GW - ___032___

Facility Cross Sections

Western Refining

GALLUP REFINERY

WNR LISTED NYSE

RECEIVED OCD

2012 SEP 27 P 12:43

Certified Return Receipt: #7011 2970 0003 9281 8015

September 26, 2012

Mr. John Kieling, Chief
NMED - Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505-6303

RE: Approval with Modifications
Requirement to Resurvey Ground Water Monitoring Wells and Recovery Wells
Western Refining Company, Southwest, Inc., Gallup Refinery
EPA ID #NMD000333211
HWB-WRG-11-003

Dear Mr. Kieling:

Western Refining Southwest, Gallup Refinery has prepared the following responses to the comments listed regarding the above referenced matter dated September 26, 2012.

Comment 1

In comment 3 of NMED's May 18, 2012 Third Notice of Disapproval (NOD), the Permittee was required to verify that all horizontal data from the June 2011 survey was correct and represented the actual locations of the monitoring wells surveyed. The Permittee cross referenced survey data from Sterling & Mataya Engineers collected on May 13, 1991 (May 1991) and data acquired by Lynn Engineering and Surveying collected on June 21, 2007 (June 2007) to verify the monitoring well locations. Survey data from the May 1991 survey was converted from NAD 27 to NAD 83; however, the Permittee did not provide conversions for all of the May 1991 survey data. Provide revised coordinate verification worksheets that include all monitoring wells from the May 1991 survey. In addition, there is a typographical error in the reported elevation for the OW-11 monitoring well conversion. The Permittee reports an elevation of 6923.59 feet and the May 1991 reports it as 6923.89 feet. Correct the typographical errors in the revised coordinate verification worksheets.

Response: *Per NMED's request, the coordinate verification has been cross referenced for all wells listed on the Sterling & Mataya Engineers survey information dated May 13, 1991. Previous cross check for coordinate verification submitted was for only the active monitoring wells. Typographical error for elevation on OW-11 has been corrected on the coordinate verification form submitted as Attachment 1.*

Comment 2

In the *2011 Corrected Well Elevation Summary Table – Revision 3 (June 12, 2012)*, the Permittee did not report a stick up length measurement for BW-1B in the "2011 Survey Stick-up Length (feet)" column. In addition, the Permittee did not define the asterisk from the OW-1 "2011 Measuring Point Description" column. Define the symbol in the "Notes" section or remove it from the revised data table. The Permittee is reminded that all data tables must be reviewed and corrected for errors prior to submission. Correct the typographical errors and provide a revised table.

Response: *Stick up length measurement for BW-1B has been entered in the "2011 Survey Stick-up Length (feet)" column and the asterisk has been removed from OW-1 "2011 Measuring Point Description" column. A revised table is submitted as Attachment 2.*

Comment 3

Comments 8 and 11 of NMED's September 24, 2012 Disapproval letter for the *Facility-Wide Ground Water Monitoring Work Plan – 2011 Updates* requires the Permittee to resubmit the tables in Appendix C with the approved survey data in the revised work plan. The Permittee must review these tables and ensure the correct information from this Report is incorporated into the final version of the tables in the revised Work Plan.

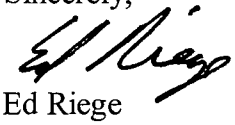
Response: *The approved survey data will be resubmitted in the revised Work Plan.*

If you have any questions regarding Western's responses, please do not hesitate to contact Cheryl Johnson of my staff at (505) 722-0231.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,



Ed Riege
Environmental Manager

cc: K. Van Horn, NMED HWB w/attach
C. Chavez, OCD w/attach
C. Johnson, Western-Gallup

ATTACHMENT 1

Sterling & Mataya

Engineers - Surveyors

D.E. Sterling, P.E. & L.S.
W.P. Mataya, L.S.

601 W. Aztec
P.O. Box 876

Gallup, New Mexico 87301
(505) 863-5440

May 13, 1991

Well No.	Elevation Top Inside Pipe at V Notch	New Mexico State Plane Coordinates (west zone) X	Y	Point No. S & M Map (9-29-89)
SMW-6	6880.71	320,839.52	1,635,867.66	532
SMW-5	6878.02	320,778.61	1,636,054.28	530
MW-1	6878.52	320,903.76	1,636,112.13	529
SMW-4	6880.08	320,974.85	1,636,153.54	528
MW-2	6880.84	321,035.35	1,636,184.06	527
MW-5	6883.32	321,233.03	1,636,212.58	526
SMW-3	6884.56	321,397.90	1,635,948.75	524
SMW-2	6884.44	321,542.80	1,635,592.65	523
SMW-1	6883.29	321,501.32	1,635,501.43	522
MW-4	6882.54	321,602.07	1,635,066.25	539
OW-11	6923.89	323,167.68	1,632,185.21	645

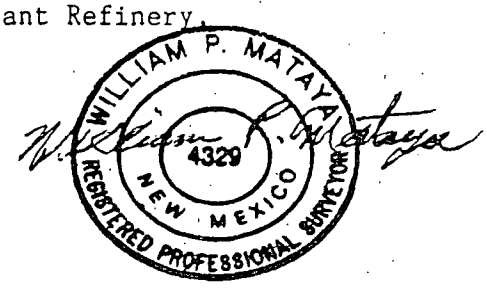
Notes:

1. Geological Survey Monument ET 6 GT 1962 was the basis for this survey. The combined factor equals 0.99960744.

2. NGS Bench Mark Z 426 - 1983 having a normal ortho. Height of 2100.35015 meters (elev. 6890.91 feet) was used for this survey.

3. A Bench Mark was established for this project at SMW-3, Top of concrete pad at the south edge of the well casing. The elevation being 6882.64 feet.

4. Subtracting 0.37 feet from the elevations shown for this project should equal the elevations in this area shown on our 1989 map which was based on datum furnished by Giant Refinery.



Western Refining Company - Gallup Refinery

Coordinate Verification

26 September 2012

INPUT	OUTPUT
State Plane, NAD27 3003 - New Mexico West, U.S. Feet Vertical - NAVD88, U.S. Feet	State Plane, NAD83 3003 - New Mexico West, U.S. Feet Vertical - NAVD88, U.S. Feet

Accuracies of conversions from NAD 27 to NAD 83 are typically 12 to 18 cm.

SMW-6

1/11

Northing/Y:	1635867.66	**Northing/Y:**	1635926.894
Easting/X:	320839.52	**Easting/X:**	2543747.542
Elevation/Z:	6880.71	**Elevation/Z:**	6880.710
Convergence:	-0 20 58.10191	**Convergence:**	-0 20 59.42244
Scale Factor:	0.999953403	**Scale Factor:**	0.999953478
Combined Factor:	0.999624400	**Combined Factor:**	0.999627692

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.599, Delta Lon = 57.273

SMW-5

2/11

Northing/Y:	1636054.28	**Northing/Y:**	1636113.514
Easting/X:	320778.61	**Easting/X:**	2543686.632
Elevation/Z:	6878.02	**Elevation/Z:**	6878.020
Convergence:	-0 20 58.55339	**Convergence:**	-0 20 59.87396
Scale Factor:	0.999953428	**Scale Factor:**	0.999953503
Combined Factor:	0.999624554	**Combined Factor:**	0.999627846

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.597, Delta Lon = 57.274

MW-1

3/11

Northing/Y:	1636112.13	**Northing/Y:**	1636171.364
Easting/X:	320903.76	**Easting/X:**	2543811.783
Elevation/Z:	6878.52	**Elevation/Z:**	6878.520
Convergence:	-0 20 57.68198	**Convergence:**	-0 20 59.00253
Scale Factor:	0.999953376	**Scale Factor:**	0.999953452
Combined Factor:	0.999624478	**Combined Factor:**	0.999627770

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.597, Delta Lon = 57.273

SMW-4

4/11

Northing/Y:	1636153.54	**Northing/Y:**	1636212.774
Easting/X:	320974.85	**Easting/X:**	2543882.873
Elevation/Z:	6880.08	**Elevation/Z:**	6880.080
Convergence:	-0 20 57.18807	**Convergence:**	-0 20 58.50860
Scale Factor:	0.999953347	**Scale Factor:**	0.999953422
Combined Factor:	0.999624375	**Combined Factor:**	0.999627667

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.597, Delta Lon = 57.272

Remark: Verification requirement by NMED. Cross check DePauli Survey to Sterling Mataya Survey 1991.

Western Refining Company - Gallup Refinery

Coordinate Verification

26 September 2012

INPUT	OUTPUT
State Plane, NAD27 3003 - New Mexico West, U.S. Feet Vertical - NAVD88, U.S. Feet	State Plane, NAD83 3003 - New Mexico West, U.S. Feet Vertical - NAVD88, U.S. Feet

Accuracies of conversions from NAD 27 to NAD 83 are typically 12 to 18 cm.

MW-2

5/11

Northing/Y: 1636184.06	**Northing/Y:** 1636243.294
Easting/X: 321035.35	**Easting/X:** 2543943.374
Elevation/Z: 6880.84	**Elevation/Z:** 6880.840
Convergence: -0 20 56.76713	**Convergence:** -0 20 58.08765
Scale Factor: 0.999953322	**Scale Factor:** 0.999953398
Combined Factor: 0.999624314	**Combined Factor:** 0.999627605

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.596, Delta Lon = 57.271

MW-5

6/11

Northing/Y: 1636212.58	**Northing/Y:** 1636271.813
Easting/X: 321233.03	**Easting/X:** 2544141.056
Elevation/Z: 6883.32	**Elevation/Z:** 6883.320
Convergence: -0 20 55.38266	**Convergence:** -0 20 56.70314
Scale Factor: 0.999953241	**Scale Factor:** 0.999953317
Combined Factor: 0.999624114	**Combined Factor:** 0.999627406

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.596, Delta Lon = 57.270

SMW-3

7/11

Northing/Y: 1635948.75	**Northing/Y:** 1636007.984
Easting/X: 321397.9	**Easting/X:** 2544305.927
Elevation/Z: 6884.56	**Elevation/Z:** 6884.560
Convergence: -0 20 54.19144	**Convergence:** -0 20 55.51185
Scale Factor: 0.999953174	**Scale Factor:** 0.999953249
Combined Factor: 0.999623987	**Combined Factor:** 0.999627279

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.599, Delta Lon = 57.268

SMW-2

8/11

Northing/Y: 1635592.65	**Northing/Y:** 1635651.884
Easting/X: 321542.8	**Easting/X:** 2544450.829
Elevation/Z: 6884.44	**Elevation/Z:** 6884.440
Convergence: -0 20 53.12879	**Convergence:** -0 20 54.44912
Scale Factor: 0.999953115	**Scale Factor:** 0.999953190
Combined Factor: 0.999623934	**Combined Factor:** 0.999627225

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.602, Delta Lon = 57.266

Remark: Verification requirement by NMED. Cross check DePauli Survey to Sterling Mataya Survey 1991.

Corpscon v6.0.1, U.S. Army Corps of Engineers

Western Refining Company - Gallup Refinery

Coordinate Verification

26 September 2012

INPUT	OUTPUT
State Plane, NAD27 3003 - New Mexico West, U.S. Feet Vertical - NAVD88, U.S. Feet	State Plane, NAD83 3003 - New Mexico West, U.S. Feet Vertical - NAVD88, U.S. Feet

Accuracies of conversions from NAD 27 to NAD 83 are typically 12 to 18 cm.

SMW-1

9/11

Northing/Y:	1635501.43	**Northing/Y:**	1635560.664
Easting/X:	321501.32	**Easting/X:**	2544409.348
Elevation/Z:	6883.29	**Elevation/Z:**	6883.290
Convergence:	-0 20 53.40847	**Convergence:**	-0 20 54.72879
Scale Factor:	0.999953132	**Scale Factor:**	0.999953207
Combined Factor:	0.999624006	**Combined Factor:**	0.999627297

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.603, Delta Lon = 57.267

MW-4

10/11

Northing/Y:	1635066.25	**Northing/Y:**	1635125.485
Easting/X:	321602.07	**Easting/X:**	2544510.099
Elevation/Z:	6882.54	**Elevation/Z:**	6882.540
Convergence:	-0 20 52.64584	**Convergence:**	-0 20 53.96608
Scale Factor:	0.999953091	**Scale Factor:**	0.999953166
Combined Factor:	0.999624001	**Combined Factor:**	0.999627292

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.607, Delta Lon = 57.266

OW-11

11/11

Northing/Y:	1632185.21	**Northing/Y:**	1632244.448
Easting/X:	323167.68	**Easting/X:**	2546075.724
Elevation/Z:	6923.89	**Elevation/Z:**	6923.890
Convergence:	-0 20 41.29121	**Convergence:**	-0 20 42.61069
Scale Factor:	0.999952454	**Scale Factor:**	0.999952529
Combined Factor:	0.999621388	**Combined Factor:**	0.999624676

Grid Shift (U.S. ft.): X/Easting = 2222908.0, Y/Northing = 59.2

Datum Shift (m.): Delta Lat. = 2.634, Delta Lon = 57.250

Remark: Verification requirement by NMED. Cross check DePauli Survey to Sterling Mataya Survey 1991.

ATTACHMENT 2

2011 CORRECTED WELL ELEVATION SUMMARY TABLE
Revision 4 - September 26, 2012

Date of Installation	Well ID Number	2011 Survey Measurement date[1]	Previous Casing Diameter (Inch)	2011 Verified Casing Diameter[2] (Inch)	Previous Ground Level Elevation (feet)	2011 Survey Ground Level Elevation[3] (feet)	Previous Well Casing Rim Elevation (feet)	2011 Survey Well Casing Rim Elevation[11] (feet)	2011 Measuring Point Description[4]	Previous Stick-up length[3] (feet)	2011 Survey Stick up Length[3] (feet)	Previous Well Casing Bottom Elevation (feet)	2011 Survey Well Casing Bottom Elevation[5] (feet)	Previous Total Well Depth (feet)	2011 Survey Total Well Depth[6] (feet)	Screened Interval Depth Top to Bottom[7] (feet)	Previous Stratigraphic unit in which screen exists	2012 Re-Evaluated Stratigraphic unit in which screen exists[8]
11/10/2003	BW-1A	6/7/2011	2.00	2.00	6,876.73	6,874.10	6,876.73	6,876.68	North edge PVC casing	4.38	2.58	6,836.73	6,839.06	40.00	37.62	30 - 35	Chinle/Alluvium	Upper Sand
10/28/2003	BW-1B	6/7/2011	2.00	2.00	6,876.91	6874.13[9]	6,876.91	6,876.94	North edge PVC casing	2.39	2.81	6,811.71	6,809.49	67.55	67.45	54.6 - 64.6	Chinle/Alluvium	Chinle/Alluvium Interface
11/10/2003	BW-1C	6/7/2011	2.00	2.00	6,876.75	6,873.95	6,876.75	6,876.78	North edge PVC casing	4.52	2.83	6,719.75	6,740.39	157.00	136.39	125 -135	Sonsela Sandstone	Sonsela
11/10/2003	BW-2A	6/7/2011	2.00	2.00	6,874.72	6,871.88	6,874.72	6,874.69	North edge PVC casing	4.27	2.81	6,809.22	6,807.12	65.50	67.57	55 - 65	Chinle/Alluvium	Upper Sand
10/28/2003	BW-2B	6/7/2011	2.00	2.00	6,874.58	6,871.66	6,874.58	6,874.50	North edge PVC casing	4.50	2.84	6,784.08	6,782.24	90.50	92.26	80 - 90	Sonsela sandstone	Chinle/Alluvium Interface
10/28/2003	BW-2C	6/7/2011	2.00	2.00	6,875.40	6,872.90	6,875.40	6,875.30	North edge PVC casing	2.98	2.40	6,724.40	6,722.46	151.00	152.84	139.5 - 149.5	Sonsela sandstone	Sonsela
6/15/2004	BW-3A	6/7/2011	2.00	2.00	6,878.22	6,875.94	6,878.22	6,878.39	North edge PVC casing	3.00	2.45	6,828.22	6,826.04	52.60	52.35	39.5 - 49.5	Chinle/alluvium	Upper Sand
10/15/2003	BW-3B	6/7/2011	2.00	2.00	6,878.79	6,876.16	6,878.79	6,878.59	North edge PVC casing	3.15	2.43	6,803.79	6,809.19	75.00	69.40	63 - 73	Chinle/alluvium	Chinle/Alluvium Interface
7/20/2004	BW-3C	6/7/2011	2.00	2.00	6,878.08	6,875.72	6,878.08	6,877.95	North edge PVC casing	2.69	2.23	6,723.08	6,723.40	155.00	154.55	144.5 - 154.5	Sonsela sandstone	Sonsela
1/5/1981	OW-1	6/7/2011	4.00	4.00	6,868.00	6,866.32	6,868.45	6866.62[10]	North edge PVC casing	1.92	0.30[10]	6,773.96	6,772.07	94.04	94.55	89.3 - 99.3	Sonsela sandstone	Sonsela
11/25/1980	OW-10	6/7/2011	4.00	4.00	6,872.00	6,873.67	6,875.12	6,874.91	North edge PVC casing	1.59	1.24	6,804.00	6,814.58	68.00	60.33	40 - 60	Chinle/alluvium	Sonsela
9/25/1981	OW-11	6/7/2011	4.00	4.00	6,923.89	6,922.05	6,923.51	6,923.51	North edge PVC casing	2.08	1.46	6,857.27	6,857.72	66.62	65.79	43 - 65	Chinle/alluvium	Sonsela
12/15/1980	OW-12	6/7/2011	4.00	4.00	6,940.43	6,939.57	6,940.43	6,940.69	North edge PVC casing	1.88	1.12	6,795.43	6,811.84	145.00	128.85	117.8 - 137.8	Sonsela sandstone	Sonsela
12/10/1980	OW-13	6/7/2011	4.00	4.00	6,920.12	6,918.95	6,920.12	6,920.07	North edge PVC casing	4.79	1.12	6,820.12	6,820.92	100.00	99.15	78.2 - 98.2	Sonsela sandstone	Sonsela
12/17/1980	OW-14	6/7/2011	4.00	4.00	6,926.64	6,924.55	6,926.64	6,926.65	North edge PVC casing	2.25	2.10	6,881.64	6,880.13	45.00	46.52	35 - 45	Chinle/alluvium	Chinle/Alluvium Interface
8/23/1996	OW-29	6/7/2011	4.00	4.00	6,913.50	6,913.89	6,913.50	6,917.00	North edge PVC casing	3.88	3.11	6,864.50	6,865.92	49.00	51.08	37.5 - 47.5	Chinle/alluvium	Chinle/Alluvium Interface
8/28/1996	OW-30	6/7/2011	4.00	4.00	6,921.60	6,921.81	6,921.60	6,924.69	North edge PVC casing	4.85	2.88	6,873.20	6,874.79	48.40	49.90	37.9 - 47.9	Chinle/alluvium	Chinle/Alluvium Interface
10/5/2009	OW-50	6/7/2011	2.00	2.00	6,914.37	6,912.63	6,914.37	6,914.21	North edge PVC casing	2.71	1.58	6,977.37	6,850.21	63.00	64.00	48 - 63	Chinle/alluvium	Chinle/Alluvium Interface
10/5/2009	OW-52	6/7/2011	2.00	2.00	6,906.26	6,906.53	6,907.68	6,907.68	North edge PVC casing	2.21	1.15	6,985.26	6,829.94	79.00	77.74	64 - 79	Chinle/alluvium	Chinle/Alluvium Interface
10/14/1981	MW-1	6/7/2011	5.00	5.00	6,878.52	6,876.63	6,878.15	6,878.12	North edge PVC casing	1.25	1.49	6,746.50	6,747.29	132.02	130.83	117.72 - 127.72	Chinle/Alluvium	Sonsela
10/15/1981	MW-2	6/7/2011	5.00	5.00	6,878.40	6,878.39	6,880.84	6,880.30	North edge PVC casing	1.88	1.91	6,741.90	6,742.82	138.94	137.48	112 - 122	Chinle/alluvium	Sonsela
10/16/1981	MW-4	6/7/2011	5.00	5.00	6,882.54	6,879.89	6,882.20	6,881.63	North edge PVC casing	2.31	1.74	6,760.40	6,759.91	122.14	121.72	101 - 121	Sonsela sandstone	Sonsela
7/21/1986	MW-5	6/7/2011	4.00	4.00	6,883.32	6,880.20	6,882.93	6,882.83	North edge aluminum casing	2.02	2.63	6,750.30	6,752.00	133.02	130.83	115 - 125	Sonsela sandstone	Sonsela
3/28/1995	RW-1	6/7/2011	4.00	4.00	6,943.50	6,942.86	6,943.50	6,946.06	North edge PVC casing	4.42	3.20	6,900.50	6,903.02	43.00	43.04	25 - 40	Chinle/alluvium	Chinle/Alluvium Interface
3/29/1995	RW-2	6/7/2011	4.00	4.00	6,927.20	6,926.40	6,927.20	6,928.53	North edge PVC casing	3.58	2.13	6,889.20	6,888.73	38.00	39.80	26.1 - 36.1	Chinle/alluvium	Chinle/Alluvium Interface
8/27/1997	RW-5	6/7/2011	4.00	4.00	6,942.50	6,941.53	6,942.50	6,943.57	West Edge PVC Casing (Existing Mark)	2.92	2.04	6,902.50	6,903.98	40.00	39.59	29.5 - 39.5	Chinle/alluvium	Chinle/Alluvium Interface
8/27/1997	RW-6	6/7/2011	4.00	4.00	6942.6[11]	6,941.96	6942.6[11]	6,944.01	North edge PVC casing	2.58	2.05	6,933.80	6,903.11	38.80	40.90	28.5 - 38.5	Chinle/alluvium	Chinle/Alluvium Interface
9/26/1985	SMW-2	6/7/2011	2.00	2.00	6,884.44	6,881.63	6,884.11	6,883.97	North edge aluminum casing	4.54	2.34	6,827.10	6,831.17	57.34	52.80	34.31 - 54.31	Chinle/alluvium	Chinle/Alluvium Interface and Upper Sand
9/25/1985	SMW-4	6/7/2011	2.00	2.00	6,882.54	6,877.63	6,882.73	6,879.52	North edge aluminum casing	3.83	1.89	6,760.40	6,809.84	122.14	69.68	51.7 - 71.7	Chinle/alluvium	Chinle/Alluvium Interface

2011 CORRECTED WELL ELEVATION SUMMARY TABLE
Revision 4 - September 26, 2012

Date of Installation	Well ID Number	2011 Survey Measurement date[1]	Previous Casing Diameter (Inch)	2011 Verified Casing Diameter[2] (Inch)	Previous Ground Level Elevation (feet)	2011 Survey Ground Level Elevation[1] (feet)	Previous Well Casing Rim Elevation (feet)	2011 Survey Well Casing Rim Elevation[1] (feet)	2011 Measuring Point Description[1]	Previous Stick-up length[3] (feet)	2011 Survey Stick up Length[4] (feet)	Previous Well Casing Bottom Elevation (feet)	2011 Survey Well Casing Bottom Elevation[5] (feet)	Previous Total Well Depth (feet)	2011 Survey Total Well Depth[6] (feet)	Screened Interval Depth Top to Bottom[7] (feet)	Previous Stratigraphic unit in which screen exists	2012 Re-Evaluated Stratigraphic unit in which screen exists[8]
7/8/2004	GWM-1	6/7/2011	2.00	2.00	6,912.65	6,910.22	6,912.65	6,912.61	North edge PVC casing	3.88	2.39	6,888.95	6,886.41	23.70	26.20	17.5 - 23.5	Chinle/alluvium	Chinle/Alluvium Interface
9/25/2005	GWM-2	6/7/2011	2.00	2.00	6,913.17	6,910.32	6,913.17	6,913.09	North edge PVC casing	4.75	2.77	6,896.97	6,894.28	18.97	18.81	3.2 - 16.2	Chinle/alluvium	Chinle/Alluvium Interface
9/25/2005	GWM-3	6/7/2011	2.00	2.00	6,912.65	6,907.35	6,912.65	6,910.25	North edge PVC casing	4.85	2.90	6,896.15	6,892.45	17.94	17.80	3 - 15	Chinle/alluvium	Chinle/Alluvium Interface
3/14/2008	NAPIS-1	6/7/2011	2.00	2.00	6,918.43	6,913.62	6,918.43	6,913.86	North edge PVC casing	0.29	0.24	6,904.40	6,900.33	14.00	13.53	3.7 - 13.7	Chinle/alluvium	Chinle/Alluvium Interface
3/14/2008	NAPIS-2	6/7/2011	2.00	2.00	6,917.27	6,913.40	6,917.27	6,912.65	North edge PVC casing	0.10	-0.75	6,902.80	6,899.04	14.50	13.61	4.2 - 14.2	Chinle/alluvium	Chinle/Alluvium Interface
3/14/2008	NAPIS-3	6/7/2011	2.00	2.00	6,917.31	6,913.38	6,917.31	6,912.76	North edge PVC casing	0.29	-0.62	6,886.60	6,882.34	30.70	30.42	25.4 - 30.4	Chinle/alluvium	Chinle/Alluvium Interface
6/11/2007	KA-3	6/7/2011	2.00	2.00	6,917.17	6,913.29	6,917.17	6,912.52	North edge PVC casing	0.17	-0.77	6,892.40	6,889.32	25.00	23.20	15 - 25	Chinle/alluvium	Chinle/Alluvium Interface

NOTES:

1) Surveyed by DePauli Engineering & Surveying, LLC on June 7, 2011 at request of NMED due to discrepancies on well casing and ground level elevations.
2) Field verified using a tape measure by Gallup Refinery field technician.
3) Original measurements were given in inches and converted to feet by dividing by 12.
4) Stick up length is determined by subtracting 2011 Survey Ground Level Elevation from 2011 Survey Well Casing Rim Elevation.
5) 2011 Survey Well Casing Bottom Elevation is determined by subtracting the 2011 Survey Well Casing Rim Elevation from the 2011 Survey Total Well Depth Measurement.
6) Total well depth was determined using a bottom sensing meter, Testwell Water level meter with bottom sensing indicator.
7) Screened interval for each well was verfied to the well boring logs. Settlement may have occurred since installation of well which is why total well depth is higher or equal to the screened interval levels.
8) Stratigraphic interpretation conducted by Peregrine Geoconnect to re-evaluate the named zones they produce water from. Tables were updated to reflect correct stratigraphic zone.
9) BW-1B 2011 Survey Ground Level Elevation is to the lowest concrete pad elevation surrounding the well.
10) OW-1 original stick up length was measured to the top of the pvc casing which is connected to the well shroud with a rubber coupling. 2011 survey measurement was taken to the top segment of pvc casing not connected to the rubber coupling. (Coupling is where elevation is referenced)
11) RW-6 elevation data was originally entered incorrectly as 6972.6 feet. Correct elevation is 6942.6 feet.
12) NAPIS 2, 3 and 4 well shroud is located below ground level therefore values entered in "2011 Survey Stick-Up Length (feet)" indicate a negative value.
13) Previous measurements and elevations are from the Well Data Summary Table from the 2009 Annual Ground Water Monitoring Report.

Western Refining
GALLUP

WNR LISTED NYSE

RECEIVED OCD

2011 DEC -9 A 9:12

Certified Return Receipt: #7010 0290 0002 7735 3387

December 5, 2011

Mr. John Kieling, Chief
NMED - Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505-6303

RE: Notice of Disapproval
Requirement to Resurvey Ground Water Monitoring Wells and Recovery Wells
Western Refining Company, Southwest, Inc., Gallup Refinery
EPA ID #NMD000333211
HWB-WRG-11-003

Dear Mr. Kieling:

Western Refining Southwest, Gallup Refinery is pleased to submit the following response to the above referenced matter.

Comment 1

NMED's NOD Annual Ground water Monitoring Report dated May 16, 2011, Comment 15 d. states *"It appears that all the wells need to be resurveyed to provide accurate information."* On June 7, 2011, DePauli Engineering & Surveying, LLC completed their survey of the active ground water monitoring wells and the recovery wells at the request of Gallup Refinery. On June 8, 2011 Western received correspondence from NMED – HWB "Requirement to Resurvey Ground Water Monitoring Wells and Recovery Wells in which Western was required to submit a work plan describing the proposed methods that will be used to re-survey the existing wells. The survey had already been completed prior to receiving the correspondence requiring a work plan.

Comment 2

DePauli Engineering & Surveying has re-submitted their survey report to address issues concerning survey point locations on each well. Copy of survey report is attached.

Comment 3

Monitoring well (MW-2) has been added to the 2011 Corrected Well Elevation Summary Table. SMW-1 is no longer an active well and has been removed from the table. Artesian Wells (PW-2, PW-3, and PW-4) were not included in the survey as these wells

have never been included on the summary table or have had questionable elevations. These artesian wells are sampled annually and are currently on a 3-year schedule. These wells are not required to be gauged at time of sampling. These wells are enclosed and run continuously to provide potable and process water. A copy of an original survey conducted by DePauli Engineering dated February 13, 2003 is attached for reference.

Comment 4

The Well Summary Table has been revised per NMED's example table provided to include all the information requested by NMED. The table has been re-named "2011 Corrected Well Elevation Summary Table". A separate elevation table has been generated listing the Artesian Wells (PW-2, PW-3, PW-4) named "2011 Well Elevation Summary Table for Artesian Water Wells."

Comment 5

All future ground water elevation maps submitted will reflect corrected elevation data resulting from the survey by DePauli Engineering.

If you have any questions regarding Western's responses, please do not hesitate to contact Cheryl Johnson of my staff at (505) 722-0231.

Sincerely,

Ed Riege
Environmental Manager
attachments
cc: K. Van Horn, NMED HWB w/attach
C. Chavez, OCD w/attach
C. Johnson, Gallup w/o attach

Western Refining Monitoring Well 2011

Well #	Northing	Easting	Elevation	Description
napis-1	1,634,587.37	2,545,700.47	6913.86	North edge PVC casing
			6914.23	Center steel lid
			6913.56	South side ground elev. inside steel sleeve
			6913.62	North East & South West corner of concrete pad
napis-3	1,634,589.71	2,545,645.25	6912.76	North edge PVC casing
			6913.12	Center steel lid
			6912.53	South side ground elev. inside steel sleeve
			6913.38	North East & South West corner of concrete pad
ka-3	1,634,583.87	2,545,645.66	6912.52	North edge PVC casing
			6912.87	Center steel lid
			6912.20	South side ground elev. inside steel sleeve
			6913.29	North West & South East corner of concrete pad
napis-2	1,634,564.93	2,545,647.46	6912.65	North edge PVC casing
			6913.26	Center steel lid
			6912.54	South side ground elev. inside steel sleeve
			6913.41	North West & South East corner of concrete pad
gwm-2	1,634,680.33	2,545,348.57	6913.09	North edge PVC casing
			6913.39	Center steel lid
			6908.05	West side ground elev. inside steel sleeve
			6910.32	South West & South East corner of concrete pad
gwm-1	1,634,686.36	2,545,346.90	6912.61	North edge PVC casing
			6912.93	Center steel lid
			6908.36	West side ground elev. inside steel sleeve
			6910.22	South West & North East corner of concrete pad
gwm-3	1,634,932.99	2,545,364.09	6910.25	North edge PVC casing
			6910.51	Center steel lid
			6905.48	West side ground elev. inside steel sleeve
			** 6907.35	Ground elev.
			** Elevation is to the lowest concrete pad elevation surounding the well	
ow-12	1,635,128.64	2,546,062.41	6940.69	North edge PVC casing
			6941.59	Center steel lid
			6939.04	West side ground elev. inside steel sleeve
			6939.57	South West & North East corner of concrete pad

Well #	Northing	Easting	Elevation	Description
rw-5	1,634,761.32	2,546,311.24	6943.57	West edge PVC casing **
			6943.78	Center steel lid
			6940.82	West side ground elev. inside steel sleeve
			6941.53	South West & North East corner of concrete pad
				**Exsiting mark on west edge of PVC casing used
rw-6	1,634,688.45	2,546,381.03	6944.01	North edge PVC casing
			6944.26	Center steel lid
			6941.49	West side ground elev. inside steel sleeve
			6941.96	North West & South East corner of concrete pad
rw-2	1,634,624.56	2,547,167.32	6928.53	North edge PVC casing
			6929.29	Center steel lid
			6925.02	West side ground elev. inside steel sleeve
			6926.40	North West & South East corner of concrete pad
rw-1	1,634,179.63	2,547,362.39	6946.06	North edge PVC casing
			6946.42	Center steel lid
			6941.25	West side ground elev. inside steel sleeve
			6942.86	Surrounding South ground elev.
ow-10	1,633,507.94	2,544,187.82	6874.91	North edge PVC casing
			6875.39	Center steel lid
			6872.59	West side ground elev. inside steel sleeve
			6873.67	South West & North East corner of concrete pad
ow-1	1,634,052.94	2,542,464.15	6866.62	North edge PVC Casing**
			6868.83	Center steel lid
			6866.44	West side ground elev. inside steel sleeve
			6866.32	North West & South East corner of concrete pad
	** Top segment of pvc casing not connected to coupling, coupling is were elevation is referenced.			
mw-4	1,635,127.10	2,544,509.90	6881.63	North edge PVC casing
			6882.38	Center steel lid
			6879.34	West side ground elev. inside steel sleeve
			6879.89	South West & North East corner of concrete pad
smw-2	1,635,652.32	2,544,450.91	6883.97	North edge Aluminum casing
			6884.54	Center steel lid
			6879.07	West side ground elev. inside steel sleeve
			6881.63	South West & North East corner of concrete pad

Well #	Northing	Easting	Elevation	Description
mw-5	1,636,272.55	2,544,141.37	6882.83	North edge Aluminum casing
			6883.40	Center steel lid
			6881.77	South side ground elev. inside steel sleeve
			6880.20	North West & South West corner of concrete pad
mw-2	1,636,243.70	2,543,943.74	6880.30	North edge PVC Casing
			6880.57	Center steel lid
			6878.41	North side ground elev. inside steel sleeve
			6878.39	North West & South East corner of concrete pad
smw-4	1,636,213.12	2,543,883.04	6879.52	North edge PVC casing
			6880.63	Center steel lid
			6875.72	West side ground elev. inside steel sleeve
			6877.63	South West & North East corner of concrete pad
mw-1	1,636,171.89	2,543,811.84	6878.12	North edge PVC casing
			6878.85	Center steel lid
			6876.79	West side ground elev. inside steel sleeve
			6876.63	South West & North East corner of concrete pad
bw-3b	1,637,028.25	2,543,362.30	6878.59	North edge PVC casing
			6878.92	Center steel lid
			6875.41	West side ground elev. inside steel sleeve
			6876.16	North West & South East corner of concrete pad
bw-3a	1,637,035.46	2,543,363.75	6878.09	North edge PVC casing
			6878.39	Center steel lid
			6875.08	West side ground elev. inside steel sleeve
			6875.94	North West & South East corner of concrete pad
bw-3c	1,637,038.21	2,543,356.75	6877.95	North edge PVC casing
			6878.22	Center steel lid
			6875.27	West side ground elev. inside steel sleeve
			6875.72	North West & South East corner of concrete pad
bw-2c	1,636,859.87	2,542,467.18	6875.30	North edge PVC casing
			6875.78	Center steel lid
			6872.02	West side ground elev. inside steel sleeve
			6872.90	South West & South East corner of concrete pad

Well #	Northing	Easting	Elevation	Description
bw-2a	1,636,848.27	2,542,473.25	6874.69	North edge PVC casing
			6875.20	Center steel lid
			6870.45	West side ground elev. inside steel sleeve
			6871.88	South West & South East corner of concrete pad
bw-2b	1,636,836.81	2,542,481.15	6874.50	North edge PVC casing
			6874.85	Center steel lid
			6870.06	West side ground elev. inside steel sleeve
			6871.66	South West & South East corner of concrete pad
bw-1a	1,635,367.32	2,542,393.40	6876.68	North edge PVC casing
			6877.09	Center steel lid
			6872.30	West side ground elev. inside steel sleeve
			6874.10	North West & South East corner of concrete pad
bw-1c	1,635,366.60	2,542,398.24	6876.78	North edge PVC casing
			6877.11	Center steel lid
			6872.28	West side ground elev. inside steel sleeve
			6873.95	South West & North East corner of concrete pad
bw-1b	1,635,368.46	2,542,404.18	6876.94	North edge PVC casing
			6877.28	Center steel lid
			6876.26	West side ground elev. inside steel sleeve
			** 6874.13	Ground elev.
ow-50	1,636,295.73	2,547,393.72	6914.21	North edge PVC casing
			6914.47	Center steel lid
			6911.46	West side ground elev. inside steel sleeve
			6912.63	South West & North East corner of concrete pad
ow-52	1,636,497.52	2,546,917.71	6907.68	North edge PVC casing
			6908.28	Center steel lid
			6905.31	West side ground elev. inside steel sleeve
			6906.53	North West & South East corner of concrete pad
ow-29	1,635,940.11	2,547,227.40	6917.00	North edge PVC casing
			6917.25	Center steel lid
			6912.09	West side ground elev. inside steel sleeve
			6913.89	South West & North East corner of concrete pad

** Elevation is to the lowest concrete pad elevation surounding the well

Well #	Northing	Easting	Elevation	Description
ow-30	1,635,431.14	2,547,552.67	6924.69	North edge PVC casing
			6924.96	Center steel lid
			6919.84	West side ground elev. inside steel sleeve
			6921.81	North West & South East corner of concrete pad
ow-14	1,635,059.64	2,547,178.60	6926.65	North edge PVC casing
			6927.71	Center steel lid
			6924.40	West side ground elev. inside steel sleeve
			6924.55	South West & North East corner of concrete pad
ow-13	1,635,445.53	2,546,668.91	6920.07	North edge PVC casing
			6920.23	Center steel lid
			6915.33	West side ground elev. inside steel sleeve
			6918.95	South West & North East corner of concrete pad
ow-11	1,632,247.50	2,546,078.73	6923.51	North edge PVC casing
			6923.97	Center steel lid
			6921.80	West side ground elev. inside steel sleeve
			6922.05	South West & North East corner of concrete pad

Notes:
1) Date of Survey: June 7, 2011
2) Instrument: Leica 1200 GPS - Base & Rover
3) The method used to survey the wells was GPS-RTK

The horizontal and vertical positions of the top of the PVC casing (unless otherwise noted) and the vertical positions for the lid, ground elevation inside the steel casing, and the surrounding ground elevation is shown above. The horizontal position are NAD 83 datum and the vertical positions are NGVD 1929. The description were revised to indicate location of survey point. (revised 11/30/2011)

Marc DePauli PS13606

11/30/2011
Date

MARC A. DEPAULI
NEW MEXICO
13606
REGISTERED PROFESSIONAL SURVEYOR

2011 CORRECTED WELL ELEVATION SUMMARY TABLE

Date of Installation	Well ID Number	2011 Survey Measurement date[1]	Previous Casing Diameter (Inch)	2011 Verified Casing Diameter[2] (Inch)	Previous Ground Level Elevation (feet)	2011 Survey Ground Level Elevation[3] (feet)	Previous Well Casing Rim Elevation (feet)	2011 Survey Well Casing Rim Elevation[3] (feet)	2011 Measuring Point Description[1]	2011 Ground Elevation Inside Steel Sleeve[3] (feet)	Previous Stick-up length (feet)	2011 Survey Stick-up length[3] (feet)	Previous Well Casing Bottom Elevation (feet)	2011 Survey Well Casing Bottom Elevation[3] (feet)	Previous Total Well Depth (feet)	2011 Survey Total Well Depth (feet)[4]	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
11/10/2003	BW-1A	6/7/2011	2.00	2.00	6,876.73	6,874.10	6,876.73	6,876.68	North edge PVC casing	6,872.30	4.37	4.38	6,836.73	6,839.06	40.00	37.62	30 - 35	Chinle/alluvium
10/28/2003	BW-1B	6/7/2011	2.00	2.00	6,876.91	6874.13*	6,876.91	6,876.94	North edge PVC casing	6,876.26	2.38	0.68	6,811.71	6,809.49	67.55	67.45	54.6 - 64.6	Chinle/alluvium
11/10/2003	BW-1C	6/7/2011	2.00	2.00	6,876.75	6,873.95	6,876.75	6,876.78	North edge PVC casing	6,872.28	4.51	4.50	6,719.75	6,740.39	157.00	136.39	125 -135	Sonsela sandstone
11/10/2003	BW-2A	6/7/2011	2.00	2.00	6,874.72	6,871.88	6,974.72	6,874.69	North edge PVC casing	6,870.45	4.26	4.24	6,809.22	6,807.12	65.50	67.57	55 - 65	Upper sand wells
10/28/2003	BW-2B	6/7/2011	2.00	2.00	6,874.58	6,871.66	6,874.58	6,874.50	North edge PVC casing	6,870.06	4.49	4.44	6,784.08	6,782.24	90.50	92.26	80 - 90	Chinle/alluvium
10/28/2003	BW-2C	6/7/2011	2.00	2.00	6,875.40	6,872.90	6,875.40	6,875.30	North edge PVC casing	6,872.02	2.97	3.28	6,724.40	6,722.46	151.00	152.84	139.5 - 149.5	Sonsela sandstone
6/15/2004	BW-3A	6/7/2011	2.00	2.00	6,878.22	6,875.94	6,878.22	6,878.39	North edge PVC casing	6,875.08	2.99	3.31	6,828.22	6,826.04	52.60	52.35	39.5 - 49.5	Upper sand wells
10/15/2003	BW-3B	6/7/2011	2.00	2.00	6,878.79	6,876.16	6,878.79	6,878.59	North edge PVC casing	6,875.41	3.14	3.18	6,803.79	6,809.19	75.00	69.40	63 - 73	Chinle/alluvium
7/20/2004	BW-3C	6/7/2011	2.00	2.00	6,878.08	6,875.72	6,878.08	6,877.95	North edge PVC casing	6,875.27	2.68	2.68	6,723.08	6,723.40	155.00	154.55	144.5 - 154.5	Sonsela sandstone
1/5/1981	OW-1	6/7/2011	4.00	4.00	6,868.00	6,866.32	6,868.45	6,866.62	North edge PVC casing**	6,866.44	1.91	0.18	6,773.96	6,772.07	94.04	94.55	89.3 - 99.3	Sonsela sandstone
11/25/1980	OW-10	6/7/2011	4.00	4.00	6,872.00	6,873.67	6,875.12	6,874.91	North edge PVC casing	6,872.59	1.59	2.32	6,804.00	6,814.58	68.00	60.33	40 - 60	Sonsela sandstone
9/25/1981	OW-11	6/7/2011	4.00	4.00	6,923.89	6,922.05	6,923.51	6,923.51	North edge PVC casing	6,921.80	2.08	1.71	6,857.27	6,857.72	66.62	65.79	43 - 65	Chinle/alluvium
12/15/1980	OW-12	6/7/2011	4.00	4.00	6,940.43	6,939.57	6,940.43	6,940.69	North edge PVC casing	6,939.04	1.87	1.65	6,795.43	6,811.84	145.00	128.85	117.8 - 137.8	Sonsela sandstone
12/10/1980	OW-13	6/7/2011	4.00	4.00	6,920.12	6,918.95	6,920.12	6,920.07	North edge PVC casing	6,915.33	4.79	4.74	6,820.12	6,820.92	100.00	99.15	78.2 - 98.2	Sonsela sandstone
12/17/1980	OW-14	6/7/2011	4.00	4.00	6,926.64	6,924.55	6,926.64	6,926.65	North edge PVC casing	6,924.40	2.25	2.25	6,881.64	6,880.13	45.00	46.52	35 - 45	Chinle/alluvium
8/23/1996	OW-29	6/7/2011	4.00	4.00	6,913.50	6,913.89	6,913.50	6,917.00	North edge PVC casing	6,912.09	3.87	4.91	6,864.50	6,865.92	49.00	51.08	37.5 - 47.5	Chinle/alluvium
8/28/1996	OW-30	6/7/2011	4.00	4.00	6,921.60	6,921.81	6,921.60	6,924.69	North edge PVC casing	6,919.84	4.85	4.85	6,873.20	6,874.79	48.40	49.90	37.9 - 47.9	Chinle/alluvium
10/5/2009	OW-50	6/7/2011	2.00	2.00	6,929.00	6,912.63	6,992.00	6,914.21	North edge PVC casing	6,911.46	2.70	2.75	6,847.63	6,850.21	63.00	64.00	48 - 63	Chinle/alluvium
10/5/2009	OW-52	6/7/2011	2.00	2.00	6,823.00	6,906.53	6,902.00	6,907.68	North edge PVC casing	6,905.31	2.20	2.37	6,828.53	6,829.94	79.00	77.74	64 - 79	Chinle/alluvium
10/14/1981	MW-1	6/7/2011	5.00	5.00	6,878.52	6,876.63	6,878.15	6,878.12	North edge PVC casing	6,876.79	1.25	1.33	6,746.50	6,747.29	132.02	130.83	117.72 - 127.72	Sonsela sandstone
10/15/1981	MW-2	6/7/2011	5.00	5.00	6,880.84	6,878.39	6,880.84	6,880.30	North edge PVC casing	6,878.41	1.82	1.89	6,741.90	6,742.82	140.24	137.48	112 - 122	Sonsela sandstone
10/16/1981	MW-4	6/7/2011	5.00	5.00	6,882.54	6,879.89	6,882.20	6,881.63	North edge PVC casing	6,879.34	2.31	2.29	6,760.40	6,759.91	122.14	121.72	101 - 121	Sonsela sandstone
7/21/1986	MW-5	6/7/2011	4.00	4.00	6,883.32	6,880.20	6,882.93	6,882.83	North edge aluminum casing	6,881.77	2.02	1.06	6,750.30	6,752.00	133.02	130.83	115 - 125	Sonsela sandstone
3/28/1995	RW-1	6/7/2011	4.00	4.00	6,943.50	6,942.86	6,943.50	6,946.06	North edge PVC casing	6,941.25	4.41	4.81	6,900.50	6,903.02	43.00	43.04	25 - 40	Chinle/alluvium
3/29/1995	RW-2	6/7/2011	4.00	4.00	6,927.20	6,926.40	6,927.20	6,928.53	North edge PVC casing	6,925.02	3.58	3.51	6,889.20	6,888.73	38.00	39.80	26.1 - 36.1	Chinle/alluvium
8/27/1997	RW-5	6/7/2011	4.00	4.00	6,942.50	6,941.53	6,942.50	6,943.57	West Edge PVC Casing (Existing Mark)	6,940.82	2.92	2.75	6,902.50	6,903.98	40.00	39.59	29.5 - 39.5	Chinle/alluvium
8/27/1997	RW-6	6/7/2011	4.00	4.00	6,972.60	6,941.96	6,972.60	6,944.01	North edge PVC casing	6,941.49	2.58	2.52	6,933.80	6,903.11	38.80	40.90	28.5 - 38.5	Chinle/alluvium
9/26/1985	SMW-2	6/7/2011	2.00	2.00	6,884.44	6,881.63	6,884.11	6,883.97	North edge aluminum casing	6,879.07	4.54	4.90	6,827.10	6,831.17	57.34	52.80	34.31 - 54.31	Upper sand wells
9/25/1985	SMW-4	6/7/2011	2.00	2.00	6,882.54	6,877.63	6,882.73	6,879.52	North edge aluminum casing	6,875.72	3.83	3.80	6,760.40	6,809.84	72.20	69.68	51.7 - 71.7	Upper sand wells
7/8/2004	GWM-1	6/7/2011	2.00	2.00	6,912.65	6,910.22	6,912.65	6,912.61	North edge PVC casing	6,908.36	3.87	4.25	6,888.95	6,886.41	23.70	26.20	17.5 - 23.5	Chinle/alluvium
9/25/2005	GWM-2	6/7/2011	2.00	2.00	6,913.17	6,910.32	6,913.17	6,913.09	North edge PVC casing	6,908.05	4.75	5.04	6,896.97	6,894.28	18.97	18.81	3.2 - 16.2	Chinle/alluvium

Date of Installation	Well ID Number	2011 Survey Measurement date	Previous Casing Diameter (Inch)	2011 Verified Casing Diameter (Inch)	Previous Ground Level Elevation (feet)	2011 Survey Ground Level Elevation (feet)	Previous Well Casing Rim Elevation (feet)	2011 Survey Well Casing Rim Elevation (feet)	2011 Measuring Point Description	2011 Ground Elevation Inside Steel Sleeve (feet)	Previous Stick-up length (feet)	2011 Survey Stick-up length (feet)	Previous Well Casing Bottom Elevation (feet)	2011 Survey Well Casing Bottom Elevation (feet)	Previous Total Well Depth (feet)	2011 Survey Total Well Depth (feet)	Screened Interval Depth Top to Bottom (ft)	Stratigraphic unit in which screen exists
9/25/2005	GWM-3	6/7/2011	2.00	2.00	6,912.65	6,907.35	6,912.65	6,910.25	North edge PVC casing	6,905.48	4.85	4.77	6,896.15	6,892.45	17.94	17.80	3 - 15	Chinle/alluvium
3/14/2008	NAPIS-1	6/7/2011	2.00	2.00	6,918.43	6,913.62	6,918.43	6,913.86	North edge PVC casing	6,913.56	0.29	0.30	6,904.40	6,900.33	14.00	13.53	3.7 - 13.7	Chinle/alluvium
3/14/2008	NAPIS-2	6/7/2011	2.00	2.00	6,917.27	6,913.40	6,917.27	6,912.65	North edge PVC casing	6,912.54	0.10	0.11	6,902.80	6,899.04	14.50	13.61	4.2 - 14.2	Chinle/alluvium
3/14/2008	NAPIS-3	6/7/2011	2.00	2.00	6,917.31	6,913.38	6,917.31	6,912.76	North edge PVC casing	6,912.53	0.29	0.23	6,886.60	6,882.34	30.70	30.42	25.4 - 30-4	Chinle/alluvium
6/11/2007	KA-3	6/7/2011	2.00	2.00	6,917.17	6,913.29	6,917.17	6,912.52	North edge PVC casing	6,912.20	0.17	0.32	6,892.40	6,889.32	25.00	23.20	15 - 25	Chinle/alluvium

NOTES:

* Ground elevation is to the lowest concrete pad elevation surrounding the well

** Top segment of pvc casing not connected to coupling. Coupling is where elevation is referenced.

1) Surveyed by DePauli Engineering & Surveying, LLC on June 7, 2011 at request of NMED due to discrepancies on well casing and ground level elevations.
2) Field verified using a tape measure by Gallup Refinery field technician.
3) Corrected bottom well elevation is determined by using 2011Survey Well Casing Rim Elevation minus the 2011 Survey Total Well Depth measurement
4) Total well depth was determined using a bottom sensing meter, Testwell Water level meter with bottom sensing indicator.

2011 WELL ELEVATION SUMMARY TABLE FOR ARTESIAN WATER WELLS

Date of Installation	Well ID Number	Submersible pump depth (feet)	Casing Diameter (Inch)	Well Head Elevation Mark* (North) (feet)	Well Head Elevation Mark* (West) (feet)	Well Head Elevation Mark* (Z) (feet)	Measuring Point Description	Total Well Depth (feet)	Well Casing Bottom Elevation[1] (feet)	Stratigraphic unit	Aquifer
9/24/1956	PW-2	800	16.0	3,300.40	4,694.28	162.78	1st Discharge tee or elbow	1,075.00	2,225.40	Chinle	San Andreas/Yeso Aquifer
April 1979	PW-3	900	14.0	2,932.83	1,387.79	248.00	1st Discharge tee or elbow	1,030.00	1,902.83	Chinle	San Andreas/Yeso Aquifer
11/12/1999	PW-4	750	24.0**	1,895.73	2,979.78	178.51	1st Discharge tee or elbow	1,076.00	819.73	Chinle	San Andreas/Yeso Aquifer

NOTES:

* Basis of survey Refinery Control Point at 1000W, 2575N, plant elevation = 254.87 feet and MSL elevation = 6959.41feet.

** 176 feet of 24" Surface Casing Steel

1) Well casing bottom elevation using Well Head Elevation Mark (North) as reference point.

At the time of the survey by DePauli Engineering the artesian wells were not included as these wells have never been listed on the summary table or had questionable elevations. These wells are sampled every three years and are not required to be gauged when sampling. A copy of an original survey dated February 13, 2003 conducted by DePauli Engineering is attached for reference.

DePauli Engineering
& Surveying, LLC.
Civil Engineers and Land Surveyors

Phone: 505-863-5440 • Fax: 505-863-1919 • des@cnetco.com
102 W. Hill Avenue • Gallup, NM 87301
PO Box 876 • Gallup, NM 87305

February 13, 2003

Mike Spolar
Giant Refining Company
Route 3, Box 7
Gallup, NM 87301

RE: Artesian Wells

Dear Mike:

We have completed the requested land surveying services as scheduled for February 12, 2003 for locations of Giant Refinery Artesian Wells.

Locations for the "1st discharge tee or elbow" are as follows:

Artesian Well 2	Artesian Well 3	Artesian Well 4
N: 3300.40	N: 2932.83	N: 1895.73
W: 4694.28	W: 1387.79	W: 2979.78
Z: 162.78	Z: 248.00	Z: 178.51

The above coordinates are based on the Giant Refining Company Control Points and Plant Coordinate System.

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

Sincerely:

Marc DePauli

Marc DePauli PE\PS
AH\lvb

MARC A. DEPAULI
NEW MEXICO
13606
REGISTERED PROFESSIONAL SURVEYOR

DePauli Engineering & Surveying Co.

Marc A. DePauli PE/PS
Donald Sterling PE/PS
William P. Mataya PS
Edward Gonzales

601 W. Aztec Avenue
Gallup, New Mexico 87301
PO Box 876
Gallup, New Mexico 87305

Ph. 505 863 5440
Fax 505 863 1919
des@cnetco.com

GIANT REFINERY
CONTROL POINTS

3½" BRONZE CAPS SET IN CONCRETE

	PLANT GRID & PLANT ELEV.	GRID EQUATION NORTH NO CHANGE W 0.00 (PLANT) = E 10,000.00	LOCATION
1.	N 4313.85 W 1531.20 Z 234.84	N 4313.85 E 8468.80 El. 6939.34	South Side Conc. Base At OW-12
2.	N 3872.22 W 1537.05 Z 234.85	N 3872.22 E 8462.95 El. 6939.35	NE Cor. Conc. Pad w/Pipe & Sampling Bibs
3.	N 3583.22 W 2053.28 Z 207.81	N 3583.22 E 7946.72 El. 6912.29	SE Cor. Conc. Pad West of API Pit
4.	N 3017.62 W 1351.23 Z 249.53	N 3017.62 E 8648.77 El. 6954.03	Just North of East to West Road at South End of 6"x30" Conc. Footing
5.	N 2992.97 W 1080.19 Z 252.70	N 2992.97 E 8919.81 El. 6957.20	Just South of East to West Road in the Center of a Square Conc. Pad

Basis of survey Refinery Control Point at 1000W; 2575-N, Plant Elev. = 254.87 and MSL Elev. = 6959.41. This data furnished by Refinery personnel.

MARC A. DEPAULI
NEW MEXICO
13606
REGISTERED PROFESSIONAL SURVEYOR
02-28-02

NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.nmenv.state.nm.us

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

DAVE MARTIN
Secretary

BUTCH TONGATE
Acting Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 22, 2011

Mr. Ed Riege
Environmental Superintendent
Western Refining, Southwest Inc., Gallup Refinery
Route 3, Box 7
Gallup, New Mexico 87301

RE: NOTICE OF DISAPPROVAL
REQUIREMENT TO RESURVEY GROUNDWATER MONITORING WELLS AND RECOVERY WELLS
WESTERN REFINING COMPANY, SOUTHWEST, INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-WRG-11-003

Dear Mr. Riege:

The New Mexico Environment Department (NMED) has received Western Refining Company, Southwest Inc., Gallup Refinery's (Western) *Requirement to Resurvey Ground Water Monitoring Wells and Recovery Wells* (Report), dated August 1, 2011. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD) with the following comments.

Comment 1

NMED's June 6, 2011 letter required Western to provide a work plan to describe the proposed methods for resurveying all of the wells at the facility. Instead, Western submitted a survey report from DePauli Engineering & Surveying, LLC (DES) and a revised Well Data Summary Table. The Report did not include a description of the methods used for surveying the wells or the specific survey points at the wells surveyed. In addition, Western did not complete the work required by NMED because an instrument was not available to measure the total well depth of each well and four of the 40 monitoring wells were not surveyed. Revise the Report to describe

the specific work performed during the surveying event to include the survey method, the survey point locations for each well, and a complete table with the total well depth measurement for each well. Also include survey data for the four unsurveyed wells (*see* Comment 3). If NMED determines that the appropriate information was not collected, the Permittee must submit a work plan to NMED in order to resurvey the wells and must not proceed with the survey until NMED has approved the plan.

Comment 2

The Report's cover letter states "[t]he horizontal and vertical positions of the top of the PVC casing (unless otherwise noted) and the vertical position for the lid, ground elevation inside the steel casing, and the surrounding ground elevations is shown on the attached pages. The horizontal positions are NAD 83 datum and the vertical positions are NGVD 1929." The survey point locations are only provided for BW-1B, GWM-3, OW-1, and RW-5. There is no indication of where the measurements were obtained from for the other wells. Provide the survey point locations for all of the wells (e.g., directional location or highest/lowest point on PVC casing, top of steel lid, and ground elevation at northwest corner of the concrete pad) in the revised Report.

Comment 3

The Report's invoice page is for 36 monitoring wells; however, there are 40 monitoring wells at the Facility. NMED used the Facility-wide Groundwater Monitoring Plan, dated June 2010 (FWGWMP) and OCD's Discharge Permit (GW-032) to generate NMED's Table 1.0 (List of Groundwater Monitoring Wells to be Resurveyed). Well MW-2 was not listed in the FWGWMP or the Discharge Permit; however, the well was surveyed with NMED's list of wells provided in Table 1.0. Wells PW-2, PW-3, PW-4, and SMW-1 were not surveyed. Explain why these four wells were not surveyed. If these wells are no longer in use, note as such on the Table.

Comment 4

The table titled *Well Data 2009 Summary Table, 2009 Annual Groundwater Discharge Report* provides a note that the wells were "[s]urveyed by DePauli Engineering & Surveying, LLC on June 27, 2011 at [the] request of NMED due to discrepancies on well casing and ground level elevations." NMED's June 2, 2011 letter required the Permittee to resurvey all the wells listed on Table 1.0 and generate a table with the following information:

a. Verify the well casing diameter;

b. Total well depth;

c. Ground level elevation;

d. Well casing rim elevation;

e. Well stick-up length (above or below ground surface).

Water level measurements and separate phase hydrocarbon (SPH) measurements were not required with the submittal and do not provide information about the well construction. Revise the table to include the previously reported elevations in comparison to the newly surveyed elevations (see attached example Table 1.1: 2011 Corrected Well Elevation Summary). In addition, information provided in the Notes section of the table must be completed if the Permittee used the survey points in the same locations for each well (e.g., highest point on top of casing, north side of the PVC casing).

Comment 5

If groundwater elevations changed as a result of resurveying the wells, revise all groundwater elevation maps accordingly for all future submittals.

The Permittee must submit a revised Report with the required information for all the groundwater monitoring wells and recovery wells no later than **December 30, 2011**. If the required information is not available, all of the wells must be resurveyed and a Work Plan must be submitted to NMED by **October 7, 2011** and the Permittee must receive NMED approval prior to completing the surveying activities.

If you have questions regarding this letter please contact Leona Tsinnajinnie of my staff at 505-476-6057.

Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
K. Van Horn, NMED HWB
L. Tsinnajinnie, NMED HWB
C. Chavez, OCD
T. Larson, Western Refining Company, Gallup Refinery
C. Johnson, Western Refining Company, Gallup Refinery
A. Haines, Western Refining Company, El Paso, Texas

File: Reading File and WRG 2011 File
HWB-WRG-11-003

Att.: Table 1.1 (2011 Corrected Well Elevation Summary)

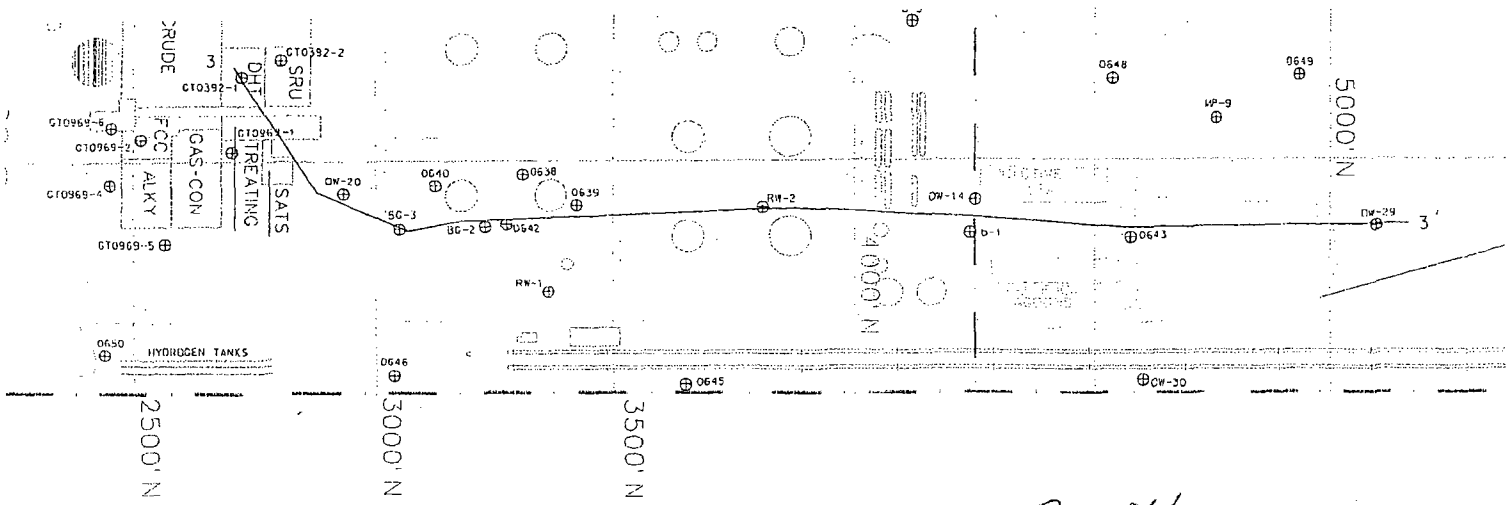
Table 1.1 2011 Corrected Well Elevation Summary - Example Table

Date of Installation	Well ID Number	Previous Casing Diameter (in.)	2011 Verified Casing Diameter (in.)	Previous Ground Level Elevation (ft)	2011 Survey Ground Level Elevation (ft)[1,2]	Previous Well Casing Rim Elevation (ft)	2011 Survey Well Casing Rim Elevation (ft)[1,3]	Measuring Point Description	Ground Elevation Inside Steel Sleeve (ft)[1,4]	Previous Stick-up Length (ft)	2011 Survey Stick-up Length (ft)[1,5]	Previous Well Casing Bottom Elevation (ft)	2011 Survey Well Casing Bottom Elevation (ft)[1,6]	Previous Total Well Depth (ft)	2011 Survey Total Well Depth (ft)[1,7]	Screened Interval Depth (ft)[8]
11/10/2003	BW-1A	2.0	2.0	6,876.73	6,874.10	6,876.73	6,876.68	e.g., Highest point on N part of casing	6,872.30	4.38	4.38	6,876.73	6,836.20	40.00	37.90	30-35
10/28/2003	BW-1B	2.0	2.0	6,876.91	6,874.13	6,876.91	6,876.94		6,876.26	2.39	0.68	6,811.71	6,806.42	67.55	67.71	54.6-64.6
11/10/2003	BW-1C	2.0	2.0	6,876.75	6,873.95	6,876.75	6,876.78		6,872.28	4.52	4.50	6,719.75	6,719.75	157.00	154.20	125-135
11/10/2003	BW-2A	2.0	2.0	6,874.72	6,871.88	6,874.72	6,874.69		6,870.45	4.27	4.24	6,809.22	6,809.22	65.50	62.66	55-65
10/28/2003	BW-2B	2.0	2.0	6,874.58	6,871.66	6,874.58	6,874.50		6,870.06	4.50	4.44	6,784.08	6,784.08	90.50	87.58	80-90
10/28/2003	BW-2C	2.0	2.0	6,875.40	6,872.90	6,875.40	6,875.30		6,872.02	2.98	3.28	6,724.40	6,724.40	151.00	148.50	139.5-149.5
6/15/2004	BW-3A	2.0	2.0	6,878.20	6,875.94	6,878.20	6,878.39		6,875.08	3.00	3.31	6,828.22	6,823.32	52.60	52.62	39.5-49.5
10/15/2003	BW-3B	2.0	2.0	6,878.79	6,876.16	6,878.79	6,878.59		6,875.41	3.15	3.18	6,803.79	6,812.57	75.00	63.59	63-73
7/20/2004	BW-3C	2.0	2.0	6,878.08	6,875.72	6,878.08	6,877.95		6,875.27	2.69	2.68	6,723.08	6,723.08	155.00	152.64	144.5-154.5

NOTES:

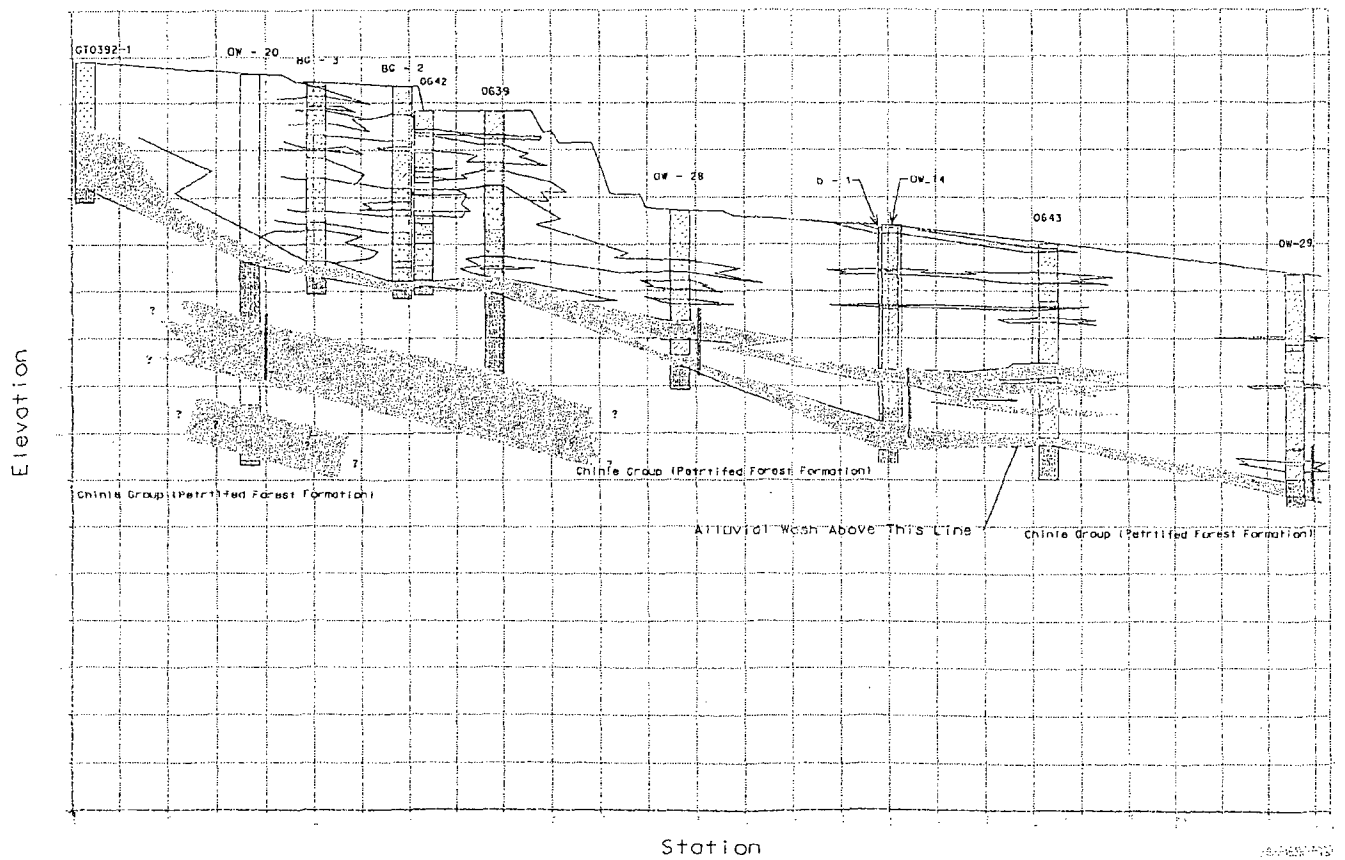
in. = inch
ft = feet

(1) Surveyed by DePauli Engineering & Surveying, LLC on June 27, 2011 at request of NMED due to discrepancies with previous elevations of well casing and ground level elevations
(2) Corrected Well Casing Rim Elevation. Measurement taken _____
(3) Corrected Stick-up Length. Measurement taken (or calculated by) _____
(4) Well Casing Bottom Elevation. Measurement taken _____
(5) Total Well Depth. Measurement taken _____
(6) Screened Interval Depth. Top of the screen to the bottom of screen



2004

Profile 3 - 3'



PRECISION ENGINEERING, INC.

- Clay
- Gravel and Sand
- Silt
- Sandy Clay or Clayey Sand
- Sand
- Shale
- Shaley Sandstone or Sandy Shale
- Sandstone
- Water Bearing Sands or Gravels
- Screen Length + Sanded Interval Above Screen