Well	11-9-10	1510	L	No	1	X										
2	Temp Blank																
3	Trip Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign	Shipment Method	Required Turnaround Time: (Check Box)	Results Due Date:
Aaron Strange	Fed Ex	☐ Standard (10 Work Days) ☐ 5 Work Days ☐ 3 Work Days ☐ 2 Work Days ☐ 1 Work Day ☑ ASAP	

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Work Days TAT
[signature]	11-9-10	16:15		
Relinquished by:	Date:	Time:	Received by (Laboratory): [signature] 11/10/10 09:00	Cooler ID / Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	QC Package: (Check One Box Below) ☐ Level III Std QC ☐ Level IV Std QC/Raw Data ☐ Level V Full Deliverable ☐ Other ____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Environmental

Date: *09-Dec-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 11/18/2010 01:45 PM

Work Order: 1011768
Lab ID: 1011768-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **12/1/2010**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	12/1/2010 06:01 PM
METALS			**SW6020**		Prep Date: **11/29/2010**	Analyst: **ALR**
Aluminum	**1.57**		**0.0100**	**mg/L**	1	12/1/2010 05:56 AM
Arsenic	**0.0365**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Barium	**0.0456**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Beryllium	ND		0.00200	mg/L	1	12/1/2010 05:56 AM
Boron	**0.248**		**0.0200**	**mg/L**	1	12/1/2010 05:56 AM
Cadmium	ND		0.00200	mg/L	1	12/1/2010 05:56 AM
Calcium	**136**		**0.500**	**mg/L**	1	12/1/2010 05:56 AM
Chromium	ND		0.00500	mg/L	1	12/1/2010 05:56 AM
Cobalt	ND		0.00500	mg/L	1	12/1/2010 05:56 AM
Copper	**0.00568**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Iron	**0.605**		**0.200**	**mg/L**	1	12/1/2010 05:56 AM
Lead	ND		0.00500	mg/L	1	12/1/2010 05:56 AM
Magnesium	**41.3**		**0.200**	**mg/L**	1	12/1/2010 05:56 AM
Manganese	**0.0250**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Molybdenum	**0.110**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Nickel	**0.00531**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Potassium	**20.6**		**0.200**	**mg/L**	1	12/1/2010 05:56 AM
Selenium	**0.645**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Silver	ND		0.00500	mg/L	1	12/1/2010 05:56 AM
Sodium	**965**		**20.0**	**mg/L**	100	12/1/2010 08:47 PM
Vanadium	**0.00639**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
Zinc	**1.51**		**0.00500**	**mg/L**	1	12/1/2010 05:56 AM
SEMIVOLATILES			**SW8270**		Prep Date: **11/23/2010**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
2-Methylnaphthalene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
2-Methylphenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
2-Nitroaniline	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
2-Nitrophenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
3&4-Methylphenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
3-Nitroaniline	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
4-Nitroaniline	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
4-Nitrophenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Acenaphthene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Acenaphthylene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Dec-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 11/18/2010 01:45 PM

Work Order: 1011768
Lab ID: 1011768-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Anthracene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Benz(a)anthracene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Benzidine	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Hexachloroethane	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Isophorone	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Naphthalene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Nitrobenzene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Pentachlorophenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Phenanthrene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Phenol	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Pyrene	ND		0.0050	mg/L	1	11/30/2010 12:13 AM
Surr: 2,4,6-Tribromophenol	*75.8*		*42-124*	*%REC*	1	11/30/2010 12:13 AM
Surr: 2-Fluorobiphenyl	*49.1*		*48-120*	*%REC*	1	11/30/2010 12:13 AM
Surr: 2-Fluorophenol	*28.9*		*20-120*	*%REC*	1	11/30/2010 12:13 AM
Surr: 4-Terphenyl-d14	*72.8*		*51-135*	*%REC*	1	11/30/2010 12:13 AM
Surr: Nitrobenzene-d5	*43.4*		*41-120*	*%REC*	1	11/30/2010 12:13 AM
Surr: Phenol-d6	*41.0*		*20-120*	*%REC*	1	11/30/2010 12:13 AM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,2,4-Trimethylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,2-Dibromoethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,2-Dichloropropane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
1,3,5-Trimethylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
2-Butanone	ND		0.010	mg/L	1	11/19/2010 11:06 PM
2-Hexanone	ND		0.010	mg/L	1	11/19/2010 11:06 PM
4-Isopropyltoluene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	11/19/2010 11:06 PM
Acetone	ND		0.010	mg/L	1	11/19/2010 11:06 PM
Benzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Bromodichloromethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Dec-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 11/18/2010 01:45 PM

Work Order: 1011768
Lab ID: 1011768-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Bromoform	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Bromomethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Carbon disulfide	ND		0.010	mg/L	1	11/19/2010 11:06 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Chlorobenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Chloroethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Chloroform	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Chloromethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
cis-1,2-Dichloroethene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Dibromochloromethane	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Ethylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Isopropylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
m,p-Xylene	ND		0.010	mg/L	1	11/19/2010 11:06 PM
Methyl tert-butyl ether	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Methylene chloride	ND		0.010	mg/L	1	11/19/2010 11:06 PM
n-Butylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
n-Propylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Naphthalene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
o-Xylene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
sec-Butylbenzene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Styrene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Tetrachloroethene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Toluene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
trans-1,2-Dichloroethene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Trichloroethene	ND		0.0050	mg/L	1	11/19/2010 11:06 PM
Vinyl chloride	ND		0.0020	mg/L	1	11/19/2010 11:06 PM
Xylenes, Total	ND		0.015	mg/L	1	11/19/2010 11:06 PM
Surr: 1,2-Dichloroethane-d4	*115*		*70-125*	*%REC*	1	11/19/2010 11:06 PM
Surr: 4-Bromofluorobenzene	*90.3*		*72-125*	*%REC*	1	11/19/2010 11:06 PM
Surr: Dibromofluoromethane	*104*		*71-125*	*%REC*	1	11/19/2010 11:06 PM
Surr: Toluene-d8	*89.4*		*75-125*	*%REC*	1	11/19/2010 11:06 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	12/2/2010 12:00 PM
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	12/2/2010 12:00 PM
ANIONS			**E300**			Analyst: **DM**
Chloride	**315**		**5.00**	**mg/L**	10	12/2/2010 06:05 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *09-Dec-10*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 11/18/2010 01:45 PM

Work Order: 1011768
Lab ID: 1011768-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Sulfate	**1,870**		**50.0**	**mg/L**	100	12/2/2010 06:26 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	10	12/2/2010 06:05 PM
Surr: Selenate (surr)	*108*		*85-115*	*%REC*	100	12/2/2010 06:26 PM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**209**		**5.00**	**mg/L**	1	12/1/2010 12:00 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	12/1/2010 12:00 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	12/1/2010 12:00 PM
Alkalinity, Total (As CaCO3)	**209**		**5.00**	**mg/L**	1	12/1/2010 12:00 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **TDW**
Specific Conductivity	**4,270**		**1.00**	**µmhos/cm**	1	12/8/2010 05:00 PM
IGNITIBILITY			**SW1010**			Analyst: **JLC**
Ignitability	*> 212*		50.0	°F	1	12/2/2010 10:00 AM
PH			**SW9040**			Analyst: **JLC**
pH	**6.86**	H	**0.100**	**pH units**	1	12/2/2010 10:00 AM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **JLC**
Total Dissolved Solids (Residue, Filterable)	**3,220**		**10.0**	**mg/L**	1	11/22/2010 10:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp

Date: *03-Dec-10*

Client: ALS Environmental
Project: 1011768
Sample ID: 1011768-01D
Collection Date: 11/18/2010 01:45 PM

Work Order: 1011690
Lab ID: 1011690-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **EE**
Cyanide, Reactive	ND		40.0	mg/Kg	1	12/2/2010 12:00 PM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **EE**
Sulfide, Reactive	ND		40.0	mg/Kg	1	12/2/2010 12:00 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

☑ **ALS Laboratory Group**
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
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Chain of Custody Form

Page 1 of 1

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 1011768

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	S/VOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(575) 748-~~6703~~ 3311	Phone	(575) 748-~~6703~~ 3311	H	Conductivity
Fax	(575) 748-~~6421~~ 5451	Fax	(575) 748-~~6421~~ 5451	I	TDS
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~[illegible]~~ Effluent	11-18-10	1345	L	Y	9	X	X	X	X	X	X	X	X	X		
2	Temp Blank																
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☑ Std 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Day TAT
[signature]	11-18-10	1615		
Relinquished by:	Date: 11/19/10	Time: 0910	Received by (Laboratory): BM ALS	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
		☑ Level II Std QC ☐ TRRP Checklist
		☐ Level III Std QC/Raw Data ☐ TRRP Level IV
		☐ Level IV SW846/CLP
		☐ Other / EDD _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ATTACHMENT 2
MECHANICAL INTEGRITY TESTS and BRADENHEAD TESTS

6 P.M.
7
8
9
10
11
MIDNIGHT
5
4
3
2
1
NOON
11
10
9
8
7
6 A.M.
5
4
GRAPHIC CONTROLS CORPORATION
BUFFALO NEW YORK
BR 222
Navajo Refining
WDW-1
31-17S-28E
API # 30-015-22592
8/12/10

Navajo Refining
WDW - 2
12-18s-27e
API # 30-015-20894
8/12/10
Darrell Moore
GRAPHIC CONTROLS CORPORATION
BUFFALO NEW YORK
BR 2221
6 A.M.
7
8
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11
NOON
1
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6 P.M.
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MIDNIGHT
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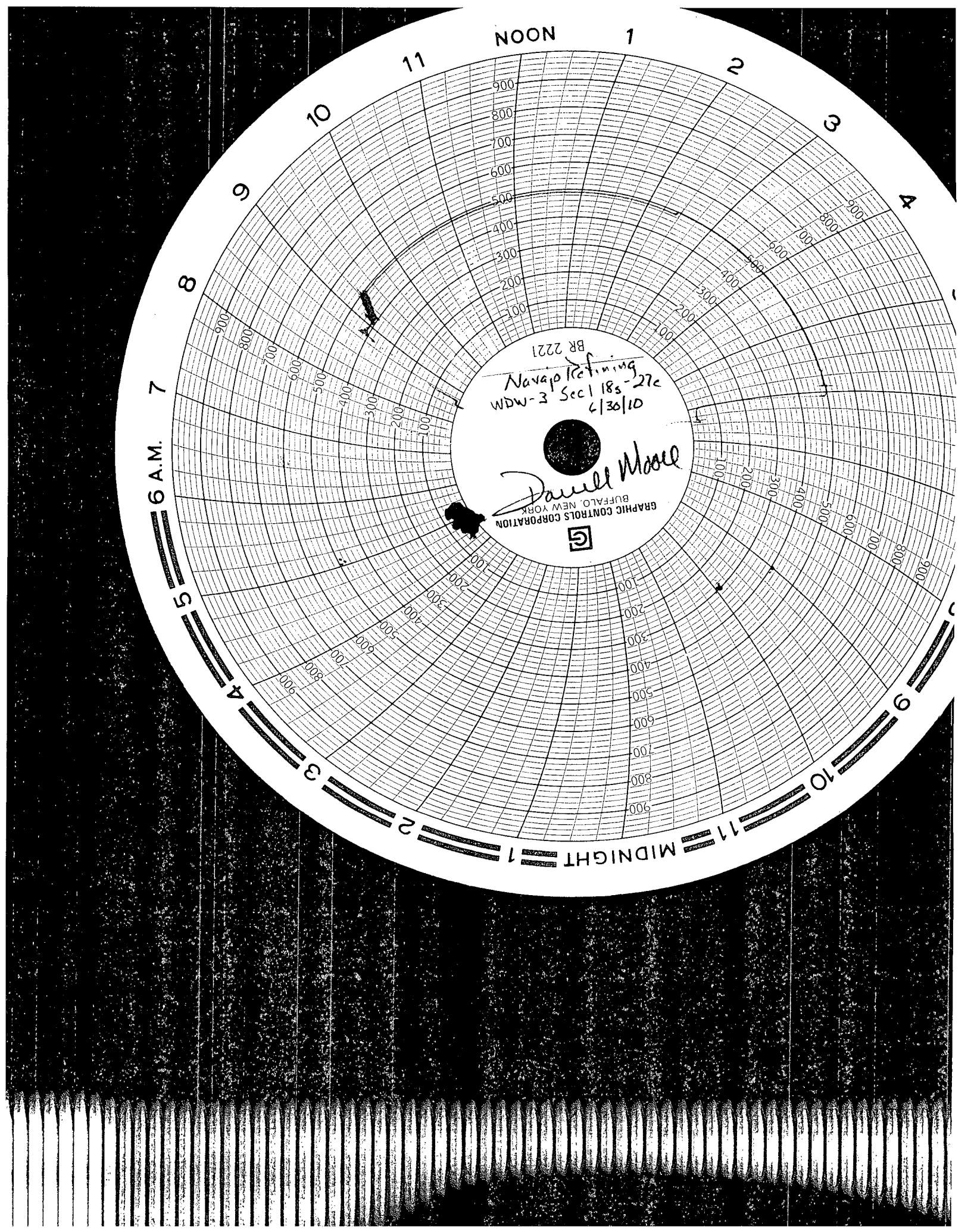
NOON
1
2
3
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6 A.M.
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MIDNIGHT
BR 2221
Navajo Refining
WDW-3 Sec1 18s-27e
6/30/10
Daniel Moore
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK

Oil Conservation Division, Environmental Bureau
C/O: Carl Chavez
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test December 16, 2010 Operator Navajo Refining API #30-015-26575

Property Name WDW Well No 3 Location: Unit O Section 1 Township 18S Range 27E

Well Status (Shut-In or Producing) Tubing____ Intermediate____ Casing____ Bradenhead____

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

TIME	PRESSURES: BRADENHEAD	INTERMEDIATE	CASING
5 minutes	0	0	
10 minutes	NA	NA	
15 minutes	NA	NA	
20 minutes	NA	NA	
25 minutes	NA	NA	
30 minutes	NA	NA	

	BRADENHEAD FLOWED	INTERMEDIATE FLOWED
Steady Flow	NA	NA
Surges	NA	NA
Down to Nothing	Immediately	Immediately
Nothing	X	X
Gas	NA	NA
Gas & Water	NA	NA
Water	NA	NA

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR_____ FRESH_____ SALTY_____ SULFUR_____ BLACK_____

5 MINUTE SHUT-IN BRADENHEAD 0 INTERMEDIATE 0

REMARKS:

We opened the surface and intermediate bradenheads one at a time. There was a puff of air out of each but that quickly went to nothing.There was no flow. No sustained pressure.

By Darrell Moore Darrell Moore Witness

Env. Mgr. for Water and Waste Navajo Refining
(Position)

E-mail address Darrell.moore@hollycorp.com

Oil Conservation Division, Environmental Bureau
C/O: Carl Chavez
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test September 14, 2010 Operator Navajo Refining API #30-015-26575

Property Name WDW Well No 3 Location: Unit O Section 1 Township 18S Range 27E

Well Status (Shut-In or Producing) Tubing____ Intermediate____ Casing____ Bradenhead____

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

TIME	PRESSURES: BRADENHEAD	INTERMEDIATE	CASING
5 minutes	0	0	
10 minutes	NA	NA	
15 minutes	NA	NA	
20 minutes	NA	NA	
25 minutes	NA	NA	
30 minutes	NA	NA	

	BRADENHEAD FLOWED	INTERMEDIATE FLOWED
Steady Flow	NA	NA
Surges	NA	NA
Down to Nothing	Immediately	Immediately
Nothing	X	X
Gas	NA	NA
Gas & Water	NA	NA
Water	NA	NA

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR_____ FRESH_____ SALTY_____ SULFUR_____ BLACK_____

5 MINUTE SHUT-IN BRADENHEAD 0 INTERMEDIATE 0

REMARKS:

Both the surface and intermediate bradenheads were opened. Each had a puff of air and then nothing.No flow. No Pressure.

By Darrell Moore Darrell Moore Witness

Env. Mgr. for Water and Waste Navajo Refining
(Position)

E-mail address Darrell.moore@hollycorp.com

Oil Conservation Division, Environmental Bureau
C/O: Carl Chavez
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test June 30, 2010 Operator Navajo Refining API #30-015-26575

Property Name WDW Well No. 3 Location: Unit O Section 1 Township 18S Range 27E

Well Status ~~(Shut-In or Producing)~~ Injecting Tubing____ Intermediate____ Casing____ Bradenhead____

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

TIME	PRESSURES: BRADENHEAD	INTERMEDIATE	CASING
5 minutes	0	0	
10 minutes	N/A	N/A	
15 minutes	N/A	N/A	
20 minutes	N/A	N/A	
25 minutes	N/A	N/A	
30 minutes	N/A	N/A	

	BRADENHEAD FLOWED	INTERMEDIATE FLOWED
Steady Flow	N/A	N/A
Surges	N/A	N/A
Down to Nothing	immediately	immediately
Nothing	X	X
Gas	N/A	N/A
Gas & Water	N/A	N/A
Water	N/A	N/A

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR____ FRESH____ SALTY____ SULFUR____ BLACK____

5 MINUTE SHUT-IN BRADENHEAD 0 INTERMEDIATE 0

REMARKS:
Both the surface and intermediate bradenheads were opened one at a time. Both had a puff of air upon opening the valve (from heat build-up) and then nothing. No flow. No pressure.

By Darrell Moore Darrell Moore Witness____

Env. Mgr. for Water & Waste Navajo Refining
(Position)

E-mail address darrell.moore@hollycorp.com

2010 QUARTERY WEEKLY WAMS LEVEL TABLES

1st Quarter	1/7/10	1/11/10	1/20/10	1/27/10	2/1/10	2/8/10	2/16/10	2/22/10	3/1/10	3/8/10	3/15/10	3/22/10	3/29/10
WDW -1[1] (Mewbourne)	175	170	165	165	165	155	155	155	155	155	155	155	155
WDW-2[1] (Chucka)	125	125	125	125	125	185	185	185	185	185	185	185	185
WDW-3[1] (Gains)	165	155	150	150	155	145	145	145	145	145	145	145	145
Comments: **Added antifreeze to WDW-2 on 02/03/2010.**													

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

2nd Quarter	4/5/10	4/12/10	4/20/10	4/26/10	5/3/10	5/10/10	5/17/10	5/25/10	6/1/10	6/7/10	6/14/10	6/21/10	6/28/10
WDW -1[1] (Mewbourne)	155	155	155	155	155	155	155	155	155	155	155	155	155
WDW-2[1] (Chucka)	185	185	185	185	185	185	185	180	170	170	165	165	155
WDW-3[1] (Gains)	145	145	165	165	165	160	160	155	155	155	155	155	155
Comments: **Added antifreeze to WDW-3 on 04/15/2010.**													

[1] Graduated tank gauged weekly in the field.

3rd Quarter	7/6/10	7/12/10	7/19/10	7/26/10	8/3/10	8/9/10	8/16/10	8/24/10	8/30/10	9/7/10	9/13/10	9/20/10	9/27/10
WDW -1[1] (Mewbourne)	155	155	155	155	155	155	155	155	155	155	155	155	155
WDW-2[1] (Chucka)	155	155	155	155	155	155	155	155	155	155	155	155	155
WDW-3[1] (Gains)	150	150	150	150	150	150	150	150	150	150	150	150	150
Comments: **No antifreeze added for 3rd Quarter.**													

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

4th Quarter	10/4/10	10/14/10	10/18/10	10/28/10	11/1/10	11/8/10	11/15/10	11/22/10	11/29/10	12/7/10	12/13/10	12/21/10	12/27/10
WDW -1[1] (Mewbourne)	155	155	155	155	155	155	155	155	155	155	155	150	150
WDW-2[1] (Chucka)	150	155	155	155	155	155	150	150	150	150	150	150	150
WDW-3[1] (Gains)	150	150	150	150	150	150	150	150	150	150	150	150	150
Comments: **Added antifreeze to WDW-1 and to WDW-3 on 12/28/2010. WDW-1 was brought up to 190 gallons and WDW-3 was brought up to 180 gallons.**													

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

ATTACHMENT 3
ANNUAL TRAINING

Annual Inj. Well Training

Name	Signature	Company	Date
Darrell Moore	Darrell Moore	Navajo	12/13/10
Aaron Strange	Aaron Strange	NRC	12/13/10
Robert Valverde	Robert Valverde	Giles	12-13-10
William Smith	William Smith	Giles	12-13-10
Mark Merrifield	Mark Merrifield	Giles	12-13-10
Sergio Chavez	[illegible]	Giles	12-13-10
Mark Cabezuela	MARK CABEZUELA	GILES	12-13-10
Scott Aguirre	[illegible]	Giles	12-13-10
James Bracamonte	[illegible]	Giles	12-13-10
Domingo Torres	[illegible]	Giles	12-13-10
Justin Hodges	Justin Hodges	Giles	12-13-10
Billie Roach	[illegible]	Giles	12-13-10
John Perez	John Perez	Giles	12-13-10
Mike Ortiz	[illegible]	Giles	12-13-10
Jason Taveira	[illegible]	Giles	12-13-10
Mike Perez	Mike Perez	"	"
Steve Perez	[illegible]	Giles	"
Kenny Williams	Kenny Williams	Giles	"
Mike Moreno	[illegible]	Giles	12-13-10
Hector Ochoa	Hector Ochoa	Giles	12-13-10
Nicolas Salazar	[illegible]	NRC	12-13-10

INJECTION WELL TRAINING

This training is being done to satisfy Navajo Refining Company's Discharge Permits UIC-CLI-008 (I-008), UIC–CLI-008 (I-008-1) and UIC-CLI-008 (I-008-2). In all three permits, section 23 states that "All personnel associated with operations at the Navajo Class I disposal wells shall have appropriate training in accepting, processing, and disposing of Class I non-exempt non-hazardous refinery waste to insure proper disposal".

Definitions The injection wells at our refinery are classified as Class I Non-Hazardous Non-exempt Injection Wells. This means that the water we send to the wells has to be non-hazardous. The Class I designation means that in all three strings of casing, the cement is circulated back to the surface to protect groundwater. It also means that we have to monitor the annulus between the tubing and the casing to insure there are no leaks. This is what the WAMS unit does.

WAMS **W**ell **A**nnulus **M**onitoring **S**ystem

Permit Conditions:

Well Head Pressure Limits	The well head pressure limits shall be 1510 lbs on the Chukka well, 1580 lbs on the Mewbourne well, and 1550 lbs on the Gaines well.
Annulus Pressure	The annulus pressure shall be at a minimum of 100 lbs
Benzene Levels	No water shall be injected into the wells above .5 parts per million (ppm) or 500 parts per billion (ppb) benzene.
Leaks	Any leaks that are identified (loss/gain of fluid in WAMS unit) shall be reported within 24 hours of discovery to OCD. Weekly monitoring of fluids in the tank at each well coupled with documented additions/removals of fluids into or out of the tank are required.

Containment	All three wells have cement containment underneath the valves and filter pots. This containment must be kept empty. If there is fluid in the containment, it must be vacuumed out and the water taken back to the refinery to be disposed into the wastewater system.
Filters	The filters at the wells have been determined to be hazardous waste by testing because of FeS (Iron Sulfide). They have been profiled to be disposed at Gulf Chemical near Houston, TX. The used filters are to be placed into the roll-off boxes at the well site. When the box gets full, an empty box will be swapped and the full box taken to Gulf Chemical for disposal. The boxes MUST be closed when they are not being filled.
Adding to WAMS Unit	If it becomes necessary to add fluids to the WAMS unit, the environmental department must be notified and the added fluid must be documented. Any spills during this process must be reported to the environmental department. Spills must be cleaned up immediately. The dirt removed can be put into the onsite roll-off boxes with the filters. Any fluid that dribbles down the side of the WAMS must be wiped off.

If there are any questions, do not hesitate to call the Environmental on-call phone at **575-365-8365**

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, December 07, 2010 7:52 AM
To: 'Gibson, Dan'; Moore, Darrell; 'Lackey, Johnny'; Schmaltz, Randy; McDaniel, Vic
Cc: Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD
Subject: UIC Class I Disposal Well 2011 Annual Report Reminder

Gentlemen:

Good morning.

This is a reminder of your OCD discharge permit reporting obligations for your Underground Injection Control (UIC) disposal well(s).

Please plan on meeting the Annual Report submittal dates in January of 2011 as failure to submit the report will constitute a violation under the Federal UIC Program and reporting to the United States Environmental Protection Agency, which could result in the shut-in and/or plug and abandonment of your Class I disposal well(s), etc.

Please contact me if you have questions. Thank you in advance for your cooperation.

File: OCD Online "Annual Report" thumbnail

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

NAVAJO REFINING COMPANY, LLC

RECEIVED

2010 FEB 1 PM 1 59

FAX
(575) 746-5283 DIV. ORDERS
(575) 746-5481 TRUCKING
(575) 746-5458 PERSONNEL

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159
TELEPHONE (575) 748-3311

FAX
(575) 746-5419 ACCOUNTING
(575) 746-5451 ENV/PURCH/MKTG
(575) 746-5421 ENGINEERING

January 29, 2010

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: ANNUAL CLASS 1 WELL REPORT
PERMIT NUMBERS UICCL1-008, UILCL1-008-0, AND UICCL1-008-1
NAVAJO REFINING COMPANY,LLC

Dear Carl,

Enclosed, please find the annual class 1 report for our three wells with the permit numbers referenced above. There is some confusion on our part, and also on OCD's apparently about the permit numbers for the wells. Our correspondence with OCD shows differing permit numbers for the wells and when we look onsite at OCD online, there are different numbers for the permit numbers there as well. For this report, UICCL1-008 is WDW-1, UICCL!-008-0 is WDW-2, and UICCL1-008-01 is WDW-3.

If there are any questions concerning this report, please call me at 575-746-5281. Thank you for your attention to this matter.

Sincerely,
NAVAJO REFINING COMPANY, LLC

Darrell Moore

Darrell Moore
Environmental Manager for Water and Waste

Encl:

ANNUAL CLASS 1 WELL REPORT
NAVAJO REFINING COMPANY, LLC
Permit Numbers UICCL1-008, UICCLI-008-0, UICCL1-008-1
API No. 30-015-27592 (008), 30-015-20894 (008-0) and 30-015-26575 (008-01)

January 31, 2010

Darrell Moore
Environmental Manager for Water and Waste

Navajo Refining Company, LLC

EXECUTIVE SUMMARY

Navajo Refining Company, LLC (Navajo) operates three class 1 wells in Eddy County NM. These wells are used to dispose wastewater from our refinery in Artesia, NM. Daily, Navajo sends approximately 16,000 bbls total of wastewater down these three wells with the volume to each well determined by its ability to take water. During 2009, there was no major work on any of the wells. We did perform fall-off tests on each well along with the annual MIT's which will both be discussed later in this report. There has been an issue with the WAMS (Well Annulus Measurement System) unit on WDW-3. There seems to be a very small leak of ethylene glycol from this unit somewhere down hole. Navajo has worked with OCD to come up with a plan for monitoring this leak. That plan will be discussed later in this report.

VOLUMES

During 2009, a total of 4,935,618 bbls of wastewater were pumped down the three wells total. This is broken down as follows: WDW-1 1,314,037 bbls, WDW-2 1,236,573 bbls, and WDW-3 2,385,008 bbls.

WDW-1 and WDW-2 were put into operation in 1998. Since that time, a total of 27,647,056 bbls have been injected into WDW-1 and a total of 14,124,671 bbls have been injected into WDW-2. WDW-3 was put online in 2007. In that time, a total of 4,559,320 bbls have been injected into this well.

Total fluids injected into all three wells at the end of 2009 are 46,331,047 bbls. I have attached a spreadsheet (Fig 1) that shows all values for all three wells.

The **average injection pressure** into WDW-1 for 2009 was 264 psi, for WDW-2 it was 310 psi, and for WDW-3 it was 570 psi.

The **maximum injection pressure** into WDW-1 for 2009 was 901 psi, for WDW-2 it was 884 psi, and for WDW-3 it was 832 psi. All of these pressures are well below the maximum permitted pressure for each well.

CHEMICAL ANALYSIS

Included in this report are the analyses from the four quarterly sampling events that we do every year. (Attachment 1) There are no results in these years' samples that would raise a concern. The TDS results have shown a steady rise throughout the year but historically, they are still within our normal operating range.

MECHANICAL INTEGRITY TESTS

Navajo performed Mechanical Integrity Tests (MIT's) on all three of our wells on August 14, 2008. These tests were witnessed by representatives of OCD along with Navajo personnel. A hot oil unit from O K Hot Oil pressured the wells up and provided a

calibrated chart. On all three tests, an OCD representative took the chart and promised to forward a copy to Navajo. To our knowledge, we have never received a copy of those charts. Therefore, we have no copy to provide in this report. However, we have included various photos and statements from OCD (Attachment2) that are proof that the wells passed the MIT's. In all three instances, the wells were pressured up for 30 minutes at about 500 psi. All three wells were well within OCD's guidelines of 10% loss/gain during the 30 minute duration of the test.

There has been an issue with the WAMS unit on WDW-3. On August 19, 2009, Navajo officially notified OCD that there was a failure in the WAMS unit. A very small amount of annulus fluid had leaked out. There were no above ground leaks so it was assumed that the leak had to be underground. The problem is that the leak is so small, identifying it is almost impossible. For reference, the well passed the annual MIT. On December 4, 2009, OCD issued its "path forward" for this well. This included: 1) Quarterly Bradenhead monitoring to coincide with the annual MIT, 2) Continued WAMS fluid monitoring. The OCD then wrote a "minor modification" to Section 22(E) of the Discharge Permit for WDW-3 to require that "Bradenhead test(s) shall be performed quarterly to coincide with the annual casing-tubing annulus test." In February, 2009, Navajo will perform the first quarterly Bradenhead test. OCD will be notified when that test is finalized so that they may witness the test.

The 2009 Quarterly Weekly WAMS Level Table is also included in Attachment 2. This spreadsheet shows the volume of liquid in gallons in the tanks on each well's WAMS unit. It also shows when any fluid has been added to any tank. On 6/25/09 and on 8/19/09, 110 gallons each were added to WDW-3. On 11/20/09, 110 gallons were added to WDW-1. The loss of fluid from WDW-1 is a new development; however, there has been no further loss since that addition on November 20, 2009.

AREA OF REVIEW

In conjunction with our falloff testing, an area of review (AOR) was done to document well changes within a one-mile radius of the three wells. This current update includes all existing wells within the AOR and any changes that have occurred to these wells since 2008.

No new fresh water wells were reported within the search area. There were twenty one new wells in the AOR of which only one penetrated any injection zone of Navajo's three wells. The well was completed in the ABO Formation by isolating the Wolfcamp (Navajo's uppermost injection interval) with a cast iron bridge plug. The well is identified as follows:

Mack Energy Corporation
State H #2
API# 30-015-35814
Unit H Sec. 2 18S 27E
2063 FNL and 441 FEL

FACILITY TRAINING

Annual training for the operation of the injection wells is done by the environmental department of Navajo. The annual training was done on October 15, 2009. Attached, (Attachment 3) is the sign in sheet along with an outline of the subjects covered during the training.

SUMMARY

During 2009, a total of 4,935,618 bbls of wastewater were injected down the three wells. There were no operational upsets of the wells and no "workovers". We performed an MIT on all three wells with no loss of pressure. There has been an issue with the WAMS unit on WDW-3. On August 19, 2009, Navajo officially notified OCD that there was a failure in the WAMS unit. A very small amount of annulus fluid had leaked out. There were no above ground leaks so it was assumed that the leak had to be underground. The problem is that the leak is so small, identifying it is almost impossible. For reference, the well passed the annual MIT. On December 4, 2009, OCD issued its "path forward" for this well. This included: 1) Quarterly Bradenhead monitoring to coincide with the annual MIT, 2) Continued WAMS fluid monitoring. The OCD then wrote a "minor modification" to Section 22(E) of the Discharge Permit for WDW-3 to require that "Bradenhead test(s) shall be performed quarterly to coincide with the annual casing-tubing annulus test." In February, 2009, Navajo will perform the first quarterly Bradenhead test. OCD will be notified when that test is finalized so that may witness.

In 2009, we also performed Fall Off tests on each well. The falloff testing was done according to a test plan that was submitted to and approved by OCD. The falloff test results show that all three wells are in communication with each other and the permit parameters for the three wells remain conservative. It is recommended that because the wells are in communication, that in future years Navajo be allowed to perform falloff tests on each well every third year instead of all three wells annually. Testing all three wells annually is unnecessary. Further, when testing a well, once radial flow is reached, the test should be considered complete. Monitoring a well that has "flatlined" adds unnecessary "noise" to any set of data without giving anything that is useful.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine or imprisonment.

Michael Whatley

Michael Whatley, Vice President and Refinery Manager

Navajo Refining Company, L.L.C.

2009 SUMMARY OF QUARTERLY MONTHLY INJECTION PRESSURES, RATES, AND VOLUMES

		Average Pressure (psig)	Maximum Pressure (psig)	Minimum Pressure (psig)	Average Flow (gpm)	Maximum Flow (gpm)	Minimum Flow (gpm)	Average Annular Pressure (psig)	Maximum Annular Pressure (psig)	Minimum Annular Pressure (psig)	Average Volume (bpd)	Maximum Volume (bpd)	Minimum Volume (bpd)	Volume (barrels)	TOTAL CUMMULATIVE Volume (barrels)
	WDW-1													**Previous Year**	**26,333,018**
1st qtr	Jan-09	187	195	130	88	92	69	81	90	61	3,019	3,157	2,360	93,601	26,426,619
	Feb-09	155	185	92	76	86	54	101	165	54	2,599	2,962	1,862	72,761	26,499,380
	Mar-09	188	199	169	88	94	83	151	166	132	3,006	3,223	2,862	93,190	26,592,570
2nd qtr	Apr-09	195	202	177	87	95	83	148	169	127	2,985	3,264	2,837	89,552	26,682,122
	May-09	155	216	1	85	87	84	99	162	64	2,927	2,982	2,876	90,739	26,772,861
	Jun-09	14	74	1	101	113	83	132	224	59	3,451	3,864	2,861	103,520	26,876,380
3rd qtr	Jul-09	9	69	1	99	105	82	86	154	58	3,378	3,586	2,806	104,706	26,981,086
	Aug-09	333	610	0	85	99	50	87	140	56	2,903	3,390	1,711	89,987	27,071,073
	Sep-09	431	486	153	125	138	115	356	755	32	4,288	4,727	3,939	128,647	27,199,719
4th qtr	Oct-09	445	901	149	142	244	115	390	605	25	4,873	8,366	3,938	151,065	27,350,784
	Nov-09	498	544	444	126	136	110	482	1,000	149	4,331	4,653	3,786	129,935	27,480,719
	Dec-09	557	665	309	156	333	108	412	621	221	5,366	11,426	3,704	166,336	27,647,056
	All 2009	**264**	**901**	**0**	**105**	**333**	**50**	**210**	**1,000**	**25**	**3,594**	**11,426**	**1,711**	**1,314,037**	**27,647,056**
	WDW-2													**Previous Year**	**12,888,098**
1st qtr	Jan-09	191	212	134	86	89	68	118	137	86	2,939	3,067	2,328	91,105	12,979,202
	Feb-09	160	189	95	74	84	54	146	237	79	2,544	2,884	1,846	71,245	13,050,447
	Mar-09	193	203	175	82	84	78	97	112	77	2,808	2,883	2,683	87,037	13,137,484
2nd qtr	Apr-09	201	208	182	81	83	77	101	119	79	2,761	2,855	2,628	82,825	13,220,310
	May-09	207	214	195	79	81	75	97	111	81	2,705	2,792	2,587	83,861	13,304,171
	Jun-09	152	213	127	92	98	75	116	225	87	3,169	3,366	2,573	95,082	13,399,252
3rd qtr	Jul-09	150	159	127	99	113	89	144	228	93	3,395	3,869	3,068	105,260	13,504,512
	Aug-09	419	616	160	84	124	49	145	213	79	2,885	4,264	1,697	89,440	13,593,952
	Sep-09	531	802	468	120	180	99	647	919	206	4,121	6,164	3,380	123,634	13,717,586
4th qtr	Oct-09	408	565	171	113	120	103	551	918	119	3,865	4,116	3,533	119,817	13,837,403
	Nov-09	510	604	434	111	161	76	579	894	347	3,790	5,528	2,589	113,692	13,951,095
	Dec-09	594	884	513	163	342	138	320	557	109	5,599	11,739	4,746	173,576	14,124,671
	All 2009	**310**	**884**	**95**	**99**	**342**	**49**	**255**	**919**	**77**	**3,382**	**11,739**	**1,697**	**1,236,573**	**14,124,671**
	WDW-3													**Previous Year**	**2,174,313**
1st qtr	Jan-09	689	750	380	190	204	163	446	503	347	6,501	6,979	5,579	201,539	2,375,852
	Feb-09	528	670	213	142	185	89	374	594	236	4,866	6,354	3,067	136,238	2,512,090
	Mar-09	686	748	594	182	204	149	428	499	369	6,239	6,986	5,105	193,408	2,705,498
2nd qtr	Apr-09	749	771	721	189	199	176	446	485	420	6,475	6,828	6,040	194,242	2,899,740
	May-09	764	788	694	191	198	175	449	508	388	6,556	6,802	6,017	203,231	3,102,972
	Jun-09	504	797	378	185	206	105	286	559	206	6,326	7,074	3,615	189,784	3,292,755
3rd qtr	Jul-09	485	531	381	192	215	160	283	368	227	6,576	7,357	5,501	203,871	3,496,626
	Aug-09	484	832	162	199	305	156	204	307	19	6,819	10,441	5,332	211,401	3,708,027
	Sep-09	440	519	177	198	209	187	332	404	236	6,804	7,150	6,414	204,114	3,912,141
4th qtr	Oct-09	386	529	10	201	217	188	310	549	206	6,903	7,442	6,449	213,990	4,126,131
	Nov-09	540	651	479	206	250	172	312	533	241	7,067	8,577	5,895	212,016	4,338,147
	Dec-09	587	625	551	208	219	184	335	500	234	7,135	7,511	6,320	221,173	4,559,320
	All 2009	**570**	**832**	**10**	**190**	**305**	**89**	**351**	**594**	**19**	**6,522**	**10,441**	**3,067**	**2,385,008**	**4,559,320**
														Total Injected fluids:	**46,331,047**

ATTACHMENT 1
CHEMICAL ANALYSIS

ALS Laboratory Group

Date: *23-Feb-09*

Client: ALS Laboratory Group
Project: 0902372
Sample ID: 0902372-01F
Collection Date: 2/13/2009 01:45 PM

Work Order: 0902323
Lab ID: 0902323-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **DB**
Cyanide, Reactive	ND		40.0	mg/Kg	1	2/19/2009
SULFIDE, REACTIVE			**SW7.3.4.2**		Prep Date: **2/19/2009**	Analyst: **DB**
Sulfide, Reactive	ND		40.0	mg/Kg	1	2/19/2009

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
a - Not accredited

S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time
n - Not offered for accreditation

ALS Laboratory Group

Date: *26-Feb-09*

Client: Navajo Refining Company
Project: Injection Well Qrtly
Sample ID: Injection Well
Collection Date: 2/13/2009 01:45 PM

Work Order: 0902372
Lab ID: 0902372-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **2/20/2009**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	2/20/2009 05:30 PM
METALS			**SW6020**		Prep Date: **2/20/2009**	Analyst: **ALR**
Aluminum	**0.150**		**0.0100**	**mg/L**	1	2/21/2009 03:12 AM
Arsenic	**0.119**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
Barium	**0.00941**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
Beryllium	ND		0.00200	mg/L	1	2/21/2009 03:12 AM
Boron	**0.142**		**0.0200**	**mg/L**	1	2/21/2009 03:12 AM
Cadmium	ND		0.00200	mg/L	1	2/21/2009 03:12 AM
Calcium	**46.3**		**0.500**	**mg/L**	1	2/21/2009 03:12 AM
Chromium	ND		0.00500	mg/L	1	2/21/2009 03:12 AM
Cobalt	ND		0.00500	mg/L	1	2/21/2009 03:12 AM
Copper	ND		0.00500	mg/L	1	2/21/2009 03:12 AM
Iron	**0.325**		**0.200**	**mg/L**	1	2/21/2009 03:12 AM
Lead	ND		0.00500	mg/L	1	2/21/2009 03:12 AM
Magnesium	**15.5**		**0.200**	**mg/L**	1	2/21/2009 03:12 AM
Manganese	**0.120**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
Molybdenum	**0.278**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
Nickel	**0.0198**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
Potassium	**8.66**		**0.200**	**mg/L**	1	2/21/2009 03:12 AM
Selenium	**0.0443**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
Silver	ND		0.00500	mg/L	1	2/21/2009 03:12 AM
Sodium	**385**		**20.0**	**mg/L**	100	2/23/2009 01:09 PM
Vanadium	ND		0.00500	mg/L	1	2/21/2009 03:12 AM
Zinc	**0.0208**		**0.00500**	**mg/L**	1	2/21/2009 03:12 AM
SEMIVOLATILES			**SW8270**		Prep Date: **2/16/2009**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
2-Methylphenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
2-Nitroaniline	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
2-Nitrophenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
3-Nitroaniline	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
4-Nitroaniline	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
4-Nitrophenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Acenaphthene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Acenaphthylene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM

Qualifiers:

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J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
a - Not accredited
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time
n - Not offered for accreditation

ALS Laboratory Group

Date: *26-Feb-09*

Client: Navajo Refining Company
Project: Injection Well Qrtly
Sample ID: Injection Well
Collection Date: 2/13/2009 01:45 PM

Work Order: 0902372
Lab ID: 0902372-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Anthracene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Benzidine	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Hexachloroethane	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Isophorone	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Naphthalene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Nitrobenzene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Pentachlorophenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Phenanthrene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Phenol	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Pyrene	ND		0.0050	mg/L	1	2/23/2009 12:58 PM
Surr: 2,4,6-Tribromophenol	*79.8*		*42-124*	*%REC*	1	2/23/2009 12:58 PM
Surr: 2-Fluorobiphenyl	*65.4*		*48-120*	*%REC*	1	2/23/2009 12:58 PM
Surr: 2-Fluorophenol	*58.2*		*20-120*	*%REC*	1	2/23/2009 12:58 PM
Surr: 4-Terphenyl-d14	*66.5*		*51-135*	*%REC*	1	2/23/2009 12:58 PM
Surr: Nitrobenzene-d5	*63.5*		*41-120*	*%REC*	1	2/23/2009 12:58 PM
Surr: Phenol-d6	*66.0*		*20-120*	*%REC*	1	2/23/2009 12:58 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
2-Butanone	ND		0.010	mg/L	1	2/19/2009 06:09 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	2/19/2009 06:09 PM
2-Hexanone	ND		0.010	mg/L	1	2/19/2009 06:09 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	2/19/2009 06:09 PM
Acetone	ND		0.010	mg/L	1	2/19/2009 06:09 PM
Benzene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Bromodichloromethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Bromoform	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Bromomethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Carbon disulfide	ND		0.010	mg/L	1	2/19/2009 06:09 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	2/19/2009 06:09 PM

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P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time
n - Not offered for accreditation

ALS Laboratory Group

Date: *26-Feb-09*

Client: Navajo Refining Company
Project: Injection Well Qrtly
Sample ID: Injection Well
Collection Date: 2/13/2009 01:45 PM

Work Order: 0902372
Lab ID: 0902372-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Chloroethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Chloroform	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Chloromethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Dibromochloromethane	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Ethylbenzene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
m,p-Xylene	ND		0.010	mg/L	1	2/19/2009 06:09 PM
Methylene chloride	ND		0.010	mg/L	1	2/19/2009 06:09 PM
Styrene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Tetrachloroethene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Toluene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Trichloroethene	ND		0.0050	mg/L	1	2/19/2009 06:09 PM
Vinyl acetate	ND		0.010	mg/L	1	2/19/2009 06:09 PM
Vinyl chloride	ND		0.0020	mg/L	1	2/19/2009 06:09 PM
Xylenes, Total	ND		0.015	mg/L	1	2/19/2009 06:09 PM
Surr: 1,2-Dichloroethane-d4	*98.6*		*70-125*	*%REC*	1	2/19/2009 06:09 PM
Surr: 4-Bromofluorobenzene	*107*		*72-125*	*%REC*	1	2/19/2009 06:09 PM
Surr: Dibromofluoromethane	*99.7*		*71-125*	*%REC*	1	2/19/2009 06:09 PM
Surr: Toluene-d8	*106*		*75-125*	*%REC*	1	2/19/2009 06:09 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	2/19/2009
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	2/19/2009
ANIONS			**E300**			Analyst: **RPM**
Chloride	**279**		**5.00**	**mg/L**	10	2/21/2009 06:19 PM
Sulfate	**360**		**5.00**	**mg/L**	10	2/21/2009 06:19 PM
Surr: Selenate (surr)	*102*		*85-115*	*%REC*	10	2/21/2009 06:19 PM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**515**		**5.00**	**mg/L**	1	2/23/2009 11:00 AM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	2/23/2009 11:00 AM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	2/23/2009 11:00 AM
Alkalinity, Total (As CaCO3)	**515**		**5.00**	**mg/L**	1	2/23/2009 11:00 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **RPM**
Specific Conductivity	**2,270**		**1.00**	**µmhos/cm**	1	2/14/2009 11:45 AM
IGNITIBILITY			**SW1010**			Analyst: **JBA**

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ALS Laboratory Group

Date: *26-Feb-09*

Client: Navajo Refining Company
Project: Injection Well Qrtly
Sample ID: Injection Well
Collection Date: 2/13/2009 01:45 PM

Work Order: 0902372
Lab ID: 0902372-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Ignitability	> 160		50.0	°F	1	2/25/2009
PH			**SM4500H+ B**			Analyst: **RPM**
pH	7.74	H	0.100	pH units	1	2/14/2009 11:30 AM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **TDW**
Total Dissolved Solids (Residue, Filterable)	1,410		10.0	mg/L	1	2/18/2009 02:00 PM

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P - Dual Column results percent difference > 40%
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☐ **ALS Laboratory Group**
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Fax. +1 281 530 5887

Chain of Custody Form

Page ___ of ___

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: D[illegible]

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	Injection Well Qrtly	A • VOC (8260) Select
Work Order		Project Number		B • SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C • Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D RCI Profile
Address	P.O. Box 159	Address	P.O. Box 159	E • Anions (300) Cl, SO4
				F • Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G • pH
Phone	575 (~~505~~) 748-3311	Phone	(505) 748-3311	H • Conductivity
Fax	575 (~~505~~) 746-5421	Fax	(505) 746-5421	I • TDS
e-Mail Address	dgboyer@SESI-NM.com	e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Injection Well	2/13/09	1345	L	Y	9	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other ___

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Work Days TAT.
Aaron Strange	2/13/09	1615		
Relinquished by:	Date: 2/14/09	Time: 09:45	Received by (Laboratory):	Cooler ID: / Cooler Temp.:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other ___
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

ALS Laboratory Group

Date: *14-May-09*

Client: ALS Laboratory Group
Project: 0905157
Sample ID: 0905157-01F
Collection Date: 5/7/2009 01:15 PM

Work Order: 0905193
Lab ID: 0905193-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**		Prep Date: **5/13/2009**	Analyst: **DB**
Cyanide, Reactive	ND		40.0	mg/Kg	1	5/13/2009
SULFIDE, REACTIVE			**SW7.3.4.2**		Prep Date: **5/13/2009**	Analyst: **DB**
Sulfide, Reactive	ND		40.0	mg/Kg	1	5/13/2009

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
a - Not accredited
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time
n - Not offered for accreditation

ALS Laboratory Group

Date: *26-May-09*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/7/2009 01:15 PM

Work Order: 0905157
Lab ID: 0905157-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **5/12/2009**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	5/12/2009 02:47 PM
METALS			**SW6020**		Prep Date: **5/13/2009**	Analyst: **ALR**
Aluminum	**0.484**		**0.0100**	**mg/L**	1	5/15/2009 05:43 PM
Arsenic	**0.140**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
Barium	**0.0282**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
Beryllium	ND		0.00200	mg/L	1	5/15/2009 05:43 PM
Boron	**0.152**		**0.0200**	**mg/L**	1	5/15/2009 05:43 PM
Cadmium	ND		0.00200	mg/L	1	5/15/2009 05:43 PM
Calcium	**126**		**0.500**	**mg/L**	1	5/15/2009 05:43 PM
Chromium	ND		0.00500	mg/L	1	5/15/2009 05:43 PM
Cobalt	ND		0.00500	mg/L	1	5/15/2009 05:43 PM
Copper	ND		0.00500	mg/L	1	5/15/2009 05:43 PM
Iron	**0.474**		**0.200**	**mg/L**	1	5/15/2009 05:43 PM
Lead	ND		0.00500	mg/L	1	5/15/2009 05:43 PM
Magnesium	**46.4**		**0.200**	**mg/L**	1	5/15/2009 05:43 PM
Manganese	**0.0900**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
Molybdenum	**0.118**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
Nickel	**0.0256**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
Potassium	**108**		**0.200**	**mg/L**	1	5/15/2009 05:43 PM
Selenium	**0.653**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
Silver	ND		0.00500	mg/L	1	5/15/2009 05:43 PM
Sodium	**462**		**20.0**	**mg/L**	100	5/15/2009 05:30 PM
Vanadium	ND		0.00500	mg/L	1	5/15/2009 05:43 PM
Zinc	**0.201**		**0.00500**	**mg/L**	1	5/15/2009 05:43 PM
SEMIVOLATILES			**SW8270**		Prep Date: **5/14/2009**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
2-Methylphenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
2-Nitroaniline	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
2-Nitrophenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
3-Nitroaniline	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
4-Nitroaniline	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
4-Nitrophenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Acenaphthene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Acenaphthylene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *26-May-09*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/7/2009 04:15 PM

Work Order: 0905157
Lab ID: 0905157-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Anthracene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Benzidine	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Hexachloroethane	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Isophorone	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Naphthalene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Nitrobenzene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Pentachlorophenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Phenanthrene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Phenol	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Pyrene	ND		0.0050	mg/L	1	5/14/2009 05:13 PM
Surr: 2,4,6-Tribromophenol	*72.0*		*42-124*	*%REC*	1	5/14/2009 05:13 PM
Surr: 2-Fluorobiphenyl	*77.6*		*48-120*	*%REC*	1	5/14/2009 05:13 PM
Surr: 2-Fluorophenol	*61.0*		*20-120*	*%REC*	1	5/14/2009 05:13 PM
Surr: 4-Terphenyl-d14	*68.3*		*51-135*	*%REC*	1	5/14/2009 05:13 PM
Surr: Nitrobenzene-d5	*84.1*		*41-120*	*%REC*	1	5/14/2009 05:13 PM
Surr: Phenol-d6	*67.6*		*20-120*	*%REC*	1	5/14/2009 05:13 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
2-Butanone	ND		0.010	mg/L	1	5/13/2009 05:20 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	5/13/2009 05:20 PM
2-Hexanone	ND		0.010	mg/L	1	5/13/2009 05:20 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	5/13/2009 05:20 PM
Acetone	**0.089**		**0.010**	**mg/L**	1	5/13/2009 05:20 PM
Benzene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Bromodichloromethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Bromoform	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Bromomethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Carbon disulfide	ND		0.010	mg/L	1	5/13/2009 05:20 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	5/13/2009 05:20 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *26-May-09*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/7/2009 01:15 PM

Work Order: 0905157
Lab ID: 0905157-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Chloroethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Chloroform	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Chloromethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Dibromochloromethane	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Ethylbenzene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
m,p-Xylene	ND		0.010	mg/L	1	5/13/2009 05:20 PM
Methylene chloride	ND		0.010	mg/L	1	5/13/2009 05:20 PM
Styrene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Tetrachloroethene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Toluene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Trichloroethene	ND		0.0050	mg/L	1	5/13/2009 05:20 PM
Vinyl acetate	ND		0.010	mg/L	1	5/13/2009 05:20 PM
Vinyl chloride	ND		0.0020	mg/L	1	5/13/2009 05:20 PM
Xylenes, Total	ND		0.015	mg/L	1	5/13/2009 05:20 PM
Surr: 1,2-Dichloroethane-d4	*102*		*70-125*	*%REC*	1	5/13/2009 05:20 PM
Surr: 4-Bromofluorobenzene	*102*		*72-125*	*%REC*	1	5/13/2009 05:20 PM
Surr: Dibromofluoromethane	*112*		*71-125*	*%REC*	1	5/13/2009 05:20 PM
Surr: Toluene-d8	*105*		*75-125*	*%REC*	1	5/13/2009 05:20 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	5/13/2009
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	5/13/2009
ANIONS			**E300**			Analyst: **IGF**
Chloride	**189**		**10.0**	**mg/L**	20	5/8/2009 01:07 PM
Sulfate	**1,340**		**25.0**	**mg/L**	50	5/8/2009 04:13 PM
Surr: Selenate (surr)	*100*		*85-115*	*%REC*	20	5/8/2009 01:07 PM
Surr: Selenate (surr)	*99.3*		*85-115*	*%REC*	50	5/8/2009 04:13 PM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**294**		**5.00**	**mg/L**	1	5/14/2009 02:30 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	5/14/2009 02:30 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	5/14/2009 02:30 PM
Alkalinity, Total (As CaCO3)	**294**		**5.00**	**mg/L**	1	5/14/2009 02:30 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **TDW**
Specific Conductivity	**4,370**		**1.00**	**µmhos/cm**	1	5/8/2009 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *26-May-09*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 5/7/2009 01:15 PM

Work Order: 0905157
Lab ID: 0905157-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
IGNITIBILITY			**SW1010**			Analyst: **KKP**
Ignitability	> 160		50.0	°F	1	5/8/2009 06:30 PM
PH			**SM4500H+ B**			Analyst: **TDW**
pH	7.52	H	0.100	pH units	1	5/8/2009 03:00 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **TDW**
Total Dissolved Solids (Residue, Filterable)	2,740		10.0	mg/L	1	5/8/2009 03:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Chain of Custody Form

Page 1 of 1

☐ **ALS Laboratory Group.**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0905157

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	P.O. Box 159	Address	P.O. Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	~~(505)~~ 575 748-3311	Phone	(505) 748-3311	H	Conductivity
Fax	~~(505)~~ 575 746-5421	Fax	(505) 746-5421	I	TDS
e-Mail Address	~~dgboyer@SESI-NM.com~~	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj. Well	5/7/09	1315	L	Y	9	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☐ Other ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☑ Std 10 WK Days

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Aaron Strange	5/7/09	1615	
Relinquished by:	5/8/09	0920	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: 10 Work Days TAT.

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other _____
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

ALS Laboratory Group

Date: *18-Aug-09*

Client: ALS Laboratory Group
Project: 0908302
Sample ID: 0908302-01F
Collection Date: 8/12/2009 08:10 AM

Work Order: 0908263
Lab ID: 0908263-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**		Prep Date: **8/17/2009**	Analyst: **DB**
Cyanide, Reactive	ND		40.0	mg/Kg	1	8/17/2009
SULFIDE, REACTIVE			**SW7.3.4.2**		Prep Date: **8/17/2009**	Analyst: **DB**
Sulfide, Reactive	ND		40.0	mg/Kg	1	8/17/2009

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Laboratory Group

Date: *21-Aug-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 8/12/2009 08:10 AM

Work Order: 0908302
Lab ID: 0908302-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **8/19/2009**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	8/19/2009 03:18 PM
METALS			**SW6020**		Prep Date: **8/14/2009**	Analyst: **JBA**
Aluminum	**0.133**		**0.0500**	**mg/L**	5	8/17/2009 05:53 PM
Arsenic	**0.124**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
Barium	**0.0226**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
Beryllium	ND		0.00200	mg/L	1	8/15/2009 03:32 AM
Boron	**0.166**		**0.0200**	**mg/L**	1	8/15/2009 03:32 AM
Cadmium	ND		0.00200	mg/L	1	8/15/2009 03:32 AM
Calcium	**125**		**0.500**	**mg/L**	1	8/15/2009 03:32 AM
Chromium	ND		0.00500	mg/L	1	8/15/2009 03:32 AM
Cobalt	ND		0.00500	mg/L	1	8/15/2009 03:32 AM
Copper	ND		0.00500	mg/L	1	8/15/2009 03:32 AM
Iron	**0.666**		**0.200**	**mg/L**	1	8/15/2009 03:32 AM
Lead	ND		0.00500	mg/L	1	8/15/2009 03:32 AM
Magnesium	**38.1**		**0.200**	**mg/L**	1	8/15/2009 03:32 AM
Manganese	**0.0734**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
Molybdenum	**0.187**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
Nickel	**0.00665**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
Potassium	**44.4**		**0.200**	**mg/L**	1	8/15/2009 03:32 AM
Selenium	**0.492**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
Silver	ND		0.00500	mg/L	1	8/15/2009 03:32 AM
Sodium	**666**		**1.00**	**mg/L**	5	8/17/2009 05:53 PM
Vanadium	ND		0.00500	mg/L	1	8/15/2009 03:32 AM
Zinc	**0.0237**		**0.00500**	**mg/L**	1	8/15/2009 03:32 AM
SEMIVOLATILES			**SW8270**		Prep Date: **8/18/2009**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
2-Methylphenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
2-Nitroaniline	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
2-Nitrophenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
3-Nitroaniline	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
4-Nitroaniline	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
4-Nitrophenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Acenaphthene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Acenaphthylene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *21-Aug-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 8/12/2009 08:10 AM

Work Order: 0908302
Lab ID: 0908302-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Anthracene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Benzidine	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Hexachloroethane	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Isophorone	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Naphthalene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Nitrobenzene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Pentachlorophenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Phenanthrene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Phenol	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Pyrene	ND		0.0050	mg/L	1	8/19/2009 03:27 PM
Surr: 2,4,6-Tribromophenol	*106*		*42-124*	*%REC*	1	8/19/2009 03:27 PM
Surr: 2-Fluorobiphenyl	*59.0*		*48-120*	*%REC*	1	8/19/2009 03:27 PM
Surr: 2-Fluorophenol	*49.2*		*20-120*	*%REC*	1	8/19/2009 03:27 PM
Surr: 4-Terphenyl-d14	*73.9*		*51-135*	*%REC*	1	8/19/2009 03:27 PM
Surr: Nitrobenzene-d5	*61.6*		*41-120*	*%REC*	1	8/19/2009 03:27 PM
Surr: Phenol-d6	*56.0*		*20-120*	*%REC*	1	8/19/2009 03:27 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
2-Butanone	ND		0.010	mg/L	1	8/14/2009 08:23 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	8/14/2009 08:23 PM
2-Hexanone	ND		0.010	mg/L	1	8/14/2009 08:23 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	8/14/2009 08:23 PM
Acetone	**0.048**		**0.010**	**mg/L**	1	8/14/2009 08:23 PM
Benzene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Bromodichloromethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Bromoform	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Bromomethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Carbon disulfide	ND		0.010	mg/L	1	8/14/2009 08:23 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	8/14/2009 08:23 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *21-Aug-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 8/12/2009 08:10 AM

Work Order: 0908302
Lab ID: 0908302-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Chloroethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Chloroform	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Chloromethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Dibromochloromethane	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Ethylbenzene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
m,p-Xylene	ND		0.010	mg/L	1	8/14/2009 08:23 PM
Methylene chloride	ND		0.010	mg/L	1	8/14/2009 08:23 PM
Styrene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Tetrachloroethene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Toluene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Trichloroethene	ND		0.0050	mg/L	1	8/14/2009 08:23 PM
Vinyl acetate	ND		0.010	mg/L	1	8/14/2009 08:23 PM
Vinyl chloride	ND		0.0020	mg/L	1	8/14/2009 08:23 PM
Xylenes, Total	ND		0.015	mg/L	1	8/14/2009 08:23 PM
Surr: 1,2-Dichloroethane-d4	*92.9*		*70-125*	*%REC*	1	8/14/2009 08:23 PM
Surr: 4-Bromofluorobenzene	*96.0*		*72-125*	*%REC*	1	8/14/2009 08:23 PM
Surr: Dibromofluoromethane	*98.5*		*71-125*	*%REC*	1	8/14/2009 08:23 PM
Surr: Toluene-d8	*102*		*75-125*	*%REC*	1	8/14/2009 08:23 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	8/17/2009
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	8/17/2009
ANIONS			**E300**			Analyst: **IGF**
Chloride	**402**		**10.0**	**mg/L**	20	8/14/2009 08:10 PM
Sulfate	**1,730**		**25.0**	**mg/L**	50	8/14/2009 08:34 PM
Surr: Selenate (surr)	*98.7*		*85-115*	*%REC*	50	8/14/2009 08:34 PM
Surr: Selenate (surr)	*99.6*		*85-115*	*%REC*	20	8/14/2009 08:10 PM
ALKALINITY			**SM2320B**			Analyst: **RPM**
Alkalinity, Bicarbonate (As CaCO3)	**220**		**5.00**	**mg/L**	1	8/21/2009 07:00 AM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	8/21/2009 07:00 AM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	8/21/2009 07:00 AM
Alkalinity, Total (As CaCO3)	**220**		**5.00**	**mg/L**	1	8/21/2009 07:00 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **IGF**
Specific Conductivity	**4,640**		**1.00**	**µmhos/cm**	1	8/18/2009 02:50 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *21-Aug-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Inj. Well
Collection Date: 8/12/2009 08:10 AM

Work Order: 0908302
Lab ID: 0908302-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
IGNITIBILITY			SW1010			Analyst: KKP
Ignitability	> 160		50.0	°F	1	8/18/2009 01:00 PM
PH			SM4500H+ B			Analyst: IGF
pH	7.81	H	0.100	pH units	1	8/13/2009 04:30 PM
TOTAL DISSOLVED SOLIDS			M2540C			Analyst: KKP
Total Dissolved Solids (Residue, Filterable)	3,160		10.0	mg/L	1	8/14/2009 05:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Chain of Custody Form

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3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0908302

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	P.O. Box 159	Address	P.O. Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	575 ~~(505)~~ 748-3311	Phone	575 ~~(505)~~ 748-3311	H	Conductivity
Fax	575 ~~(505)~~ 746-5421	Fax	575 ~~(505)~~ 746-5421	I	TDS
e-Mail Address	~~dgboyer@SESI-NM.com~~	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj. Well	8-12-09	0810	L	Y	9	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Aaron Strange	8-12-09	1615	
Relinquished by:	8/13/09	09:15	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: 10 Work Days TAT.

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other _____
- ☐ TRRP CheckList
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

ALS Laboratory Group

Date: *25-Nov-09*

Client: ALS Laboratory Group
Project: 0911524
Sample ID: 0911524-01F
Collection Date: 11/19/2009 01:58 PM

Work Order: 0911500
Lab ID: 0911500-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **AJK**
Cyanide, Reactive	ND		40.0	mg/Kg	1	11/24/2009 10:15 AM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **AJK**
Sulfide, Reactive	ND		40.0	mg/Kg	1	11/24/2009 10:15 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Laboratory Group

Date: *08-Dec-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 11/19/2009 01:58 PM

Work Order: 0911524
Lab ID: 0911524-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **11/25/2009**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	11/25/2009 03:14 PM
METALS			**SW6020**		Prep Date: **11/25/2009**	Analyst: **ALR**
Aluminum	**0.329**		**0.0100**	**mg/L**	1	11/25/2009 08:09 PM
Arsenic	**0.111**		**0.00500**	**mg/L**	1	11/25/2009 08:09 PM
Barium	**0.0198**		**0.00500**	**mg/L**	1	11/25/2009 08:09 PM
Beryllium	ND		0.00200	mg/L	1	11/25/2009 08:09 PM
Boron	**0.258**		**0.0200**	**mg/L**	1	11/25/2009 08:09 PM
Cadmium	ND		0.00200	mg/L	1	11/25/2009 08:09 PM
Calcium	**147**		**0.500**	**mg/L**	1	11/25/2009 08:09 PM
Chromium	ND		0.00500	mg/L	1	11/25/2009 08:09 PM
Cobalt	ND		0.00500	mg/L	1	11/25/2009 08:09 PM
Copper	ND		0.00500	mg/L	1	11/25/2009 08:09 PM
Iron	ND		0.200	mg/L	1	11/25/2009 08:09 PM
Lead	ND		0.00500	mg/L	1	11/25/2009 08:09 PM
Magnesium	**46.6**		**0.200**	**mg/L**	1	11/25/2009 08:09 PM
Manganese	**0.0634**		**0.00500**	**mg/L**	1	11/25/2009 08:09 PM
Molybdenum	**0.155**		**0.00500**	**mg/L**	1	11/25/2009 08:09 PM
Nickel	**0.00618**		**0.00500**	**mg/L**	1	11/25/2009 08:09 PM
Potassium	**16.4**		**0.200**	**mg/L**	1	11/25/2009 08:09 PM
Selenium	**0.428**		**0.0500**	**mg/L**	10	11/30/2009 05:14 PM
Silver	ND		0.00500	mg/L	1	11/25/2009 08:09 PM
Sodium	**1,060**		**40.0**	**mg/L**	200	11/30/2009 07:41 PM
Vanadium	ND		0.00500	mg/L	1	11/25/2009 08:09 PM
Zinc	**0.0382**		**0.00500**	**mg/L**	1	11/25/2009 08:09 PM
SEMIVOLATILES			**SW8270**		Prep Date: **11/24/2009**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
2-Methylphenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
2-Nitroaniline	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
2-Nitrophenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
3-Nitroaniline	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
4-Nitroaniline	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
4-Nitrophenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Acenaphthene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Acenaphthylene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *08-Dec-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 11/19/2009 01:58 PM

Work Order: 0911524
Lab ID: 0911524-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Anthracene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Benzidine	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Hexachloroethane	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Isophorone	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Naphthalene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Nitrobenzene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Pentachlorophenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Phenanthrene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Phenol	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Pyrene	ND		0.0050	mg/L	1	12/3/2009 07:19 PM
Surr: 2,4,6-Tribromophenol	*79.3*		*42-124*	*%REC*	1	12/3/2009 07:19 PM
Surr: 2-Fluorobiphenyl	*70.6*		*48-120*	*%REC*	1	12/3/2009 07:19 PM
Surr: 2-Fluorophenol	*63.0*		*20-120*	*%REC*	1	12/3/2009 07:19 PM
Surr: 4-Terphenyl-d14	*66.4*		*51-135*	*%REC*	1	12/3/2009 07:19 PM
Surr: Nitrobenzene-d5	*69.2*		*41-120*	*%REC*	1	12/3/2009 07:19 PM
Surr: Phenol-d6	*63.3*		*20-120*	*%REC*	1	12/3/2009 07:19 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
1,1-Dichloroethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
1,1-Dichloroethene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
1,2-Dichloroethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
2-Butanone	**0.010**		**0.010**	**mg/L**	1	11/26/2009 12:50 AM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	11/26/2009 12:50 AM
2-Hexanone	ND		0.010	mg/L	1	11/26/2009 12:50 AM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	11/26/2009 12:50 AM
Acetone	**0.043**		**0.010**	**mg/L**	1	11/26/2009 12:50 AM
Benzene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Bromodichloromethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Bromoform	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Bromomethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Carbon disulfide	ND		0.010	mg/L	1	11/26/2009 12:50 AM
Carbon tetrachloride	ND		0.0050	mg/L	1	11/26/2009 12:50 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *08-Dec-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 11/19/2009 01:58 PM

Work Order: 0911524
Lab ID: 0911524-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Chloroethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Chloroform	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Chloromethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Dibromochloromethane	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Ethylbenzene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
m,p-Xylene	ND		0.010	mg/L	1	11/26/2009 12:50 AM
Methylene chloride	ND		0.010	mg/L	1	11/26/2009 12:50 AM
Styrene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Tetrachloroethene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Toluene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Trichloroethene	ND		0.0050	mg/L	1	11/26/2009 12:50 AM
Vinyl acetate	ND		0.010	mg/L	1	11/26/2009 12:50 AM
Vinyl chloride	ND		0.0020	mg/L	1	11/26/2009 12:50 AM
Xylenes, Total	ND		0.015	mg/L	1	11/26/2009 12:50 AM
Surr: 1,2-Dichloroethane-d4	*105*		*70-125*	*%REC*	1	11/26/2009 12:50 AM
Surr: 4-Bromofluorobenzene	*99.3*		*72-125*	*%REC*	1	11/26/2009 12:50 AM
Surr: Dibromofluoromethane	*84.1*		*71-125*	*%REC*	1	11/26/2009 12:50 AM
Surr: Toluene-d8	*98.9*		*75-125*	*%REC*	1	11/26/2009 12:50 AM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	11/24/2009 10:15 AM
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	11/24/2009 10:15 AM
ANIONS			**E300**			Analyst: **IGF**
Chloride	**735**		**25.0**	**mg/L**	50	11/23/2009 07:41 PM
Sulfate	**1,900**		**25.0**	**mg/L**	50	11/23/2009 07:41 PM
Surr: Selenate (surr)	*107*		*85-115*	*%REC*	50	11/23/2009 07:41 PM
ALKALINITY			**SM2320B**			Analyst: **TDW**
Alkalinity, Bicarbonate (As CaCO3)	**131**		**5.00**	**mg/L**	1	11/21/2009 01:00 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	11/21/2009 01:00 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	11/21/2009 01:00 PM
Alkalinity, Total (As CaCO3)	**131**		**5.00**	**mg/L**	1	11/21/2009 01:00 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **TDW**
Specific Conductivity	**5,970**		**1.00**	**µmhos/cm**	1	12/1/2009 04:00 PM
IGNITIBILITY			**SW1010**			Analyst: **RPM**

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Laboratory Group

Date: *08-Dec-09*

Client: Holly Energy Partners
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 11/19/2009 01:58 PM

Work Order: 0911524
Lab ID: 0911524-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Ignitability	> 160		50.0	°F	1	12/4/2009 01:30 PM
PH			**SM4500H+ B**			Analyst: **TDW**
pH	7.00	H	0.100	pH units	1	11/20/2009 07:00 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **TDW**
Total Dissolved Solids (Residue, Filterable)	4,010		10.0	mg/L	1	11/21/2009 12:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Page 1 of 1

☐ **ALS Laboratory Group**
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 0911524

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	P.O. Box 159	Address	P.O. Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	575 (505) 748-3311	Phone	575 (505) 748-3311	H	Conductivity
Fax	575 (505) 746-5421	Fax	575 (505) 746-5421	I	TDS
e-Mail Address	[redacted]	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Injection Well	11-19-09	1358	L	Y	9	X	X	X	X	X	X	X	X			
2	Trip blank																
3	Temp. Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ Other 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Work Days TAT.
Aaron Strange	11-19-09	1615		
Relinquished by:	Date:	Time:	Received by (Laboratory): 11/20/09 09:20	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.

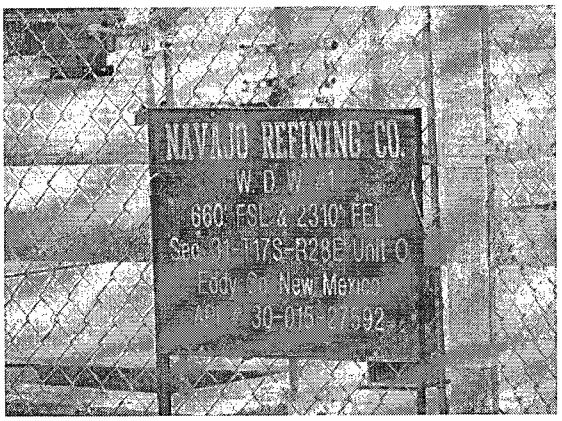
QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other _____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

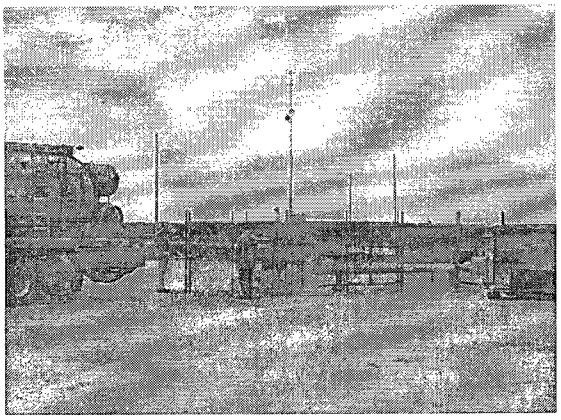
Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.

ATTACHMENT 2
MECHANICAL INTEGRITY TESTS

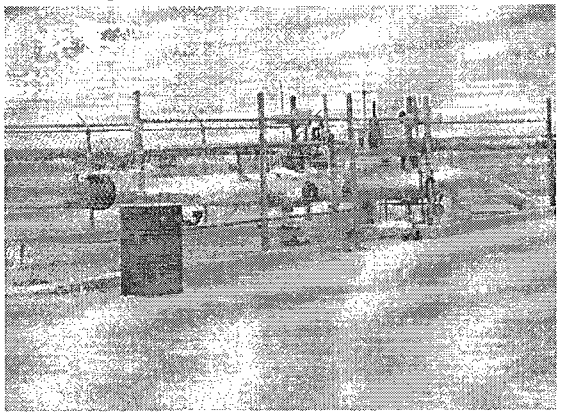
WDW-1 Inspection & MIT (8/14/2009)



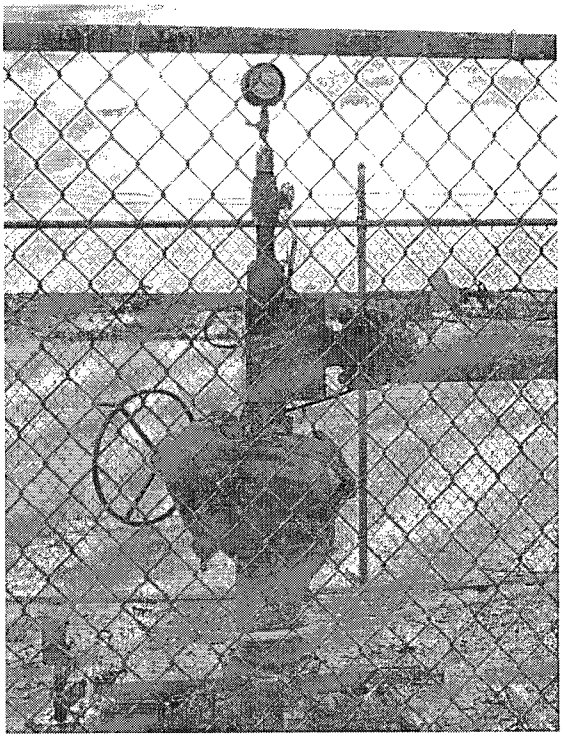
WDW-1 Sign w/ Fenced & Lighted Facility 24/7



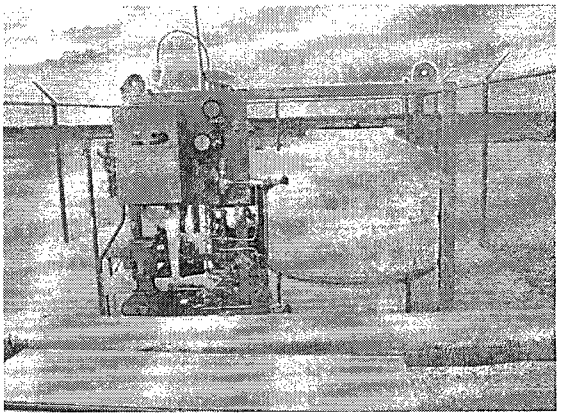
Hot Oil MIT contractor setup for standard annulus pressure test MIT



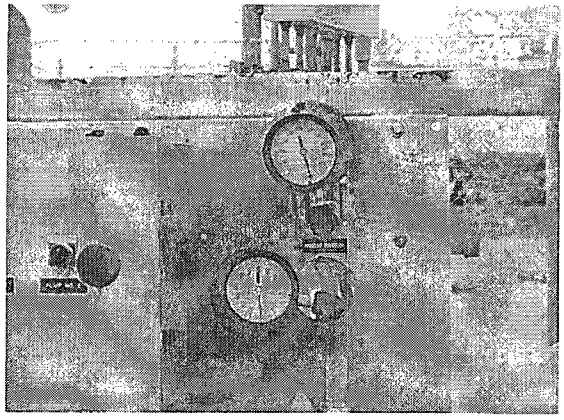
Looking W-SW at fenced pipeline pig station for ~12 mile WDW-1 back to refinery



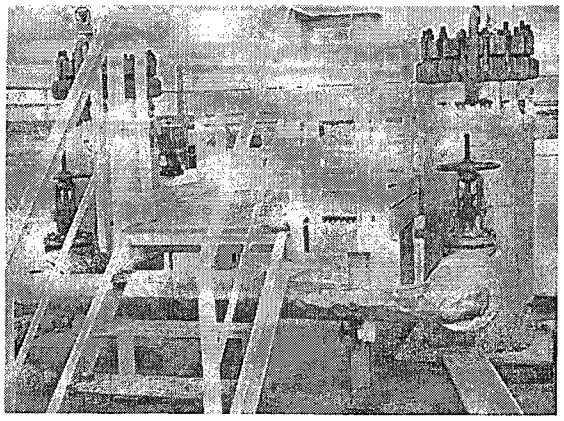
Wellhead



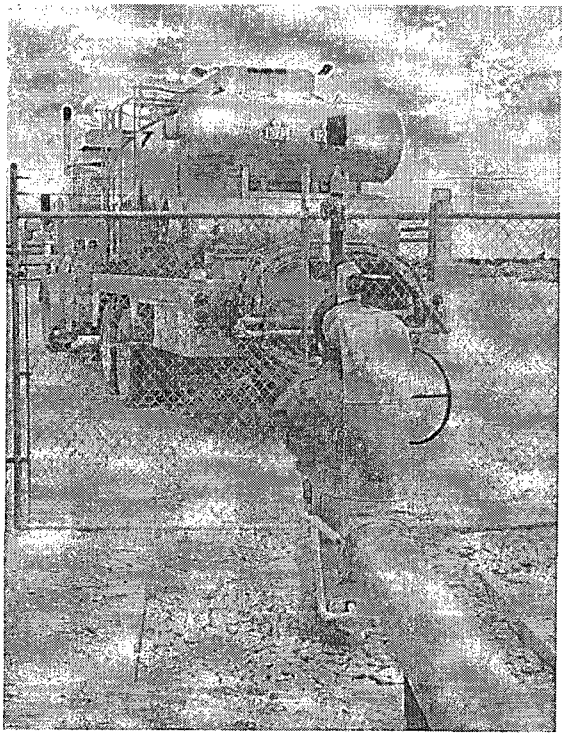
WAMs Unit



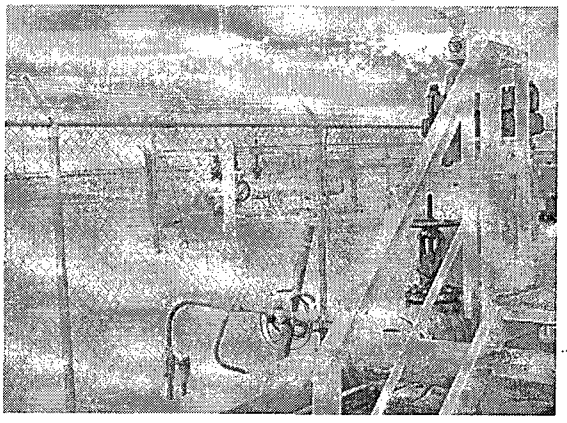
Injection pressure station



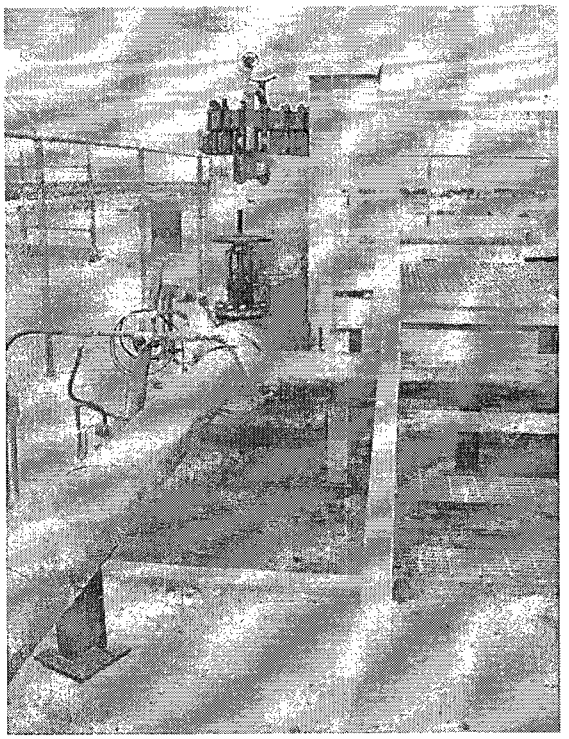
Dual filtration system before injection



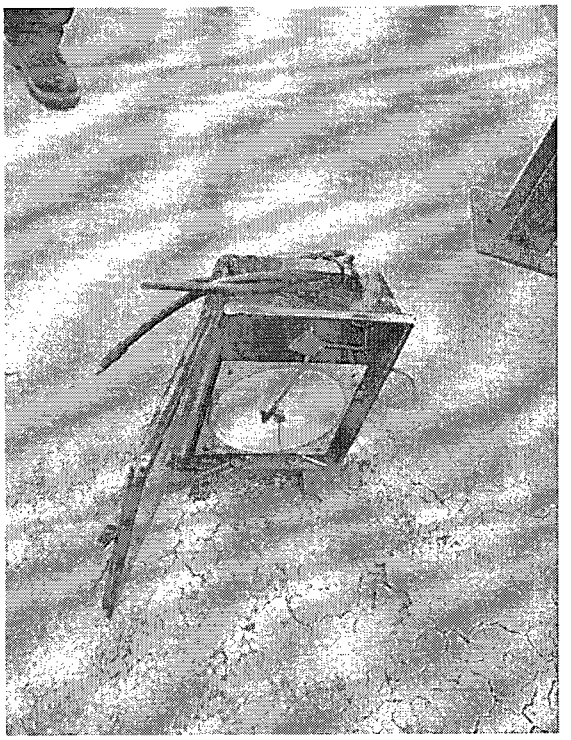
Hot Oil Truck fluid pressure up on annulus



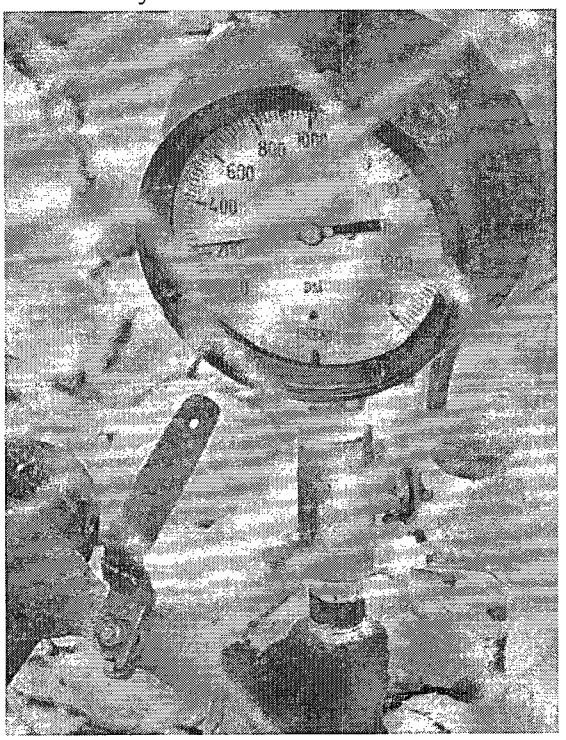
Looking S-SW at pipeline pig station in background



Filtration system

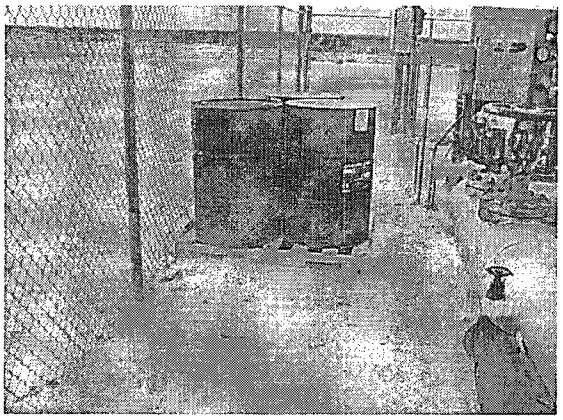


Calibrated chart recorder

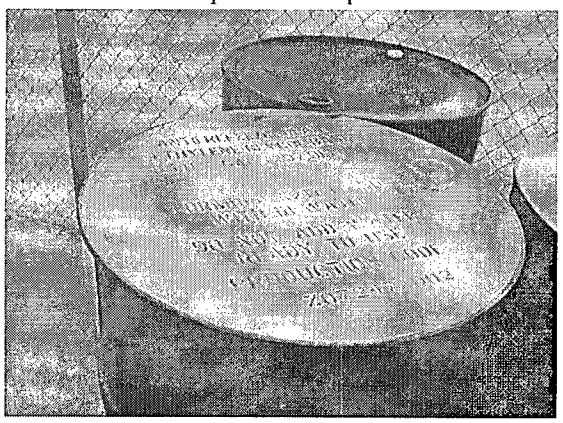


Pre-MIT annulus pressure at ~220 psig

Recommended AFE to replace ½ inch dia. pipe with 1 inch or greater.



Drums of ethylene glycol stored on ground need to be on impermeable pad



Ethylene glycol drums w/ rusty trash drum close-up

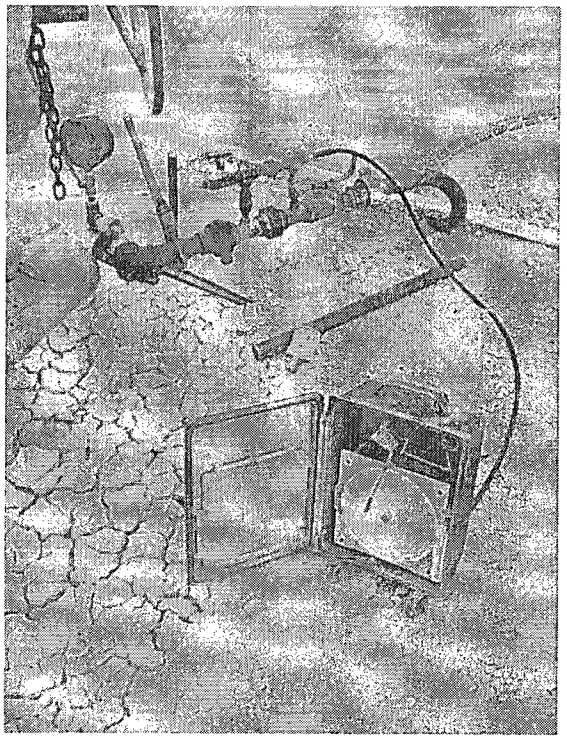
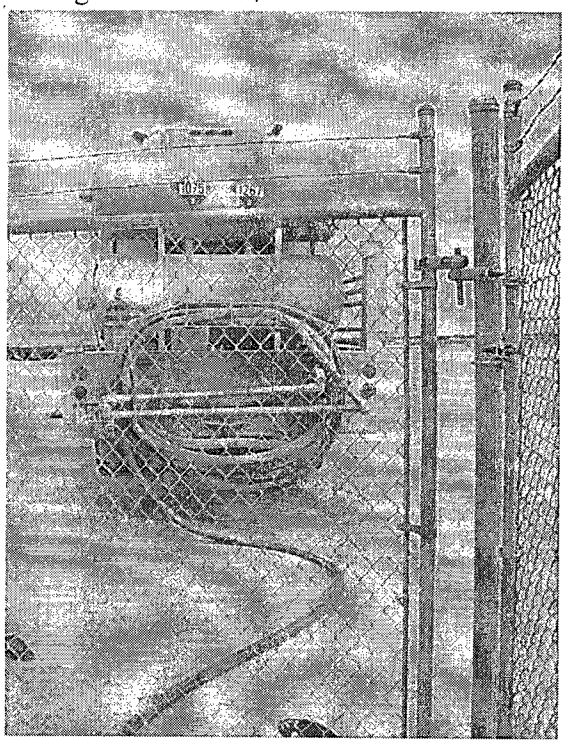


Chart recorder setup w/ valve arrangement during MIT



Hot Oil truck in background connected to annulus during fluid pressure up.

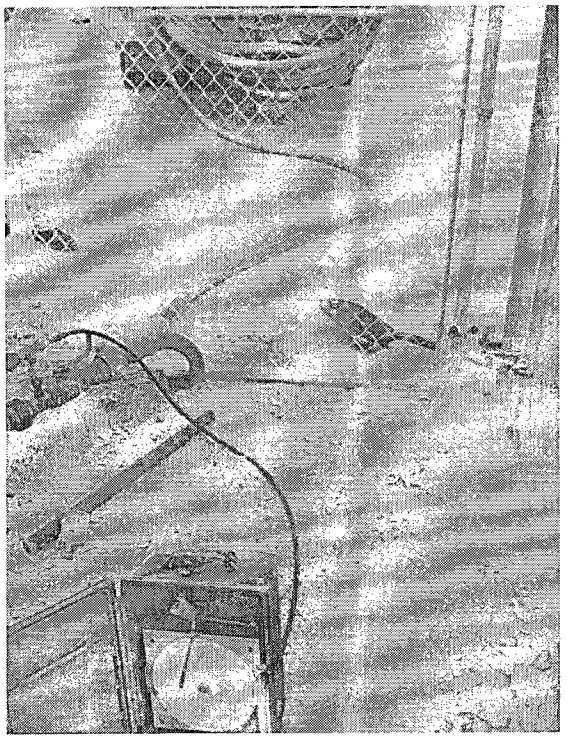


Chart recorder in action

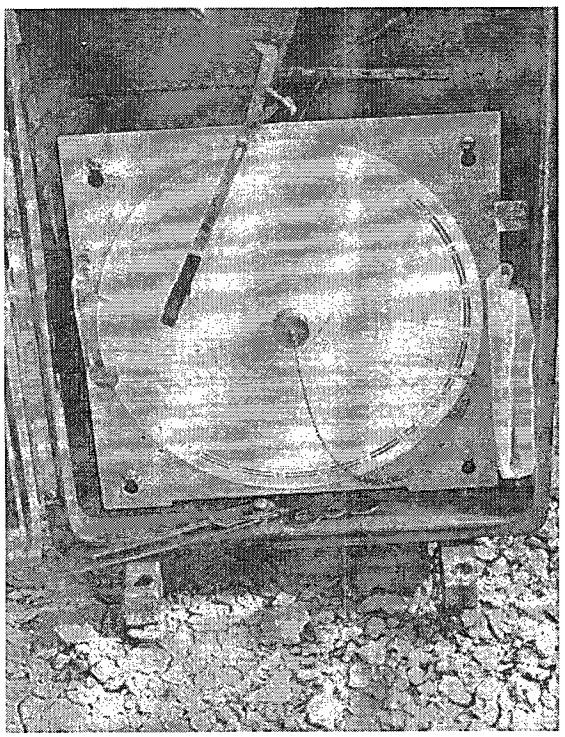
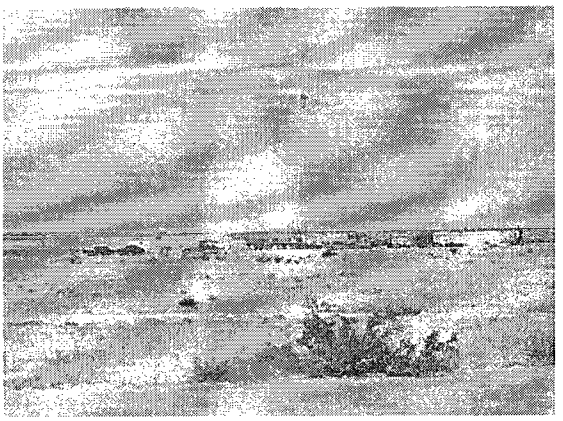
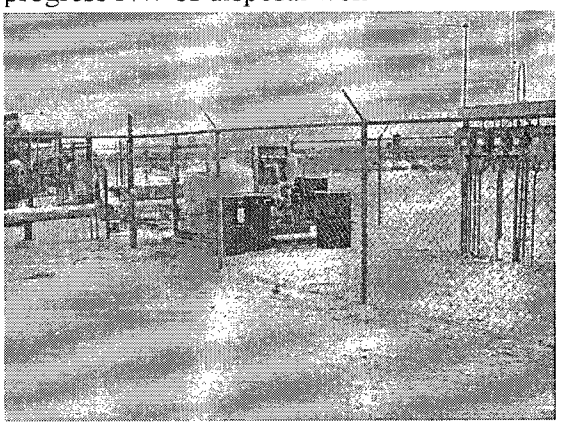


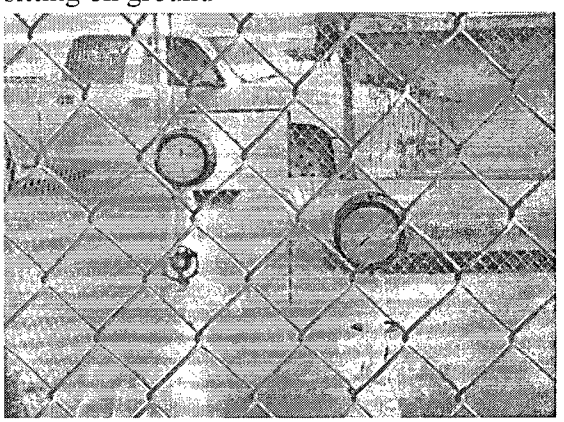
Chart recorder during pressure up w/ calibration sheet



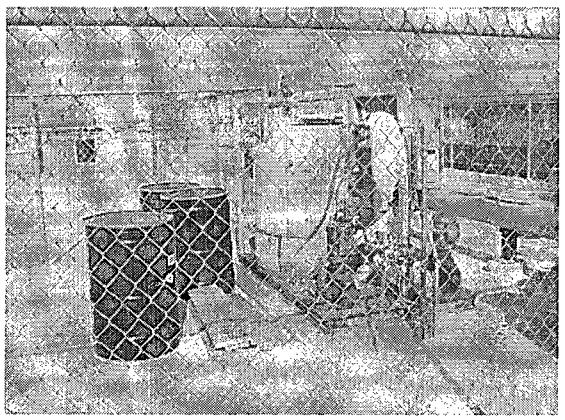
Noticed either new or well workover in progress NW of disposal well



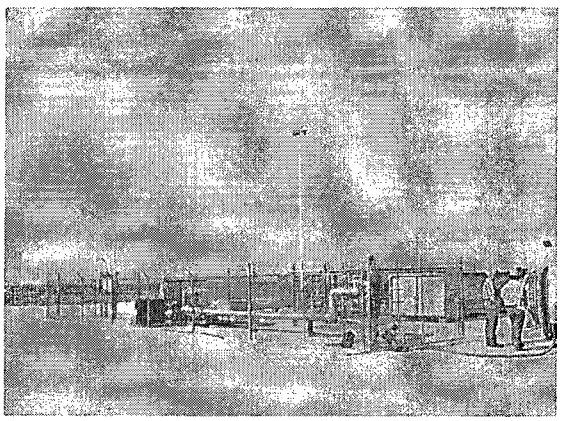
WAMs Unit w/ ethylene glycol drums sitting on ground



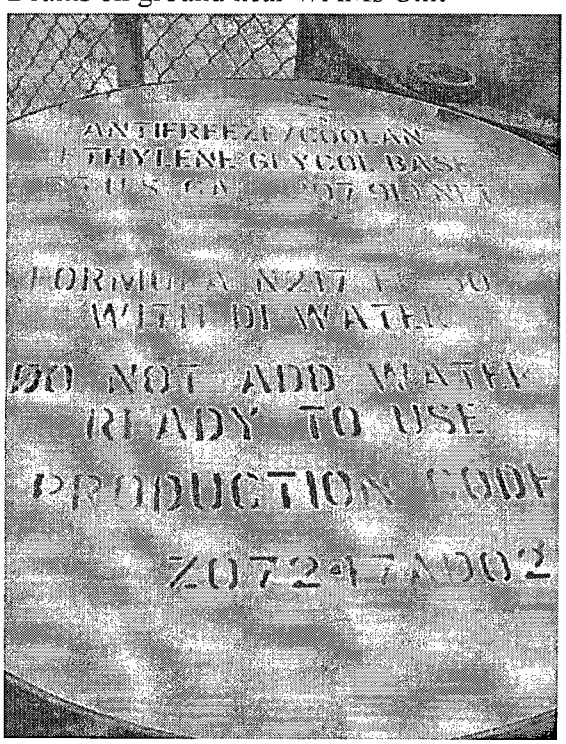
Line pressure gauges ~ 1300 psi injection pressure during MIT



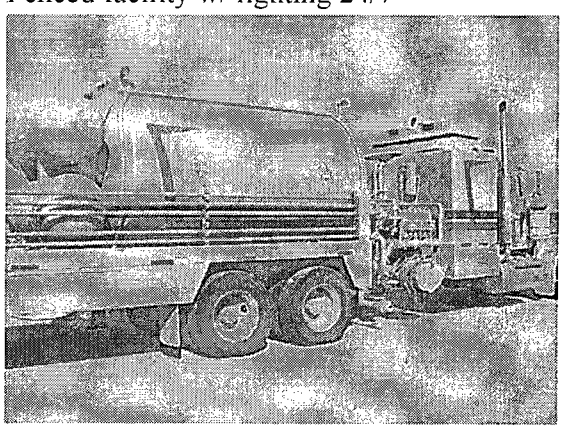
Drums on ground near WAMs Unit



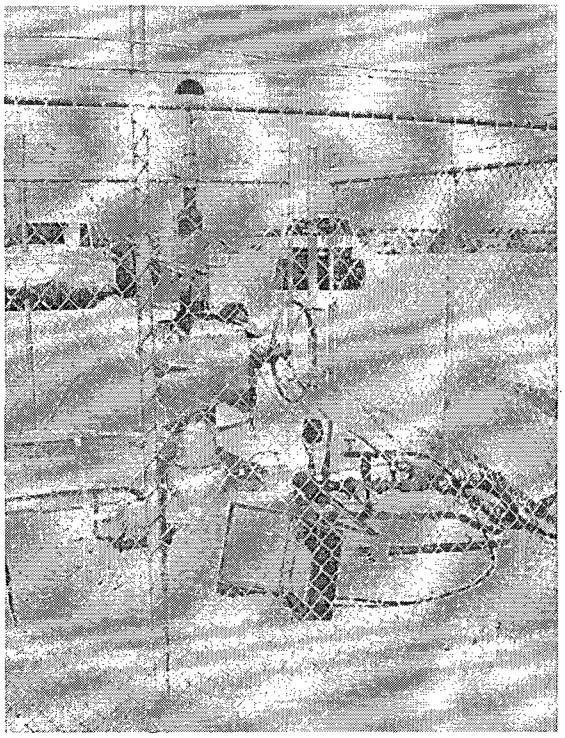
Fenced facility w/ lighting 24/7



Close-up ethylene glycol drum



Hot Oil Truck



Standard annulus pressure test MIT under dynamic condition

Trash drum

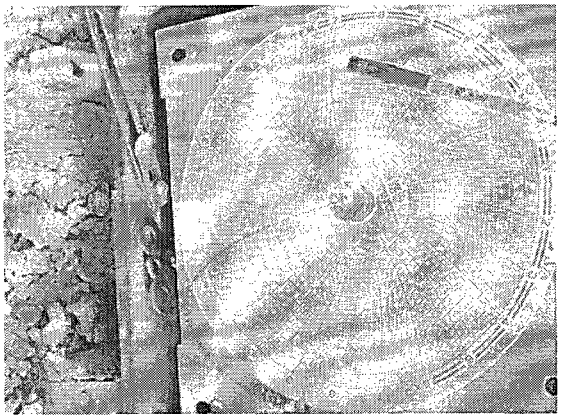
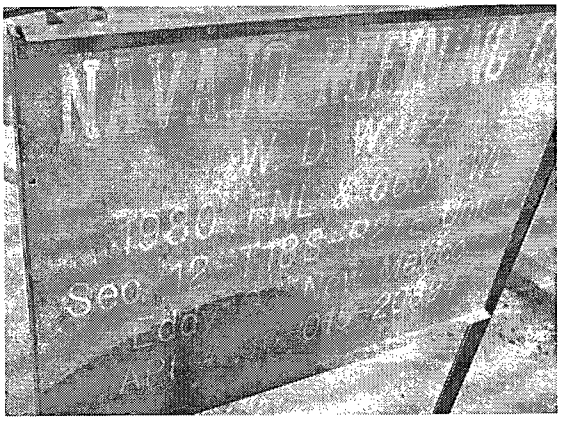


Chart recorder at end of MIT

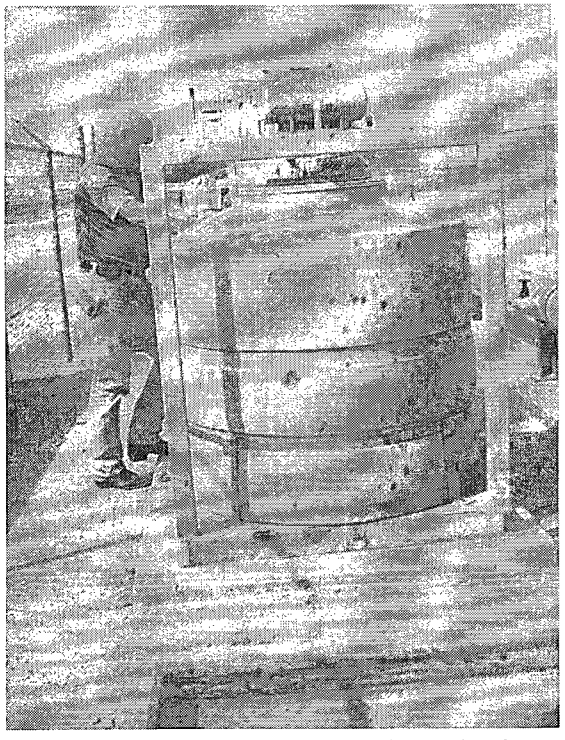
Notes:

1) Passed standard annulus pressure MIT (Start @ 575 psig & End @ 580 psig) over 30 minutes.
2) AFE submitted to replace ½ inch dia. piping w/ 1 inch or greater- safety and breakage concerns.
3) Operator indicated WAMs fluid level ok (no loss or addition of ethylene glycol).
4) Drums containing chemicals need to be stored in impermeable pad area or removed from facility.

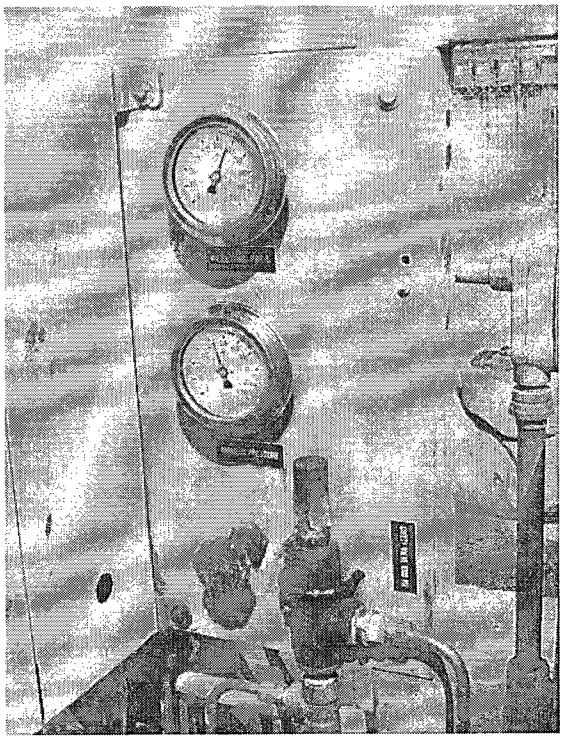
WDW-2 Inspection & MIT (8/14/2009)



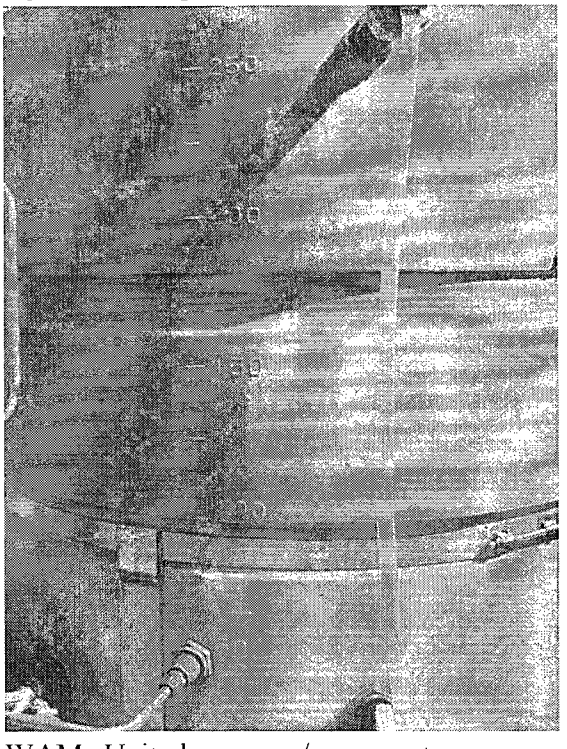
Well sign w/ security fence and lighting 24/7



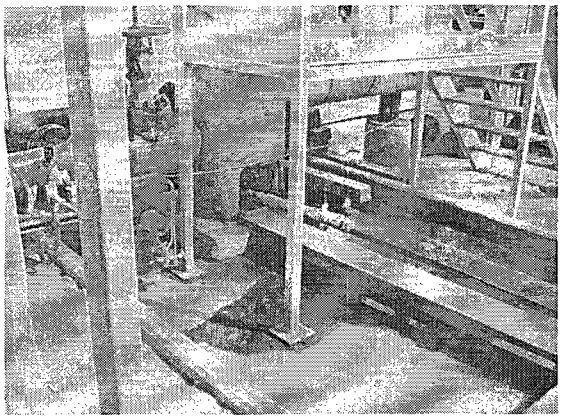
WAMs Unit annulus fluid level monitoring device for OCD UIC Class I Wells



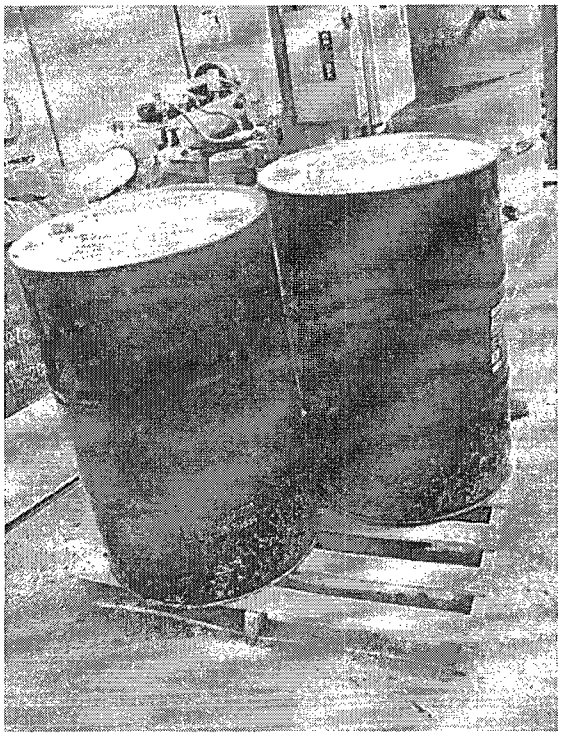
Injection well pressure monitoring station



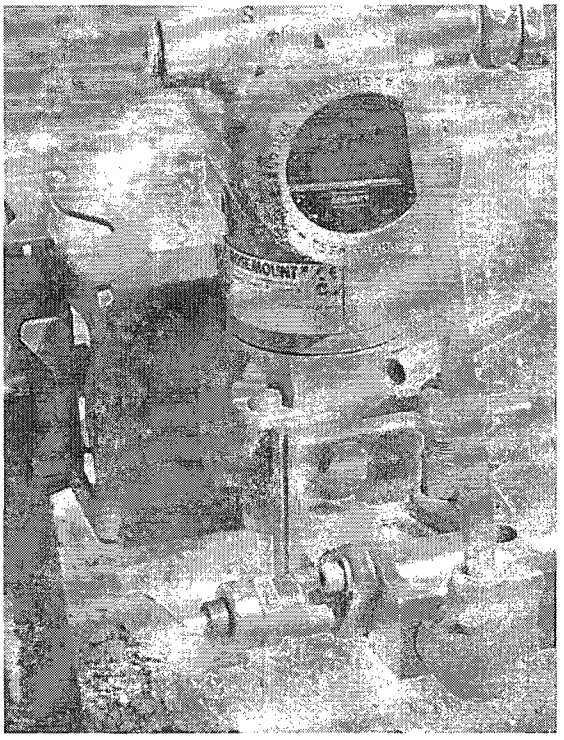
WAMs Unit close-up w/ manometer



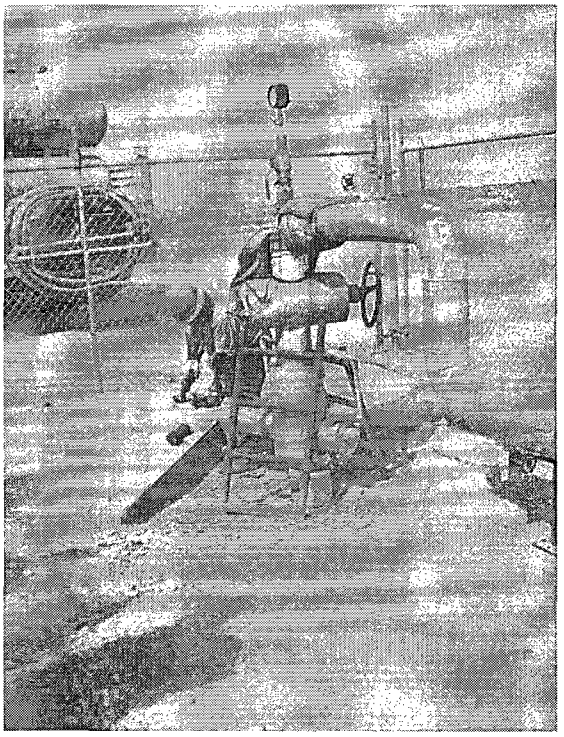
Impermeable curb in process area



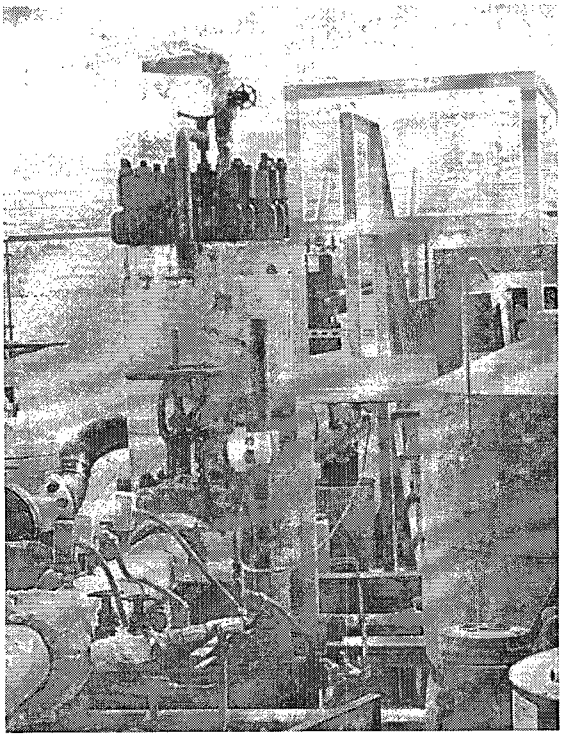
Ethylene glycol fluid needs to be stored on impermeable pad area



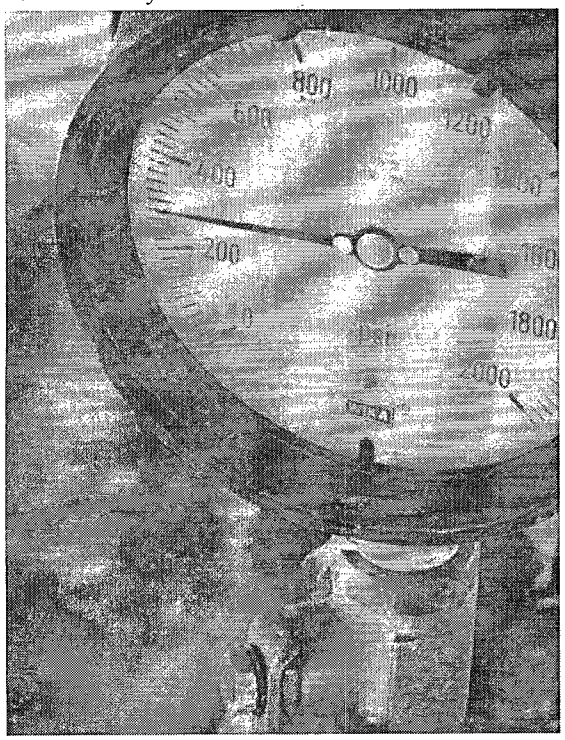
Electronic in-line flow rate monitor gauge



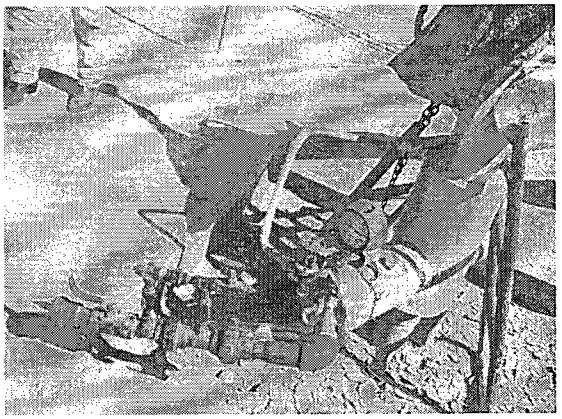
Wellhead w/ Hot Oil Operator preparing to install chart recorder for MIT



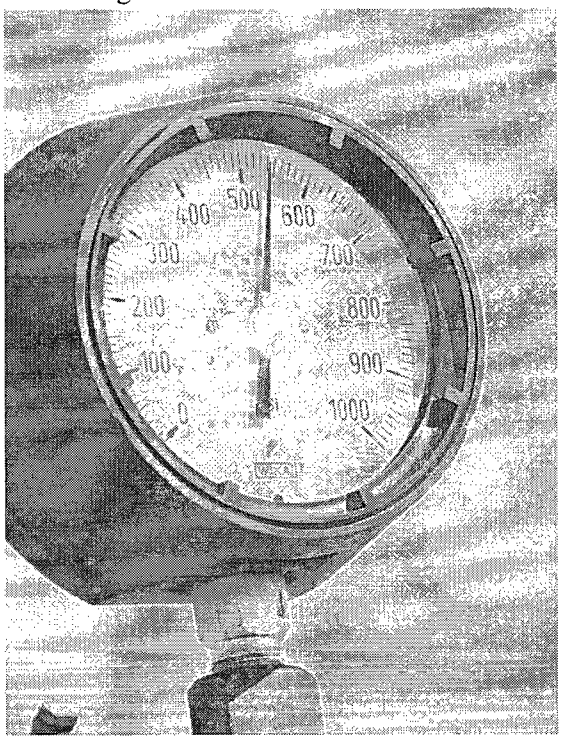
Filtration system before injection w/ boxes for O&M by workers



Pressure gauge reading ~300 psig pre-MIT



Connection to annulus through small ½ inch dia. fitting



Annulus pressure gauge reading ~ 535 psig during MIT

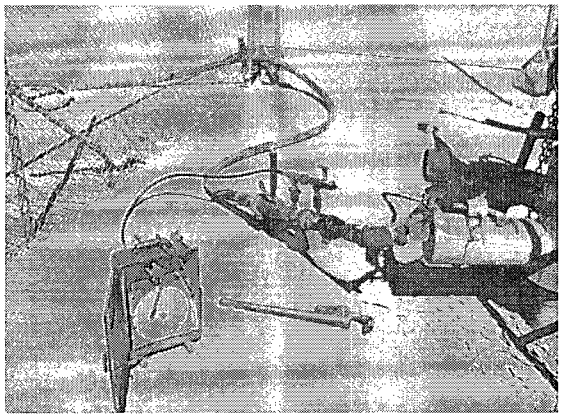
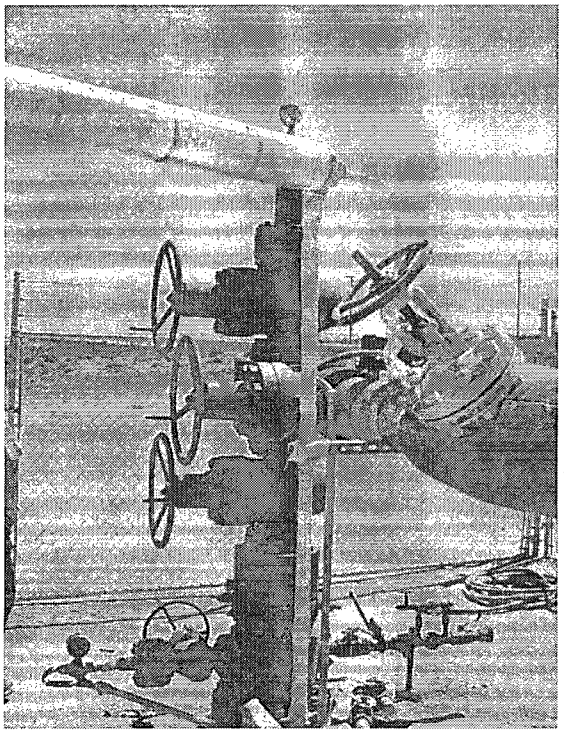
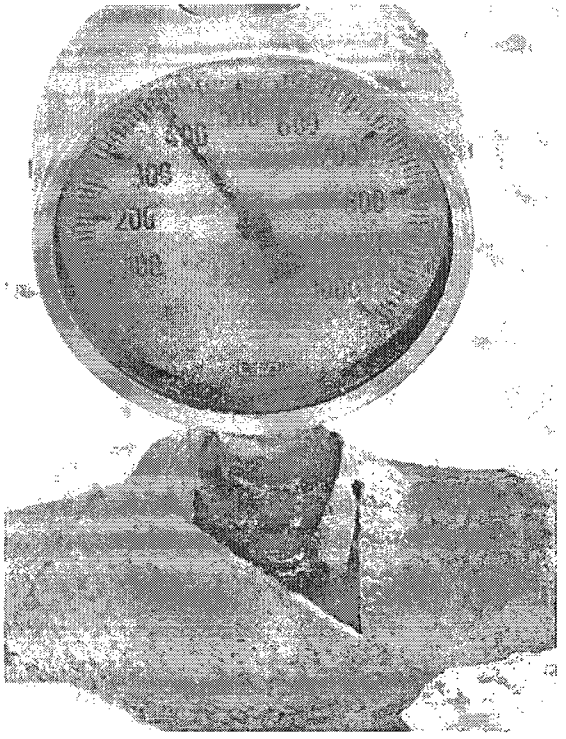


Chart recorder set-up w/ valve arrangement. Operator wants to replace ½ inch line with 1 inch or greater diameter size due to pressure on small line and breakage concerns during MITs.



Wellhead w/ blow-out preventers



Another in-line pressure gauge reading during pressure up pre-MIT

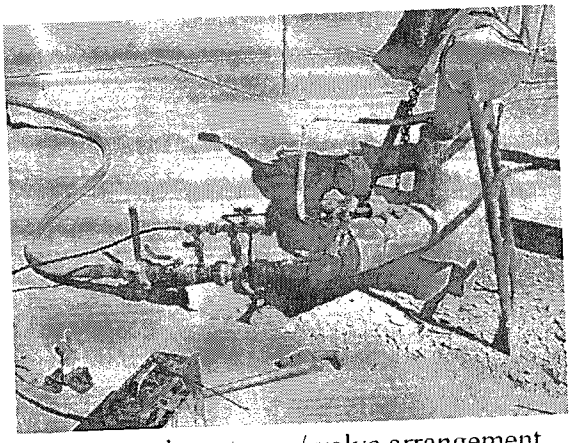


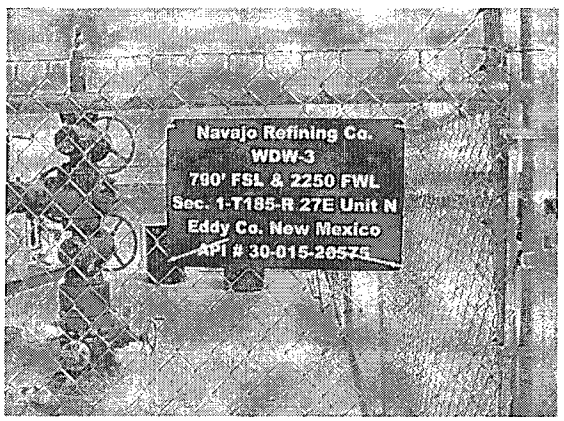
Chart recorder setup w/ valve arrangement

Annulus pressure increasing during pressure up on annulus pre-MIT

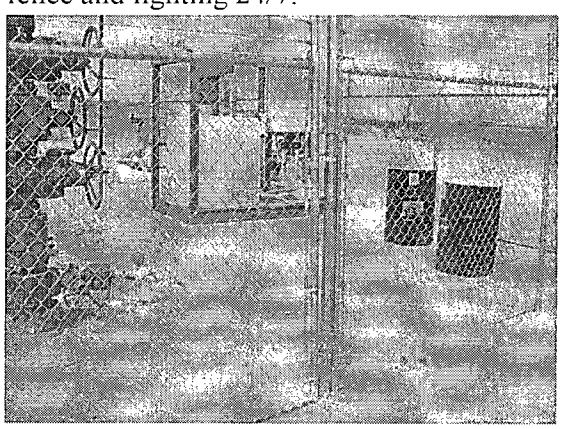
1) Passed standard annulus pressure MIT (Start @ 525 psig & End @ 520 psig) over 30 minutes.
2) Operator indicated WAMs fluid level ok (no loss or addition of ethylene glycol).
3) Drums containing chemicals need to be stored in impermeable pad area or removed from facility.

Notes:

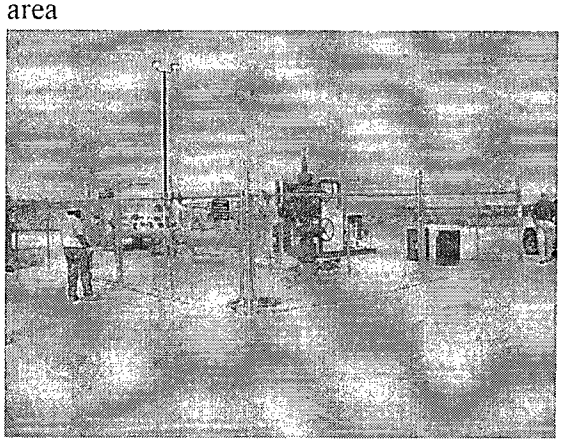
WDW-3 Inspection & MIT (8/14/2009)



UIC Class I Well WDW-3 sign w/ security fence and lighting 24/7.

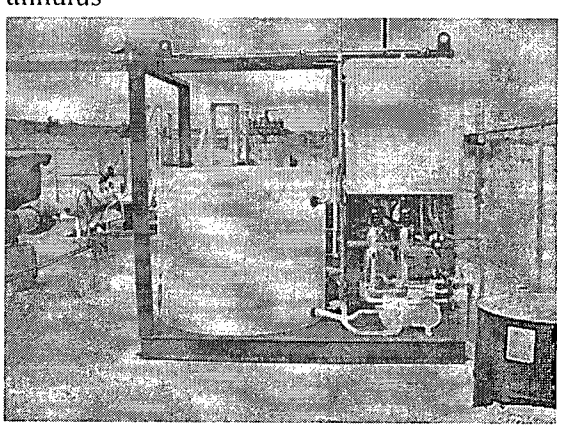


WAMs Unit near wellhead w/ drums of ethylene glycol not stored in impermeable area

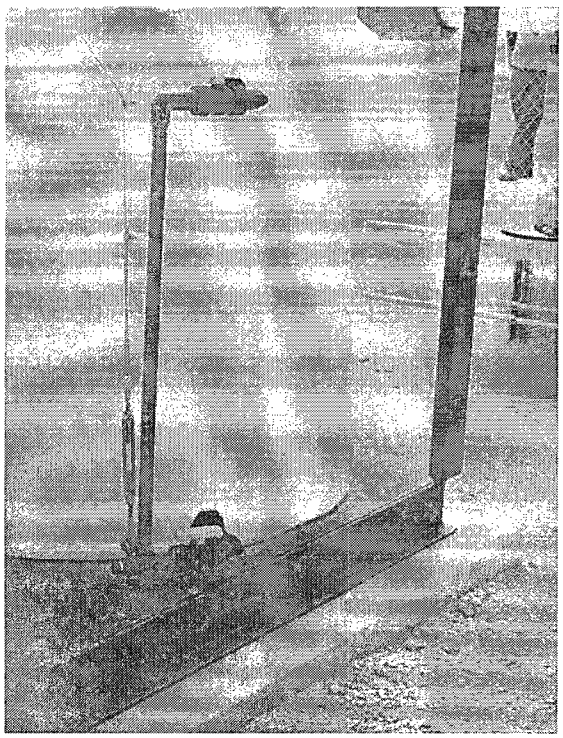


Wellhead from a distance looking SE

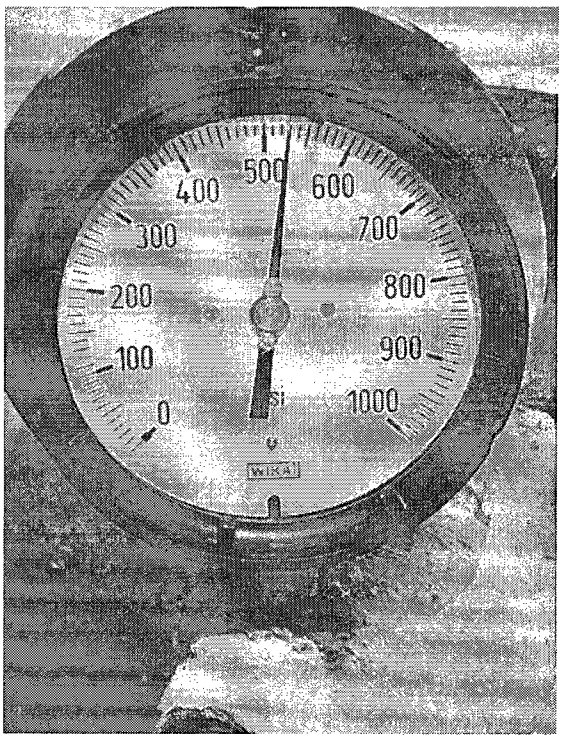
Annulus pressure gauge at top of well casing reading ~ 500 psig during pressure up on annulus



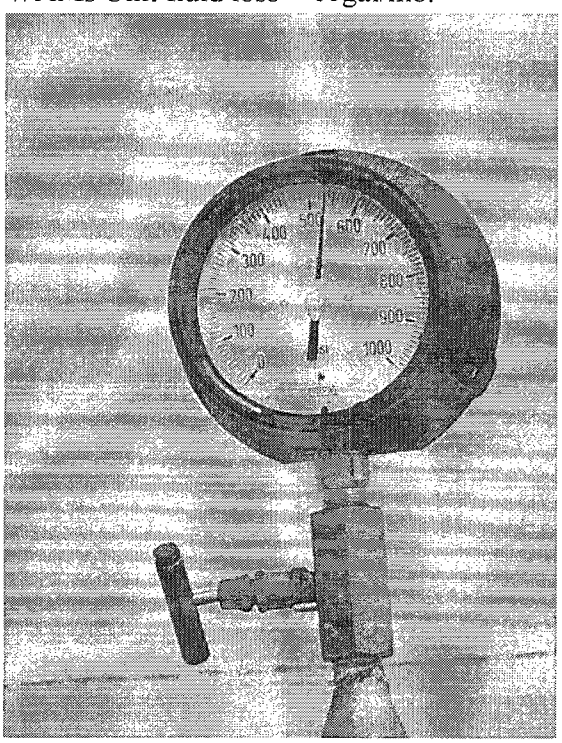
WAMs unit w/ overhead piping to wellhead looking E



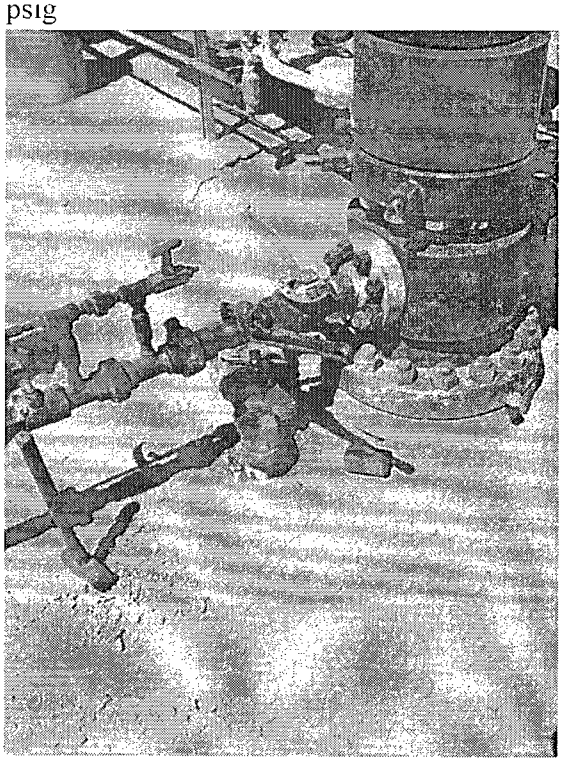
WAMs Unit fluid loss ~ 10gal/mo.



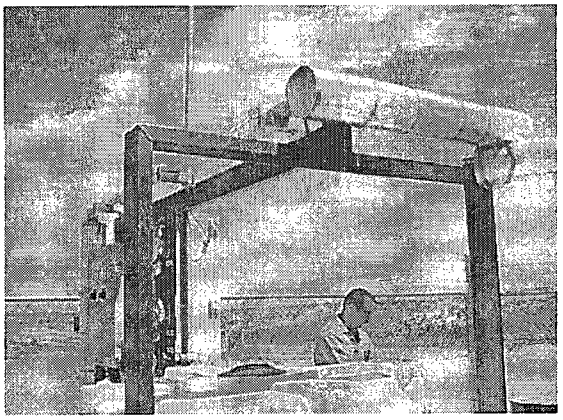
Another pressure gauge during MIT at ~ 530 psig



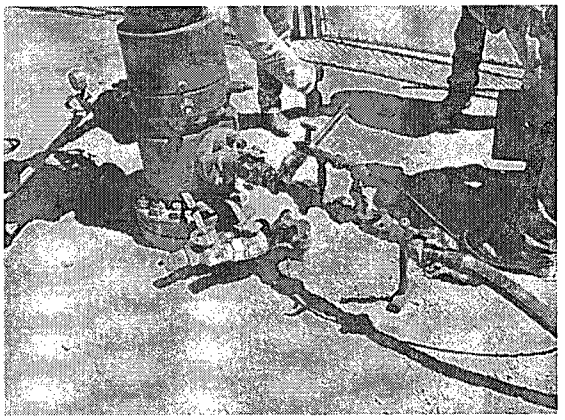
Annulus pressure gauge during MIT at ~530 psig



Rusty fittings near wellhead pinhole leak(s)?



WAMs Unit overhead piping into wellhead annulus w/ no apparent leakage observed



Hot Oil fluid pressure up on annulus w/ valve configuration during MIT

Operator wants to replace ½ inch nipple w/ at least 1 inch over breakage concerns and high pressure on small diameter pipe during the MITs, etc.

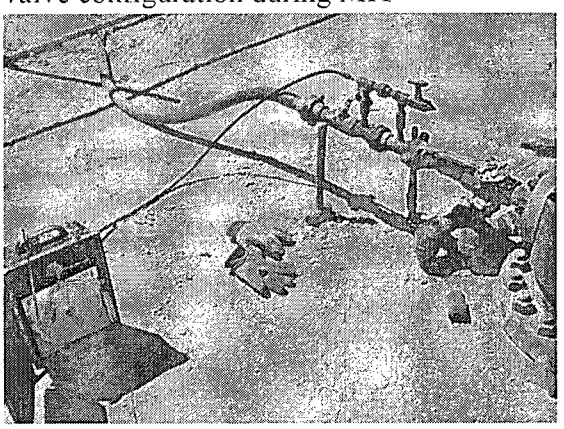
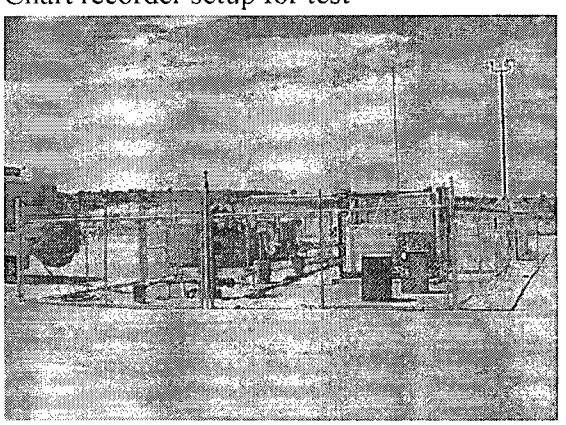
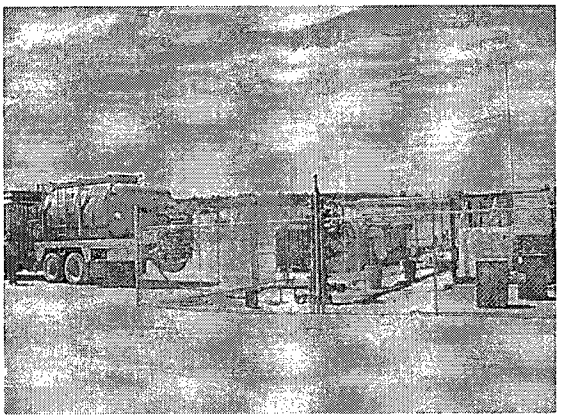


Chart recorder setup for test



Looking E across fenced and lighted facility w/ ethylene glycol drums stored on ground.



Hot Oil truck setup for MIT

Notes:

1) MIT passed (Start @ 560 psig w/ End @ 540 psig) on 8/14/2009.
2) MIT system integrity concerns about WAMs Unit & ethylene glycol leakage somewhere in the system. No discernable stains, leaks have been observed at surface. Company called "300 PSI" performed (~ 2006) a proprietary sealant leak application from surface to 1000 ft. and from ~ 7000 ft. to near top of perforated interval.
3) Need to test all surface lines, valves, etc. for pinhole leakage and proceed into well if leak not found in surface piping.
4) Drums need to be stored in the impermeable pad area.

2009 QUARTERY WEEKLY WAMS LEVEL TABLES

1st Quarter	1/2/09	1/8/09	1/15/09	1/22/09	1/29/09	2/5/09	2/12/09	2/17/09	2/23/09	3/4/09	3/13/09	3/20/09	3/27/09
WDW -1[1] (Mewborne)	150	150	150	150	150	150	145	140	135	135	135	135	135
WDW-2[1] (Chucka)	175	175	175	175	175	175	165	155	150	150	150	150	150
WDW-3[2] (Gains)	58%	58%	58%	58%	58%	58%	56%	56%	56%	56%	56%	56%	56%
	205	205	205	205	205	205	200	200	200	200	200	200	200
Comments: **No antifreeze was added.**													

[1] Graduated tank gauged weekly in the field.
[2] Reading measured directly, and reported as percentage capacity.

2nd Quarter	4/3/09	4/9/09	4/16/09	4/23/09	4/30/09	5/6/09	5/13/09	5/20/09	5/29/09	6/4/09	6/11/09	6/18/09	6/25/09
WDW -1[1] (Mewborne)	135	135	135	135	135	135	135	135	135	130	130	130	130
WDW-2[1] (Chucka)	150	150	150	150	150	150	150	150	150	150	150	150	150
WDW-3[2] (Gains)	56%	56%	56%	56%	56%	56%	56%	56%	56%	53%	39%	30%	64%
	200	200	200	200	200	200	200	200	180	165	150	130	240
Comments: **Added 110 gallons of antifreeze to WDW-3 on 6/25/09.**													

[1] Graduated tank gauged weekly in the field.
[2] Reading measured directly, and reported as percentage capacity.

3rd Quarter	7/2/09	7/9/09	7/14/09	7/20/09	7/27/09	8/4/09	8/12/09	8/19/09	8/26/09	9/2/09	9/9/09	9/18/09	9/24/09
WDW -1[1] (Mewborne)	135	135	135	135	135	135	135	135	135	135	135	135	130
WDW-2[1] (Chucka)	150	150	150	150	150	150	150	150	150	150	150	150	150
WDW-3[1] (Gains)	235	225	215	200	185	170	155	140	245	240	230	225	220
Comments: **Added 110 gallons of antifreeze to WDW-3 on 8/19/09.**													

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

4th Quarter	10/2/09	10/9/09	10/16/09	10/23/09	10/30/09	11/6/09	11/13/09	11/20/09	11/25/09	12/6/09	12/15/09	12/22/09
WDW -1[1] (Mewborne)	130	130	115	100	75	75	65	175	175	175	175	175
WDW-2[1] (Chucka)	145	145	140	135	135	130	130	130	125	125	125	125
WDW-3[1] (Gains)	215	215	215	210	205	205	200	200	175	175	170	165
Comments: **Added 110 gallons of antifreeze to WDW-1 on 11/20/09.**												

[1] Graduated tank gauged weekly in the field. Reading is in gallons.

ATTACHMENT 3
ANNUAL TRAINING

Injection Well Training Sign In Sheet
Oct. 15, 2009

Print Name	Sign Name	Company
Pete Lopez	[illegible]	Champion
Nicolas Salayandia	[illegible]	NRC
Richard Valverde	[illegible]	Champion
Michael Avitia	[illegible]	Champion
Jacob Aguilar	[illegible]	Champion
Robert G Valverde	Robert G Valverde	CHAMPION
Robert E Boan	[illegible]	Navajo

INJECTION WELL TRAINING

This training is being done to satisfy Navajo Refining Company's Discharge Permits UIC-CLI-008 (I-008), UIC–CLI-008 (I-008-1) and UIC-CLI-008 (I-008-2). In all three permits, section 23 states that "All personnel associated with operations at the Navajo Class I disposal wells shall have appropriate training in accepting, processing, and disposing of Class I non-exempt non-hazardous refinery waste to insure proper disposal".

Definitions The injection wells at our refinery are classified as Class I Non-Hazardous Non-exempt Injection Wells. This means that the water we send to the wells has to be non-hazardous. The Class I designation means that in all three strings of casing, the cement is circulated back to the surface to protect groundwater. It also means that we have to monitor the annulus between the tubing and the casing to insure there are no leaks. This is what the WAMS unit does.

WAMS Well Annulus Monitoring System

Permit Conditions:

Well Head Pressure Limits	The well head pressure limits shall be 1510 lbs on the Chukka well, 1580 lbs on the Mewbourne well, and 1550 lbs on the Gaines well.
Annulus Pressure	The annulus pressure shall be at a minimum of 100 lbs
Benzene Levels	No water shall be injected into the wells above .5 parts per million (ppm) or 500 parts per billion (ppb) benzene.
Leaks	Any leaks that are identified (loss/gain of fluid in WAMS unit) shall be reported within 24 hours of discovery to OCD. Weekly monitoring of fluids in the tank at each well coupled with documented additions/removals of fluids into or out of the tank are required.

Containment	All three wells have cement containment underneath the valves and filter pots. This containment must be kept empty. If there is fluid in the containment, it must be vacuumed out and the water taken back to the refinery to be disposed into the wastewater system.
Filters	The filters at the wells have been determined to be non-hazardous waste by testing. They have been profiled to be disposed at CRI and ONLY at CRI. The used filters are to be placed into the roll-off boxes at the well site. When the box gets full, an empty box will be swapped and the full box taken to CRI for disposal.
Adding to WAMS Unit	If it becomes necessary to add fluids to the WAMS unit, the environmental department must be notified and the added fluid must be documented. Any spills during this process must be reported to the environmental department. Spills must be cleaned up immediately. The dirt removed can be put into the onsite roll-off boxes with the filters. Any fluid that dribbles down the side of the WAMS must be wiped off.

If there are any questions, do not hesitate to call the Environmental on-call phone at **575-365-8365**

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, November 19, 2009 7:45 AM
To: 'Bob Patterson'; 'Dan Gibson'; 'Schmaltz, Randy'; 'Moore, Darrell'; 'Lackey, Johnny'
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Griswold, Jim, EMNRD
Subject: UIC Class I Disposal Well Annual Report Schedule for Submittal & Content REMINDER- 2010
Attachments: Class I Disposal Well Annual Report Tracking 2010.xls; 19.15.11 NMAC.doc

Gentlemen:

Good morning. You may recall an e-mail message from me this past Summer alerting you to the reporting provision of your current discharge permit (permit) and how the New Mexico Oil Conservation Division (OCD) is stepping up its efforts to track reporting under issued permits.

Please find attached a spreadsheet listing the dates that OCD expects to receive your Annual Reports and/or any reporting requirements from your permit. If you are an operator with limited reporting requirements based on your permit, you are welcome to follow the format and content required from more recent permit renewals issued by the OCD, which are more comprehensive and constitute a report, Any renewed permits will likely require similar content anyway.

You will notice that a Hydrogen Sulfide Contingency Plan (CP) (see attached 19.15.11 NMAC Regulations) has been written into a couple of new Navajo Refining Company permits. This regulation became effective on December 1, 2008 and applies to any facility or well where the hydrogen sulfide concentration is at or greater than 100 ppm. Consequently, if your facilities meet or exceed this concentration, you are required to have an H2S CP for your facility regardless of whether the OCD has required it in your permit. The OCD believes that all UIC Class I Disposal Well Facilities require an H2S CP; therefore, the OCD is requesting your H2S CP(s) by Wednesday, March 31, 2010, unless a different date for submittal is specified in your permit. Also, if you are an operator with multiple wells, you may develop one CP, but you must address each well location with site specific details in that one CP.

Please plan on meeting the Annual Report submittal dates in January of 2010 as failure to submit the report will constitute a violation under the Federal Underground Injection Control (UIC) Program and reporting to the United States Environmental Protection Agency, which could result in the shut-in and/or plug and abandonment of your Class I disposal well. Failure to meet the H2S CP requirement may also result in the shut-in of your well operations; consequently, the OCD is hopeful you will satisfy the regulations pertaining to this deadly gas.

Please contact me if you have questions. Thank you in advance for your cooperation in this matter.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

CC: UIC Class I Well File "Annual Reporting" and "H2S Contingency Plan"

Permit ID	Operator	Annual Report Due Date	Submitted	Annual Report Contents
UICI-8 WDW-1	Navajo Refining Company	01/31/10		20. B. Hydrogen Sulfide (H2S') Contingency Plan: If concentrations of H-S at the facility may exceed 100 ppm as specified in 19.15.11.12 et seq. NMAC, a H2S Contingency Plan per 19.15.11.9 et se NMAC shall be submitted within 3 months of permit issuance. 21 G. Injection Record Volumes and Pressures: The owner/operator shall submit quarterly reports of its disposal, operation and well workovers p:rovided herein. The minimum, maximum, average flow waste injection volumes (including total volumes) and annular pressures of waste (oil field exempt/non-exempt non-hazardous waste) injected will be recorded monthly and submitted to the OCD Santa Fe Office on a quarterly basis. The casing-tubing annulus shall contain fluid and be equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. Due to pressure fluctuations observed at Navajo's other two nearby Class I Injection Wells, WDW-1 shall be equipped with an expansion tank under constant 100 psig pressure connected to the casing-annulus and maintained under constant pressure. The expansion tank shall initially be filled half-full (250 gallon expansion tank) with an approved fluid to establish an equilibrium volume and fluid level. Weekly monitoring of fluid levels in the expansion tank coupled with documented additions! removals of fluids into or out of the expansion tank is required to maintain the equilibrium volume. Any loss or gain of fluids in the expansion tank shall be recorded, and if significant, reported to the OCD within 24 hours of discovery. The owner/operator shall provide the following information on a quarterly basis: weekly expansion tank volume readings shall be provided in a table in the cover letter of each quarterly report. Navajo shall monitor, record and note any fluid volume additions or removals from the expansion tank on a quarterly basis. In addition, any well activity (i.e., plugging, changing injection intervals, etc.) shall be conducted in accordance with all applicable New Mexico Oil Conservation Division regulations. 21 H. Analysis of Injected Waste: Provide an analytical data or test results summary of the injection waste water with each annual report. The analytical testing shall be conducted on a quarterly basis with any exceedence reported to the OCD within 24 hours after having knowledge of an exceedence(s). Records shall be maintained at Navajo for the life of the well. The required analytical test methods are: a. Aromatic and halogenated volatile hydrocarbon scan by EPA Method 8260C GC/MS. Semi-volatile Organics GC/MS EPA Method 8270B including 1 and 2- methylnaphthalene. b. General water chemistry (Mefhod 40 CFR 136.3) to include calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, sulfate, total dissolved solids (TDS), pH, and conductivity. c. Heavy metals using the ICP scan (EPA Method 60 tO) and Arsenic and Mercury using atomic absorption (EPA Methods 7060 and 7470). d. EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity (40 CFR part 261 Subpart C Sections 261.21 -261.23, July 1, 1992).

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, September 25, 2009 3:05 PM
To: 'Bob Patterson'; 'lmolleur@keyenergy.com'; 'Schmaltz, Randy'; DARRELL MOORE; Lackey, Johnny
Cc: Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD
Subject: New Mexico Oil Conservation Division Class I (non-hazardous) Disposal Well Operator Notice--QUARTERLY & ANNUAL REPORTING

Gentlemen:

Re: UIC Class I Disposal Well **Quarterly and Annual Reporting**

You are receiving this message because you are currently operating a Underground Injection Control (UIC) Class I (non-hazardous) Disposal Well in New Mexico under an Oil Conservation Division (OCD) Discharge Permit. You may be aware of the most recent events related to OCD Class III Wells in New Mexico and can find out more by visiting the OCD's Brine Well Webpage at http://www.emnrd.state.nm.us/OCD/brinewells.htm and OCD Brine Well Work Group Website at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pCJC0906359521.

The OCD is writing to inform you that it will be monitoring more closely the receipt of your "Quarterly Reports" and "Annual Reports" required under the applicable section(s) of your OCD Discharge Permit. After reexamining our UIC Program subsequent to the UIC Class III Solution Mining Wells that collapsed in July and November of 2008, the OCD identified that it has been deficient in tracking reporting obligations in the past; however, the OCD has recently upgraded its online electronic system to better track operators who are not meeting the reporting requirements as specified in their OCD Discharge Permits. Please plan on submitting reports with required information by the date specified in your discharge permit. Operators undergoing permit renewal will notice changes to the OCD's discharge permit, which will include "Annual Reports" in addition to the Quarterly Reporting requirement(s).

To access your OCD Discharge Permit Online for the date of submittal and required contents of the report(s), please go to OCD Online at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx (enter "Order Type" as UICI and your "Order Number"). The OCD has placed a "Quarterly Reporting" and "Annual Reports" thumbnails into each of your online well files and will be scanning all received reports into them upon receipt from now on.

If you have been delinquent in submitting your Quarterly (more recent permits require Annual Reports), a historical review of your production or disposal records will be required in order to provide cumulative injection or disposal information in this year's report.

Please contact me if you have questions or need assistance.

Thank you in advance for your cooperation in this matter.

Copy: Class I (non-hazardous) Disposal Well Files UICI- 5, 9, 8, 8-1 & 8-0 (Quarterly Reporting & Annual Reports)

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
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Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")