GW - 28

EVAPORATION PONDS CA

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, November 27, 2018 2:39 PM
To: Combs, Robert (Robert.Combs@hollyfrontier.com)
Cc: Griswold, Jim, EMNRD; Combs, Robert (Robert.Combs@hollyfrontier.com); Cobrain, Dave, NMENV; Tsinnajinnie, Leona, NMENV
Subject: RE: EP area Test Wells Plugging Plans

Robert:

EMNRD is in agreement with NMED in this matter.

Thank you.

From: Tsinnajinnie, Leona, NMENV
Sent: Tuesday, November 27, 2018 2:36 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Combs, Robert (Robert.Combs@hollyfrontier.com) <Robert.Combs@hollyfrontier.com>; Cobrain, Dave, NMENV <dave.cobrain@state.nm.us>
Subject: RE: EP area Test Wells Plugging Plans

Carl-

NMED is fine with abandoning the 16 former test wells in the WP. The wells in this WP are not monitored or sampled in the FWGMWP.

HollyFrontier may proceed with the scheduled field work.

Leona

From: Chavez, Carl J, EMNRD
Sent: Tuesday, November 27, 2018 2:08 PM
To: Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>
Cc: Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Combs, Robert (Robert.Combs@hollyfrontier.com) <Robert.Combs@hollyfrontier.com>
Subject: FW: EP area Test Wells Plugging Plans

Leona:

Hi. Can you tell EMNRD if the RCRA investigation(s) associated with the pits near the Pecos River have been closed?

If there is still monitoring or the potential for future monitoring of these monitoring wells under RCRA, EMNRD would discourage the plug and abandonment of the wells. However, if the SWMU or HWMU has been closed, EMNRD understands why the operator wants to PA the wells.

From a EMNRD general stand point, we are aware of the contamination issues associated with the pits/ponds, but do not know the current environmental conditions of GW at the location. There seemed to still be residual contamination in the area? EMNRD would recommend some sampling for general chemistry, organics and metals to check the current environmental condition of GW in that area at this point in time before plug and abandonment of the wells.

EMNRD met with Navajo a couple of weeks ago when they brought this up. Robert indicated the monitoring wells are not included in the FWGWMWP. Robert indicated there were roots growing in some of the MWs. EMNRD mentioned the NPDES Permit that the Refinery had once obtained to discharge into the Pecos River, but then changed its mind and terminated the NPDES Permit. Navajo indicated it is not interested in obtaining another NPDES Permit to discharge into the Pecos River.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD **and see "Publications")**

From: Combs, Robert <Robert.Combs@HollyFrontier.com>
Sent: Tuesday, November 27, 2018 1:54 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Tsinnajinnie, Leona, NMENV <Leona.Tsinnajinnie@state.nm.us>
Subject: [EXT] RE: EP area Test Wells Plugging Plans

Leona and Carl,
I just wanted to check in on this. These plugging plans were approved by OSE and we're planning to begin field work on 12/10/18.
If you would like to discuss, please let me know.
Thanks,
Robert

Robert Combs
Environmental Specialist
The HollyFrontier Companies
P.O. Box 159
Artesia, NM 88211-0159
office: 575-746-5382
cell: 575-308-2718
fax: 575-746-5451
Robert.Combs@hollyfrontier.com

From: Combs, Robert
Sent: Friday, November 16, 2018 6:59 AM
To: Carl (CarlJ.Chavez@state.nm.us); Leona Tsinnajinnie (Leona.Tsinnajinnie@state.nm.us)
Subject: EP area Test Wells Plugging Plans

Leona and Carl,
Please see the attached. These were sent out FedEx and delivered on 10/11/18. We would like to get in the field to perform the work in the first or second weeks (maybe both!) in December.
Since these wells are not in the current monitoring program, I don't suspect there'll be any issues, but wanted to make sure you knew what was going on!
Please let me know if you'd like to discuss.
Thanks,

Robert

Robert Combs
Environmental Specialist
The HollyFrontier Companies
P.O. Box 159
Artesia, NM 88211-0159
office: 575-746-5382
cell: 575-308-2718
fax: 575-746-5451
Robert.Combs@hollyfrontier.com

Chavez, Carl J, EMNRD

From: Combs, Robert <Robert.Combs@HollyFrontier.com>
Sent: Friday, November 16, 2018 7:00 AM
To: Chavez, Carl J, EMNRD; Tsinnajinnie, Leona, NMENV
Subject: [EXT] EP area Test Wells Plugging Plans
Attachments: 2018-09-28 Subm EP Test Wells Plugging Plans.pdf

Leona and Carl,
Please see the attached. These were sent out FedEx and delivered on 10/11/18. We would like to get in the field to perform the work in the first or second weeks (maybe both!) in December.
Since these wells are not in the current monitoring program, I don't suspect there'll be any issues, but wanted to make sure you knew what was going on!
Please let me know if you'd like to discuss.
Thanks,
Robert

Robert Combs
Environmental Specialist
The HollyFrontier Companies
P.O. Box 159
Artesia, NM 88211-0159
office: 575-746-5382
cell: 575-308-2718
fax: 575-746-5451
Robert.Combs@hollyfrontier.com

HOLLYFRONTIER.

September 28, 2018

Ms. Catherine Goetz
New Mexico Office of the State Engineer
Water Rights District II
1900 West Second Street
Roswell, New Mexico 88201

RE: Work Plan for Abandonment of Former "Test" Wells:
HollyFrontier Navajo Refining LLC – Artesia Refinery

Dear Ms. Goetz:

HollyFrontier Navajo Refining LLC (Navajo) is submitting this *Work Plan for Abandonment of Former "Test" Wells* (work plan) for the Artesia Refinery located in Artesia, New Mexico (**Figure 1**). This work plan has been prepared to propose the abandonment of sixteen (16) "test" wells located around the former evaporation ponds (EPs) approximately three miles east of the active refinery. These wells were installed between 1977 and 1982, but are not part of the current groundwater monitoring well network. The proposed scope of work for the abandonment of these wells is provided below.

Background

Soil and groundwater investigations have been conducted in and around the EPs since the late 1970's. Shallow groundwater "test" wells were installed surrounding the EPs between 1977 and 1982. Subsequent investigations were performed from the mid-1980's through 2013, which included installation of numerous additional monitoring wells within and surrounding the EPs. Semiannual groundwater monitoring of the EPs is conducted according to a *Facility-Wide Groundwater Monitoring Work Plan*, which is updated annually and submitted to the New Mexico Environment Department (NMED) Hazardous Waste Bureau and to the New Mexico Energy, Minerals Natural Resources Department Oil Conservation Division (OCD) for review and approval. As mentioned above, the "test" wells are not included in the current semiannual monitoring program.

During a routine site inspection, Navajo personnel observed the presence of metal and fiberglass vertical pipes at various locations surrounding the EPs (**Figure 2**). Further investigation confirmed that the locations of these pipes correspond to the locations of the "test" wells, which were previously believed to have been plugged and abandoned. Navajo personnel attempted to locate all of the "test" wells and gauged those that they were located. Several of the wells were dry and at least one had roots blocking the casing. Navajo plans to properly plug and abandon these wells because the wells are not suitable for groundwater monitoring as the condition of the wells screens is unknown and there is adequate monitoring coverage in the EP area.

Proposed Well Abandonment Activities

Table 1 provides a listing of the point of diversion (POD) number assigned to the test wells, the well numbers, well construction information (where available from well logs or POD reports), and information obtained by Navajo personnel. As seen in **Figure 2** and **Table 1**, 10 of the 16 test wells were located in the field. Subsurface location methods, such as the use of a metal detector, magnetometer, or similar device, will be used to attempt to locate the other 6 wells.

"Test" well #16 is located in close proximity to existing pipelines. A historical figure of the "test" well locations shows well #13 to be near well #16; thus, well #13 is also within the area of existing pipelines. The reported location of well #11 on the New Mexico Office of the State Engineer (OSE) record was stated as "1600 feet from the east boundary of Section 12" while the reported location on the OSE record for well #12 is "1500 feet from the east boundary of Section 12". Downhole cameras will be deployed in well #16, and wells #11 and #13 if they can be located, to verify the presence of screened pipe and confirm that these are correctly identified as "test" wells rather than features associated with the pipelines. Because well #16, and potentially wells #11 and #13, are located within fifteen feet of existing pipelines, Navajo proposes to abandon each well (if located) by grouting in place without attempting to remove the casing.

Attachment A contains a copy of form WD-08 "Well Plugging Plan of Operations" required by the OSE for each of the 16 test wells proposed to be abandoned. These forms are being submitted to OSE prior to initiation of field activities and this work plan will be modified, if necessary, based on OSE comments. **Attachment B** contains a copy of the OSE well records that were located for the test wells.

The well casing (with the exception of "test" wells #11, #13, and #16) will be pulled from the ground at each location, if possible. If it is not possible to pull the well casing, the casing will be cut approximately 1-3 feet below the ground surface. New Mexico Administrative Code (NMAC) Section 19.27.4.30.C specifies that well plugging should be conducted by filling the constructed well from the bottom upwards using a neat cement slurry, bentonite based plugging material, or other sealing material approved by the state engineer. A tremie pipe will be inserted into the open boring immediately following removal of each casing, or into the casing if it will be left in place, to pump slurry into the well from the bottom up to the surface. The proposed slurry material for filling these wells will consist of approximately 5.2 gallons of water per 94-pound bag of Portland cement. Due to the remote locations of these wells, the cement slurry will be mixed on site, then pumped into the borehole (or remaining casing) using a tremie pipe to fill the well from the bottom upwards.

Following approval of the plugging plans, Navajo will schedule the field activities to occur so as to complete the work in a timely manner. The actual volume of material placed in each well will be documented and the abandonment procedures will be photographically documented. Following completion of the well abandonment activities, a summary letter will be prepared and submitted to OSE, along with the driller's completed plugging report for each well. A copy of the summary letter and documentation of the field activities completed within the scope of this work plan will be included in the subsequent *Annual Groundwater Monitoring Report*, which will be submitted to both the NMED and the OCD.

If you have any questions or comments regarding this request, please feel free to contact me at 575-746-5487 or Robert Combs at 575-746-5382.

Sincerely,

Scott M. Denton
Environmental Manager
HollyFrontier Navajo Refining LLC

Enclosures

c: Ms. Leona Tsinnajinnie, NMED HWB
Mr. Carl Chavez, OCD

TABLE

HollyFrontier Navajo Refining LLC
501 East Main • Artesia, NM 88210
(575) 748-3311 • http://www.hollyfrontier.com

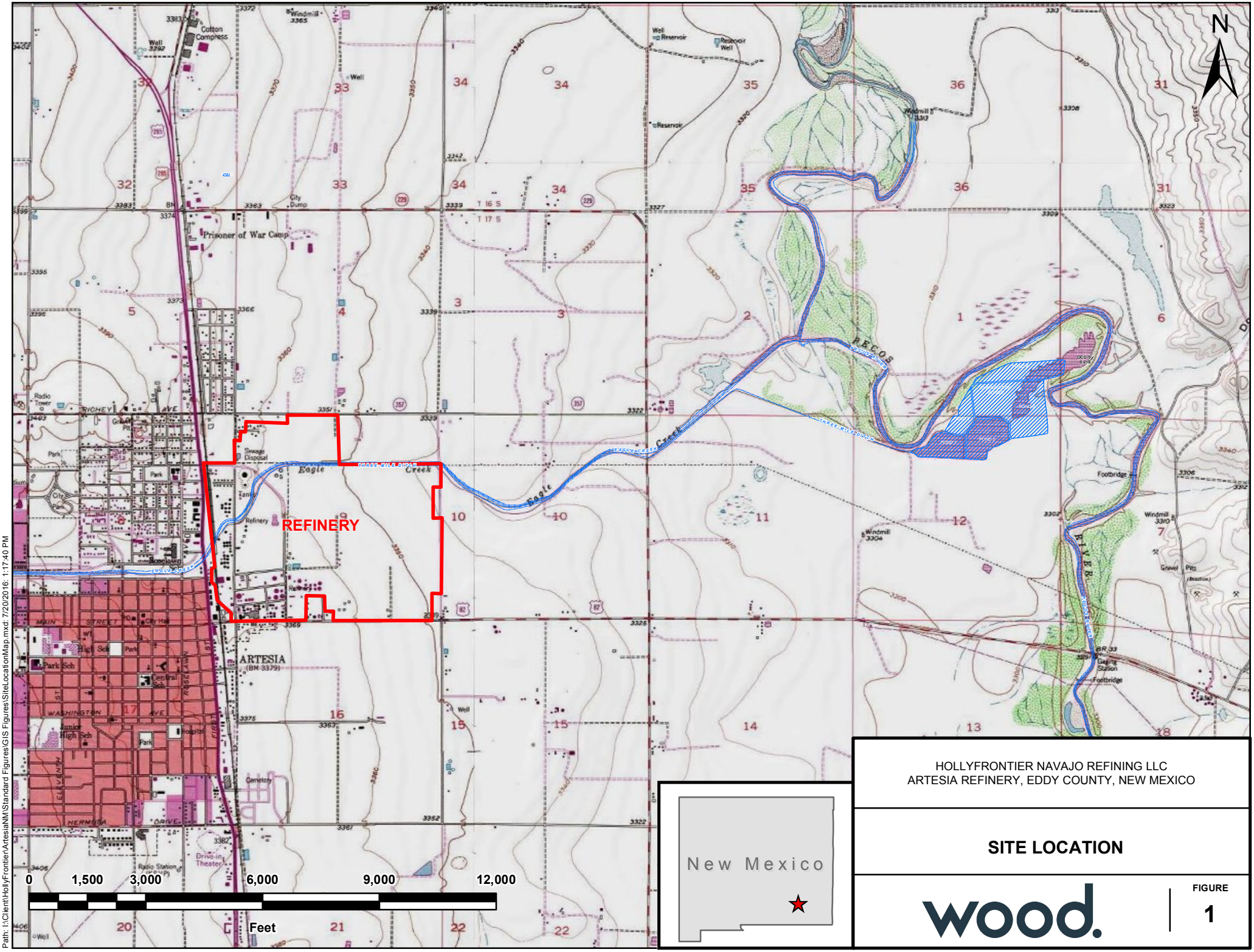
Table 1 - Former "Test Wells" Information
HollyFrontier Navajo Refining LLC - Artesia, New Mexico

POD Number	Test Well	Diameter (in)	Screen Interval (ft)	TD from log	Installation Date	Lat Deg	Lat Min	Lat Sec	Long Deg	Long Min	Long Sec	Field verification comments
RA 06143 X2	#1	8	3 to 19	20	6/16/1977	32	51	23.5	-104	20	35.6	Broken at ground level, dry
RA 06143 X3	#2	-	-	-	-	32	51	22.3	-104	20	35.6	Found, DTW 9.05 ft
RA 06143	#3	8	3 to 19	23	6/17/1977	32	51	18.9	-104	20	16.2	Not found in field
RA 06143 X4	#4	-	-	-	-	32	51	19.9	-104	20	15.1	Not found in field
RA 06143 X5	#5	8	3 to 20	21	6/18/1977	32	51	33.8	-104	20	3.9	Found, DTW 11.3 ft, TD 11.6 ft
RA 06143 X6	#6	-	-	-	-	32	51	36.2	-104	20	0.8	Found, dry with weeds
RA 06143 X7	#7	8	3 to 21	22	6/20/1977	32	51	32.2	-104	19	39.8	Not found in field
RA 06143 X83	#8	-	-	-	-	32	51	30.5	-104	19	39.6	Not found in field, should be south of #7
RA 06143 X9	#9	8	3 to 20	21	6/21/1977	32	51	14.0	-104	19	54.8	Found, dry, 4.2 ft TD, 6 in instead of 8 in
RA 06143 X10	#10	-	-	-	-	32	51	22.9	-104	19	38.1	Found, dry
RA 06143 X11	#11	-	-	-	-	32	51	4.1	-104	22	32.8	Not found in field, reported 100 ft west of well #12
RA 06143 X12	#12	8	3 to 18	19	6/22/1977	32	51	13.9	-104	19	52.1	Found, 3 ft stickup, DTW 8.15 ft, TD 14.8 ft
RA 06143 X13	#13	8	3 to 20	21	6/23/1977	32	51	13.4	-104	20	5.4	Not found in field
RA 06143 X14	#14	-	-	-	-	32	51	23.2	-104	19	36.1	Found near #10 & #17, wasps; another #14 shown on Plate 2 near #13 & #16
RA 06775 E	#16	8.625	-	60	3/29/1981	32	51	13.7	-104	20	8.1	Found, 2 ft stickup, DTW 9.66 ft, TD 37.7 ft
RA 06776 E	#17	8.625	-	30	3/29/1981	32	51	21.6	-104	19	36.8	Found, threaded steel cap could not be opened

Definitions:

- = no historical information is available
Deg = degrees
DTW = depth to water
ft = feet
in = inches
Lat = Latitude
Long = Longitude
Min = Minutes
OSE = Office of the State Engineer
POD = point of diversion
Sec = Seconds
TD = total depth ("from log" means from OSE records, TD in comments column was measured)

FIGURES



HOLLYFRONTIER NAVAJO REFINING LLC
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

SITE LOCATION

wood.

FIGURE
1

DB: C.RICHARDS PM: P.KRUEGER Project (Project #) 6703160022
Path: I:\Client\HollyFrontier\ArtesiaNM\Standard Figures\GIS Figures\SiteLocationMap.mxd: 7/20/2016: 1:17:40 PM

N

#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
#11
#12
#13
#14
#16
#17

LEGEND

Test Wells

- Field Located
- Not Field Located (Location Based on OSE Records)
- HEP Mainlines
- Evaporation Ponds

0 350 700
Feet

HOLLYFRONTIER NAVAJO REFINING LLC
ARTESIA REFINERY, EDDY COUNTY, NEW MEXICO

EVAPORATION PONDS
FORMER "TEST" WELL LOCATIONS

wood.

FIGURE
2

ATTACHMENT A
WELL PLUGGING PLAN FORMS

HollyFrontier Navajo Refining LLC
501 East Main • Artesia, NM 88210
(575) 748-3311 • http://www.hollyfrontier.com

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X2

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 23.5 sec
Longitude: -104 deg, 20 min, 35.6 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #1", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 20 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): 3 to 19 (according to OSE records)

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 09/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~20 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X3

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 22.3 sec
Longitude: -104 deg, 20 min, 35.6 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #2", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 9 feet below land surface / feet above land surface (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

■ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 9/20/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 18.9 sec
Longitude: -104 deg, 20 min, 16.2 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #3", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The location provided is from the POD form for RA 06143; however, the well has not recently been physically located. Additional attempts will be made to locate the well for plugging.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 23 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

■ a well screen or perforated pipe, state the screened interval(s): 3 to 19 (according to OSE records)

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 09/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X4

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 19.9 sec
Longitude: -104 deg, 20 min, 15.1 sec, WGS84
☐ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #4", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The location provided is from the POD form for RA 06143 X4; however, the well has not recently been physically located. Additional attempts will be made to locate the well for plugging.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface / feet above land surface) (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 09/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X5

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 33.8 sec
Longitude: -104 deg, 20 min, 3.9 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #5", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 8 to 12 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 21 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): 3 to 20 (according to OSE records)

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 9/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~21 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X6

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 36.2 sec
Longitude: -104 deg, 20 min, 0.8 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #6", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 8 to 12 feet (below land surface / feet above land surface) (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant

9/28/18
Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X7

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 32.2 sec
Longitude: -104 deg, 19 min, 39.8 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #7", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The location provided is from the POD form for RA 06143 X7; however, the well has not recently been physically located. Additional attempts will be made to locate the well for plugging.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: Unknown feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 22 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): 3 to 21 (according to OSE records)

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 9/28/15

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~22 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X83

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 30.5 sec
Longitude: -104 deg, 19 min, 39.6 sec, WGS84
☒ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #8", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The location provided is from the POD form for RA 06143 X83; however, the well has not recently been physically located. Additional attempts will be made to locate the well for plugging.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: Unknown feet (below land surface / feet above land surface) (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant

9/20/18
Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X9

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 14.0 sec
Longitude: -104 deg, 20 min, 54.8 sec, WGS84
☑ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #9", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The well appears to be silted in at about 4.2 ft below ground.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: >4.2 ft feet (below land surface / feet above land surface) (circle one)

6) Depth of the well: 21 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): 3 to 20 (according to OSE records)

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 9/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~21 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X10

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 22.9 sec
Longitude: -104 deg, 19 min, 38.1 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #10", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 12 feet (below land surface / feet above land surface (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 09/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X11

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/18

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 4.1 sec
Longitude: -104 deg, 22 min, 32.8 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #11", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The location provided is from the POD form for RA 06143 X11; however, the well has not recently been physically located. Additional attempts will be made to locate the well for plugging.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface / feet above land surface (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 09/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X12

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/18

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 13.9 sec
Longitude: -104 deg, 19 min, 52.1 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #12", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface / feet above land surface) (circle one)

6) Depth of the well: 19 (log)/14.8 TD feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

■ a well screen or perforated pipe, state the screened interval(s): 3 to 18 ft bgs

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~19 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X13

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 13.4 sec
Longitude: -104 deg, 20 min, 5.4 sec, WGS84
☐ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #13", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use. The location provided is from the POD form for RA 06143 X13; however, the well has not recently been physically located. Additional attempts will be made to locate the well for plugging.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 21 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): 3 to 20 ft bgs

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant

9/28/18
Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~21 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06143 X14

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 23.2 sec
Longitude: -104 deg, 19 min, 36.1 sec, WGS84
☐ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #14", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface / feet above land surface) (circle one)

6) Depth of the well: Unknown feet

7) Inside diameter of innermost casing: Unknown inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

■ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant

9/22/18
Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~23 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06775 E

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 13.7 sec
Longitude: -104 deg, 20 min, 8.1 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #16", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 60(log)/37.7 TD feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): Unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant

9/28/18
Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~60 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: RA 06776 E

Name of well owner: HollyFrontier Navajo Refining LLC

Mailing address: PO Box 159

City: Artesia State: NM Zip code: 88211

Phone number: 575-746-5487 E-mail: scott.denton@hollyfrontier.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Talon LPE

New Mexico Well Driller License No.: 1575 Expiration Date: 7/31/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 51 min, 21.6 sec
Longitude: -104 deg, 19 min, 36.8 sec, WGS84
■ Check if seconds are decimal format.

2) Reason(s) for plugging well:

This plan is for "Test Well #17", one of sixteen wells that were installed between 1977 and 1982 and are no longer in use.

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? Unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

TDS concentrations in nearby monitoring wells in same water-bearing unit range from approximately 3,000 to 17,000 mg/L, as reported in annual groundwater monitoring reports.

5) Static water level: 6 to 10 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 30 feet

7) Inside diameter of innermost casing: 8 inches.

8) Casing material: steel

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): unknown

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Unknown If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? N/A If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Lean cement grout will be placed in the boring from the bottom up using a tremie pipe.

2) Will well head be cut-off below land surface after plugging? Yes - if the casing cannot be pulled

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 1.6-2 gallons (per well)

4) Type of Cement proposed: Portland cement

5) Proposed cement grout mix: 5 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

25 lbs High Yield Bentonite to 470 lbs Portland cement

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

As stated in Section IV.2, the well was installed for monitoring purposes, but has not been used for monitoring since the mid-1980's. Updated monitoring wells were installed in the mid-1980's and data on the shallow groundwater quality is reported to NMED and OCD on an annual basis.

VIII. SIGNATURE:

I, Scott Denton, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 09/28/18

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this _____ day of _____, _____

Tom Blaine P.E., New Mexico State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			0
Bottom of proposed interval of grout placement (ft bgl)			TD of well (~30 ft)
Theoretical volume of grout required per interval (gallons)			1.6-2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5
Mixed on-site or batch-mixed and delivered?			Mix on-site
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

ATTACHMENT B
COPIES OF OSE RECORDS

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X2	1	1	1	12	17S	26E	561505	3635542*

Driller License: 675 **Driller Company:** H & W ENTERPRISES

Driller Name:

Drill Start Date: 06/16/1977 **Drill Finish Date:** 06/16/1977 **Plug Date:**

Log File Date: 09/19/1977 **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:** 9 GPM

Casing Size: **Depth Well:** 20 feet **Depth Water:** 0 feet

Casing Perforations:	Top	Bottom
	3	19

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 262445 **Transaction Desc:** RA 06143 X2 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
09/19/1977	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X2	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X2		561505	3635542*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WEL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 60 FT FROM WEST BOUNDARY, 180 FT FROM NORTH BOUNDARY OF SECTION 12. THIS WELL IS REFERRED TO AS WELL NO. 1

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143 X3	1	1	1	12	17S	26E	561505	3635542*

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262470 **Transaction Desc:** RA 06143 X3 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X3	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X3		561505	3635542*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 60 FT FROM THE WEST BOUNDARY AND 190 FT FROM THE NORTH BOUNDARY OF SECTION 12. THIS WELL IS REFERRED TO AS WELL NUMBER 2.

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/15/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143	3	2	1	12	17S	26E	561909	3635345*

x

Driller License:	675	**Driller Company:**	H & W ENTERPRISES		
Driller Name:					
Drill Start Date:	06/17/1977	**Drill Finish Date:**	06/17/1977	**Plug Date:**	
Log File Date:	01/16/1978	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	8.00	**Depth Well:**	20 feet	**Depth Water:**	

x

Casing Perforations:	**Top**	**Bottom**
	3	19

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 262477 **Transaction Desc:** RA 06143 **File Date:** 06/14/1977

Primary Status: CAN Cancelled Permit
Secondary Status: FIN Finalized
Person Assigned: *******
Applicant: NAVAJO REFINING CO.

Events

Date	Type	Description	Comment	Processed By
06/14/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
07/01/1978	FCN	Finalize Cancel of permit		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143		561909	3635345*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS TO BE USED FOR OBSERVATION OF WATER LEVELS AND WATER QUALITY IN CONNECTION WITH THE WASTE WATER DISPOSAL PITS OF THE COMPANY.

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143 X4	3	2	1	12	17S	26E	561909	3635345*

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 262474 **Transaction Desc:** RA 06143 X4 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X4	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X4		561909	3635345*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUNDWATER ONLY AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. THE AMOUNT OF WATER USED WILL BE ONLY A FEW GALONS PER MONTH.

LOCATION IS 1700 FEET FROM THE WEST BOUNDARY, 730 FEET FROM THE NORTH BOUNDARY OF SECTION 12. OBSERVATION WELL IS REFERRED TO AS TEST WELL # 4

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1977
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143 X5	1	3	4	01	17S	26E	562310	3635952*

Driller License: 675 **Driller Company:** H & W ENTERPRISES

Driller Name:

Drill Start Date: 06/18/1977 **Drill Finish Date:** 06/18/1977 **Plug Date:**

Log File Date: 06/20/1977 **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:** 0 GPM

Casing Size: **Depth Well:** 21 feet **Depth Water:** 0 feet

Casing Perforations:	Top	Bottom
	3	20

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262436 **Transaction Desc:** RA 06143 X5 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
06/20/1977	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X5	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X5		562310	3635952*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER ONLY AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 950 FT FROM THE SOUTH BOUNDARY, 2300 FT FROM THE EAST BOUNDARY OF SECTION 1. THIS WELL IS REFERRED TO AS OBSER. #5.

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143 X6	1	3	4	01	17S	26E	562310	3635952*

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 262407 **Transaction Desc:** RA 06143 X6 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X6	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X6		562310	3635952*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER ONLY AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES.LOCATION IS 940 FT FROM NORTH BOUNDARY, 2300 FT FROM THE WEST BOUNDARY OF SECTION. THIS WELL IS REFERRED TO AS OBSERVATION WELL NUMBER 6

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X7	2	4	4	01	17S	26E	562914	3635954*

Driller License: 675 **Driller Company:** H & W ENTERPRISES

Driller Name: H AND W ENTERRISES

Drill Start Date:	06/20/1977	**Drill Finish Date:**	06/20/1977	**Plug Date:**	
Log File Date:	08/31/1977	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	0 GPM
Casing Size:		**Depth Well:**	22 feet	**Depth Water:**	

Casing Perforations:	Top	Bottom
	3	21

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 262405 **Transaction Desc:** RA 06143 X7 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
08/31/1977	LOG	Well Log Received		*******
08/31/1977	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X7	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X7		562914	3635954*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER ONLY AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 560 FT FROM SOUTH BOUNDARY, 350 FT FROM EAST BOUNDARY OF SECTION 1. THIS WELL IS REFERRED TO AS OBSERVATION WELL # 7

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X83	2	4	4	01	17S	26E	562914	3635954*

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262400 **Transaction Desc:** RA 06143 X83 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X83	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X83		562914	3635954*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER ONLY AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 450 FT FROM THE SOUTH BOUNDARY, 350 FT FROM THE EAST BOUNDARY OF SECTION 1. THIS WELL IS REFERRED TO AS OBSERVATION WELL #8

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143 X9	4	2	2	01	17S	26E	562908	3636966*

x

Driller License: 675 **Driller Company:** H & W ENTERPRISES

Driller Name:

Drill Start Date: 06/21/1977 **Drill Finish Date:** 06/21/1977 **Plug Date:**

Log File Date: 08/31/1977 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 21 feet **Depth Water:**

x

Casing Perforations:	Top	Bottom
	3	20

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262385 **Transaction Desc:** RA 06143 X9 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
08/31/1977	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X9	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X9		562908	3636966*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 500 FT FROM NORTH BOUNDARY, 340 FT FROM THE EAST BOUNDARY OF SECTION 12. THIS WELL IS REFERRED TO AS OBSERVATION WELL # 9

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X10	4	2	2	12	17S	26E	562917	3635350*

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 262383 **Transaction Desc:** RA 06143 X10 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X10	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X10		562917	3635350*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 500 FT FROM NORTH BOUNDARY, 240 FT FROM EAST BOUNDARY OF SECTION 12. THIS WELL IS REFERRED TO AS OBSERVATION WELL NUMBER 10

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1977
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X11	4	3	2	12	17S	26E	562516	3634943*

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)
(NAD83 UTM in meters)

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262360 **Transaction Desc:** RA 06143 X11 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X11	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X11		562516	3634943*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC USE. LOCATION IS 1120 FT FROM THE NORTH BOUNDARY, 1600 FT FROM FROM THE EAST BOUNDARY OF SECTION 12. THIS WELL IS REFERRED TO AS OBSERVATION WELL #12

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C1 A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X12	4	4	2	12	17S	26E	562920	3634946*

Driller License: 675 **Driller Company:** H & W ENTERPRISES

Driller Name:

Drill Start Date: 06/22/1977 **Drill Finish Date:** 06/22/1977 **Plug Date:**

Log File Date: 08/31/1977 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 19 feet **Depth Water:**

Casing Perforations:	Top	Bottom
	3	18

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262352 **Transaction Desc:** RA 06143 X12 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
08/31/1977	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X12	0	0		

****Point of Diversion**

RA 06143 X12		562920	3634946*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION 1120 FT FROM THE NORTH BOUNDARY 1500 FT FROM THE EAST BOUNDARY OF SECTION 12 THIS WELL IS REFERED TO AS OBSERVATION WELL # 12.

1. DIAMETER OF WELL NOT TO EXCEED 8 INCHES. 2. AT THE END OF THE TEST PERIOD THE WELL SHALL BE PLUGGED. 3. APPLICATION APPROVED FOR OBSERVATION AND WATER TESTING PURPOSES ONLY.

Conditions

1A	Depth of the well shall not exceed the thickness of the valley fill.
B	The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
C1	A complete and properly executed Well Record on the form provided by the State Engineer shall be filed not later than ten (10) days after completion of the well. Test data shall be filed not later than ten (10) days after completion of the test(s).
6	The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978

Action of the State Engineer

State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06143 X13	4	4	1	12	17S	26E	562112	3634940*

x

Driller License: 675 **Driller Company:** H & W ENTERPRISES

Driller Name:

Drill Start Date: 06/23/1977 **Drill Finish Date:** 06/23/1977 **Plug Date:**

Log File Date: 08/31/1977 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** 21 feet **Depth Water:**

x

Casing Perforations:	Top	Bottom
	3	20

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262350 **Transaction Desc:** RA 06143 X13 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******
08/31/1977	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X13	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X13		562112	3634940*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GOUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES.LOCATION IS 1280 FEET FROM NORTH BOUNDARY, 2430 FEET FROM WEST BOUNDARY OF SEC. 12. THIS WELL IS REFERRED TO AS OBSERVATION WELL #13

Conditions

1A	Depth of the well shall not exceed the thickness of the valley fill.
4	No water shall be appropriated and beneficially used under this permit.
B	The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
C	Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 06143 X14	4	4	1	12	17S	26E	562112	3634940*

x

Driller License: **Driller Company:**

Driller Name:

Drill Start Date: **Drill Finish Date:** **Plug Date:**

Log File Date: **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: **Depth Well:** **Depth Water:**

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 262322 **Transaction Desc:** RA 06143 X14 **File Date:** 06/15/1977

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: NAVAJO REFINING COMPANY

Events

Date	Type	Description	Comment	Processed By
06/15/1977	APP	Application Received		*******
06/15/1977	FTN	Finalize non-published Trans.		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06143 X14	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06143 X14		562112	3634940*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

THIS WELL IS FOR OBSERVATION OF GROUND WATER AND WILL NOT BE USED FOR IRRIGATION OR DOMESTIC PURPOSES. LOCATION IS 1280 FEET FROM NORTH BOUNDARY AND 2530 FEET FROM EAST BOUNDARY OF SECTION 12.

1. DIAMETER OF WELL NOT TO EXCEED 8 INCHES. 2. APPLICATION APPROVED FOR OBSERVATION AND WATER TESTING PURPOSES ONLY. 3.

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

C Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

4 No water shall be appropriated and beneficially used under this permit.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 06/15/1977
PCW Due Date: 06/30/1978
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06775 E	2	1		12	17S	26E	562010	3635446*

x

Driller License: 406 **Driller Company:** TIDWELL, CLYDE J.

Driller Name:

Drill Start Date: 03/21/1981 **Drill Finish Date:** 03/29/1981 **Plug Date:**

Log File Date: 04/06/1981 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 8.63 **Depth Well:** 60 feet **Depth Water:** 10 feet

x

Water Bearing Stratifications:	Top	Bottom	Description
	10	25	Sandstone/Gravel/Conglomerate
	28	35	Sandstone/Gravel/Conglomerate

x

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 251076 **Transaction Desc:** RA 06775 E **File Date:** 03/17/1981

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING CO

Events

Date	Type	Description	Comment	Processed By
03/17/1981	APP	Application Received		*******
03/19/1981	FTN	Finalize non-published Trans.		*******
04/06/1981	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06775 E	0	0		EXP EXPLORATION

****Point of Diversion**

RA 06775 E		562010	3635446*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

Observation well to determine thickness of aquifer at this point and quality of water therein. DIAMETER OF WELL NOT TO EXCEED 8 INCHES. APPLICATION APPROVED FOR OBSERVATION AND WAQTER TESTING PURPOSES ONLY. WELL DRILLER SHALL SUBMIT

LOGS OF ALL HOLES DRILLED. AT THE END OF THE TEST PERIOD THE WELL SHALL BE PLUGGED.

Conditions

1A	Depth of the well shall not exceed the thickness of the valley fill.
4	No water shall be appropriated and beneficially used under this permit.
B	The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 03/19/1981
PCW Due Date: 03/31/1982
State Engineer:

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	RA 06776 E			2	12	17S	26E	562618	3635245*

Driller License:	406	**Driller Company:**	TIDWELL, CLYDE J.		
Driller Name:					
Drill Start Date:	03/29/1981	**Drill Finish Date:**	03/29/1981	**Plug Date:**	
Log File Date:	04/06/1981	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	8.62	**Depth Well:**	30 feet	**Depth Water:**	10 feet

Water Bearing Stratifications:	Top	Bottom	Description
	10	28	Sandstone/Gravel/Conglomerate

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Transaction Summary

EXPL Permit To Explore

Transaction Number: 251092 **Transaction Desc:** RA 06776 E **File Date:** 03/17/1981

Primary Status: PMT Permit
Secondary Status: LOG Well Log Received
Person Assigned: *******
Applicant: NAVAJO REFINING CO.

Events

Date	Type	Description	Comment	Processed By
03/17/1981	APP	Application Received		*******
03/19/1981	FTN	Finalize non-published Trans.		*******
04/06/1981	LOG	Well Log Received		*******
04/06/1981	LOG	Well Log Received		*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
RA 06776 E	0	0		OBS OBSERVATION

****Point of Diversion**

RA 06776 E		562618	3635245*

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Remarks

OBSERVATION WELL TO DETERMINE THICKNESS OF AQUIFER AT THIS POINT AND QUALITY OF WATER THEREIN. DIAMETER OF WELL NOT TO EXCEED 8 INCHES. APPLICATION APPROVED FOR OBSERVATION AND WATER TESTING PURPOSES ONLY.

Conditions

1A Depth of the well shall not exceed the thickness of the valley fill.

6 The well shall be plugged upon completion of the permitted use, and a plugging report shall be filed with the State Engineer within 10 days.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C Driller's well record must be filed with the State Engineer within 10 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

4 No water shall be appropriated and beneficially used under this permit.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A - Approved
Action Date: 03/19/1981
PCW Due Date: 03/31/1982
State Engineer:

6/29/18 3:06 PM

TRANSACTION
SUMMARY

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
Deputy Secretary

JAMES H. DAVIS, Ph.D.
Director
Resource Protection Division

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 30, 2012

Mr. Robert Combs
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211-0159

RE: APPROVAL WITH MODIFICATIONS
EVAPORATION PONDS PHASE IV CORRECTIVE ACTION INVESTIGATION WORKPLAN, SEPTEMBER 2011
NAVAJO REFINING COMPANY, ARTESIA REFINERY
EPA ID NO. NMD048918817
HWB-NRC-11-007

Dear Mr. Combs:

The New Mexico Environment Department (NMED) has completed its review of Navajo Refining Company, Artesia Refinery's (the Permittee) *Evaporation Ponds Phase IV Corrective Action Investigation Workplan* (Work Plan), dated September 2011. NMED hereby issues this Approval with the following modifications.

Comment 1

Throughout the Work Plan, the Permittee mentions the shallow and valley fill aquifers. Comments 4 and 5 from the June 20, 2011 Approval with Modifications for the Evaporation Pond Phase III Corrective Action Investigation (CAI) Report required the Permittee to revise all references to the "aquifers" as "zones." The Permittee mentions the requirement in Section 3.2 (Site Hydrogeology) but should have carried out the reference throughout the document. In

future work plans and reports, the Permittee must refer to these "aquifers" as "zones" or remove the distinction. No revision necessary.

Comment 2

In Section 2.2 (Previous Investigation of the EP Area), pages 4-11, the Permittee summarizes all investigations that have been performed at the evaporation ponds. The Permittee describes the investigations but does not discuss the major constituents of concern (COCs) and their analytical results. In future work plans and reports, provide additional information about the major COCs and detected concentrations. No revision necessary.

Comment 3

In Section 3 (Site Conditions), page 12, the Permittee refers the reader to "Sections 4.1 through 4.3 of the Phase III CAI Report for the description of the general setting, regional and site specific lithology and regional and site specific hydrogeologic information." The Permittee must provide the referenced information in future work plans and reports. The Permittee can summarize the geology site conditions and refer to specific logs or sections of past reports for specific details, but a sufficient description must be provided for the reader to be able to understand local site conditions. In future work plans and reports, the Permittee must provide adequate descriptions in the site conditions section. No revision necessary.

Comment 4

In Section 3.3 (Previously Identified Soil Impacts), page 15, paragraph 4, the Permittee states, "[i]n Comment 12 of the June 30, 2011 letter, NMED points out that no sample was collected below 5 feet at location EP1-6 and that the concentration of DRO in the 2.5 to 5 foot sample was greater than the concentration of the 0-2.5 foot sample. However, as shown in Figure A-13, soil samples were collected from MW-84 and MW-81 on either side of location EP1-6 at varying depths, including intervals below 5 feet. The concentration at these two locations decrease significantly with depth, with a reported DRO concentration of 50.5 mg/kg in MW-85 at 14 to 15 [feet below ground surface (ft bgs)] and no detectable DRO present at 9 to 10 ft bgs or 17 to 18 ft bgs in MW-81. Likewise, no detectable DRO was present at 5 to 7.5 ft bgs or 12.5 to 15 ft bgs at location EP1-8 as shown in figure A-20. Based on the similarity of the lithology and the means in which the impacts occurred, it is reasonable to presume that the concentrations at location EP1-6 would also decrease significantly with depth."

a. The Permittee references the incorrect monitoring well in this statement. MW-84 is identified as one of the monitoring wells used to evaluate the DRO concentration trend in EP1-6; however, the Permittee states that the "reported DRO concentration is 50.5 mg/kg in MW-85 at 14 to 15 bgs." In future work plans and reports, review all sections of the

document to ensure correct monitoring wells are referenced prior to their submittal. Provide a replacement page with the correct reference.

b. In addition, the neighboring monitoring wells and soil borings mentioned in the statement above does not support the Permittee's statement that the DRO concentration decreases significantly with depth at EP1-6. The soil lithologies presented in A-2 and A-14 of Appendix A (Updated Lithologic Cross-Sections and Presentation of Analytical Data on Cross-Sections) depict soil boring EP1-6 crossing soil and clay matrices and ending at 15 feet. The Permittee must drill next to the original soil boring EP1-6, collect soil samples and provide lithologic and analytical data to verify that DRO concentration decreases significantly with depth at this location. Include the additional soil boring at location EP1-6 as part of the investigation and provide a figure depicting the soil boring location in the investigation report.

Comment 5

In Section 5.2.1 (Soil Sample Collection Procedures), page 21, paragraph 2, the Permittee states that "[d]iscrete samples will be collected from the background soil boring from both a sand matrix and from a clay matrix, where possible. If only one type of soil is present with a background soil boring, then one sample will be collected from the upper 5 feet of soil and one sample will be collected from the 5 to 10 foot interval." The Permittee must attempt to collect representative soil samples from the fine grained soil matrices that do not contain a large portion of organic material.

Comment 6

In Section 5.2.2 (Soil Analytical Methods), page 22, bullet 3, the Permittee states that they will analyze the soil samples for RCRA 8 metals by methods 6010 and 7471. In addition to RCRA 8 metals analysis, the Permittee must also include analysis of priority pollutant metals to comply with OCD requirements.

Comment 7

In Figures 1 (Site Location Map), 2 (Evaporation Ponds) and all figures in Appendix A (Updated Lithologic Cross-Sections and Presentation of Analytical Data on Cross-Sections), the Permittee uses the incorrect title, "Evaporation Ponds Phase III CAI Report." In future work plans and reports, ensure the titles of each figure reference the subject work plan or report. No revision necessary.

The Permittee must incorporate and address all comments in this Approval with Modifications. The replacement page in Comment 4a must be submitted to NMED by **September 21, 2012**. The Permittee must submit the Investigation Report to NMED by **April 19, 2013**.

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

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
L. Tsinnajinnie, NMED HWB
J. Lackey, NRC
M. Holder, NRC
P. Krueger, Arcadis
K. Schnebele, Arcadis
C. Chavez, EMNRD OCD

File: Reading File and NRC 2012, HWB-NRC-11-007

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

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

DAVE MARTIN
Cabinet Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 19, 2011

Darrell Moore
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211-0159

RE: APPROVAL WITH MODIFICATIONS
EVAPORATION PONDS PHASE III CORRECTIVE ACTION
INVESTIGATION WORK PLAN
NAVAJO REFINING COMPANY, ARTESIA REFINERY
EPA ID #: NMD048918817
HWB-NRC-10-003

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has completed its review of Navajo Refining Company's Artesia Refinery (Permittee) *Evaporation Ponds Phase III Corrective Action Investigation Work Plan* (Work Plan) dated February 2010. This document was submitted in response to NMED's September 3, 2009 Notice of Disapproval to the *Evaporation Ponds Additional Corrective Action Investigation Report (Third Revision March 2009)* (NOD). NMED hereby issues this Approval with Modifications, and provides the following comments. The Permittee must implement the Work Plan, as modified by the comments in this letter.

General Comments

1. Work completed prior to NMED approval:

NMED Comment: The Work Plan indicates the Permittee has already completed or nearly completed the proposed work. Any work conducted without NMED approval is ill advised, as NMED could provide direction to conduct different or additional work, or require the Permittee

to "undo" the unapproved work. Additional investigation activities may be required upon review of the Investigation Report.

2. Well Identification:

NMED Comment: The Permittee references wells but seldom identifies the wells being referenced. For example, Section 3.2.4.2 (Valley Fill Aquifer) and Section 5.2 (Groundwater Sample Collection from Deeper Wells), all reference monitoring wells but the well locations are not identified. No revision is necessary, however; future documents must identify well locations by name when being referenced. See also Specific Comment 8 and 12.

Specific Comments

3. Executive Summary, page ix and x:

Permittee Statement: "[t]he data obtained during these activities will be summarized and reported to NMED in a status report, along with a recommendation for installation of additional wells or a recommendation that no additional delineation is warranted. Any other recommendations for additional activities will be made based upon the results obtained and will be included in the status report...[t]he Phase III Corrective Action Investigation Report will summarize the actual activities performed and the data obtained along with recommendations for future monitoring or corrective actions. This report will be submitted within 150 days after completion of installation and sampling of additional wells, if such is warranted based on the results of this investigation. If additional wells are not warranted, then the report will be submitted within 120 days of the status report described above."

NMED Comment: NMED cannot evaluate additional activities until an Investigation Report has been submitted and reviewed. The Permittee must submit an Investigation Report rather than a Status Report. If the Permittee determines additional monitoring wells are necessary, information on these wells must be included in the recommendations section of the Investigation Report. Upon review of the Investigation Report, NMED will determine if a separate work plan will be required for the installation of additional wells. See also Specific Comment 14.

4. Section 2 (Background):

NMED Comment: The Permittee summarizes historical investigations that have been conducted at the Evaporation Ponds. NMED does not agree with all of the conclusions drawn from the investigations (e.g., laboratory contaminants and contaminants resulting from stainless steel wells). No revision is necessary.

5. Section 3.2.1 (Site Lithology), page 17:

Permittee Statement: "[a]s shown in Figures 5 through 8, there are several areas where the shallow soil consists of stained sediment. These areas are concentrated near the areas where discharge formerly occurred and within EP1."

NMED Comment: Figures 5 through 8 do not indicate areas where stained sediment is present; they include cross sections at the Evaporation Ponds. This statement appears to be a typographical error; shallow soils contaminants are provided in Figures 9 through 12. No revision is necessary.

6. Section 3.2.3 (Previously Identified Soil Impacts), page 18:

Permittee Statement: "[t]he CAI and ACAI reports compared the soil analytical results to the soil screening levels that were current as of the date of those reports. NMED updated the soil screening guidance and soil screening levels (SSLs) in December 2009; therefore, the data screening has been updated. The December 2009 SSLs are presented in the columns immediately to the right of each analyte in Table 2. Shallow soil samples (less than 5 ft bgs) were compared to the Residential SSL while the deeper soil samples (greater than 5 ft bgs) were compared to the SSL for a dilution/attenuation factor (DAF) of 20 (DAF20)."

NMED Comment: It is not clear why soil samples collected from 0-5 feet were compared to the residential scenario and samples collected from greater than five feet were compared to the Dilution Attenuation Factor 20 (DAF20). The residential scenario applies to soils from the surface to a depth of 10 to 15 feet below ground surface (bgs). It is also not clear why the DAF20 was applied; these values are used where there is a greater degree of dilution and attenuation of contaminants along the migration flowpath and for contaminants not in direct contact with groundwater. A DAF1 is more appropriate because contamination in some locations at the Evaporation Ponds is in direct contact with groundwater. In this case, NMED disagrees with the application of the New Mexico Soil Screening Levels (NM SSLs). In the Investigation Report, the Permittee must use the residential and the DAF1 screening levels for comparison purposes.

7. Section 3.2.4.1 (Shallow Saturated Zone), page 20, bullet two:

Permittee Statement: "[i]f no WQS or MCL value was available, the tap water screening level found in NMED SSG Table A-1, as updated December 2009, was used, if available."

NMED Comment: If a Water Quality Standard (WQS), a Maximum Contaminant Level (MCL), or a tap water screening level does not exist, the Permittee must apply the EPA Regional

Screening Levels (RSL) for tap water as indicated in Section 4.1.1.a, item 2 of the Post Closure Care Permit. No revision is necessary.

8. Section 3.2.4.2 (Valley Fill Aquifer), page 22:

Permittee Statement: "[w]ells completed in the underlying valley fill alluvium were sampled in 1994 and 1995 and the results were presented in the Phase III RFI report. Groundwater samples from these wells were analyzed for VOCs and SVOCs as well as for metals. Tables 4-6 and 4-7 of the Phase III RFI report summarized the results of the Phase III RFI sampling event and are included in Appendix A of this Work Plan."

NMED Comment: Future documents must identify the well locations being addressed in the text and in a referenced figure, or reference the Section where the wells are identified. In addition, many conclusions drawn in this section are based on data collected in 1994 and 1995. The same conclusions may not be appropriate using data from 2010. No revision is necessary. See also General Comment 2 and Specific Comment 12.

9. Section 4.3.1 (Evaluation of Communication Between Shallow Saturated Zone Groundwater and Pecos River, page 24:

Permittee Statement: "[t]he elevation of surface water in the river will be measured at the same time that the water levels are measured in the existing groundwater wells during the first semiannual groundwater monitoring event. That monitoring event is scheduled to occur in March or April 2010."

NMED Comment: The Investigation Report must include a detailed discussion of the Pecos River (e.g., flow rate, ephemeral or perennial, depth and width of the river, proximity to the evaporation ponds). In addition, during the first year, the surface water-elevation of the river must be measured in conjunction with both semi-annual groundwater monitoring events; the measurement methodology must be described.

10. Section 4.3.3 (Evaluation of DRO Concentrations in Groundwater), page 26:

Permittee Statement: "[g]roundwater samples have been analyzed for DRO using Method 8015 Modified. This method measures the concentration of all organic hydrocarbon compounds, including petroleum hydrocarbons and biogenic material that may be present in groundwater. In order to determine if the DRO concentrations reported in samples collected from downgradient wells actually represent the presence of petroleum hydrocarbons in that area, a rigorous review of the analytical data will be performed. Specifically, the chromatograms from the laboratory analyses of DRO from both the shallow and the deeper wells will be requested for all samples

collected during the first semiannual sampling event in 2010. The chromatograms will be reviewed to determine if the reported concentrations include biogenic compounds or other non-petroleum hydrocarbons.

"In the event that the review of the chromatograms indicates that the reported concentrations of DRO in downgradient wells accurately reflect petroleum hydrocarbon impacts, further evaluation of the petroleum hydrocarbons will be performed to determine an appropriate risk-based screening level.

"In the event that the review of the chromatograms indicates that the reported concentrations of DRO in downgradient wells include non-petroleum hydrocarbon compounds, additional evaluation procedures will be proposed to determine the concentrations of petroleum hydrocarbons present in the groundwater downgradiant from the EPs."

NMED Comment: This evaluation is further discussed in Section 5.3 (Evaluation of DRO Concentrations in Groundwater), page 30. Address the following in the Investigation Report:

a. Explain how biogenic compounds (non-petroleum hydrocarbons) can be identified from reviewing chromatograms.

b. Explain how it will be determined that the biogenic material is not the result of the degradation of hydrocarbons.

c. Since there is known hydrocarbon contamination, including the presence of separate-phase hydrocarbons at the Evaporation Ponds, explain the purpose of this study.

11. Section 4.3.4 (Evaluation of Arsenic Concentrations in Groundwater), page 26-27:

Permittee Statement: "[i]n order to evaluate whether the arsenic concentrations present in groundwater are due to dissolved arsenic or the presence of naturally occurring colloidal matter, groundwater samples collection from the wells in the EP area will be collected using low-flow purging and sampling techniques. This method should reduce agitation of groundwater during the purging process and reduce suspended solid matter.

"To further evaluate the amount of arsenic present in groundwater from colloidal matter, samples from five wells will be evaluated using field filtration. The selected wells include two wells with known hydrocarbon impacts (MW-83 inside EP1 and MW-78 inside EP2) and the three most downgradient wells (MW-10, MW-18A, and MW-70). Three sets of samples will be collected: one set will be unfiltered, one set will be field filtered using a 0.45 micron filter, and one set will

be field filtered using a 0.1 micron filter. The 0.45 micron filter is the specified size for filtered samples discussed in the guidance document published by NMED. However, 0.1 micron filters can be used to determine if there are arsenic species that pass through a 0.45 micron filter yet are not truly dissolved. Therefore, ARCADIS recommends an evaluation using both sizes of filters. All three sets of samples from each of these five wells will be analyzed of arsenic using Method 6020. The resulting concentrations will be reviewed and evaluated to develop an understanding of the arsenic distribution in groundwater."

NMED Comment: This is also discussed in further detail in Section 5.4 (Evaluation of Arsenic Concentrations in Groundwater). In the Investigation Report, clearly explain and demonstrate how the comparison of filtered and unfiltered water samples will help determine if detected arsenic concentrations are from background or are related to refinery operations without conducting a background study. Pending the results of this comparison, a background study may need to be conducted.

12. Section 5.2 (Groundwater Sample Collection from Deeper Wells), page 28; Section 7 (Schedule), bullet 6, page 38:

Permittee Statement: "[g]roundwater samples will be collected from 11 monitoring wells completed in the deeper valley fill alluvium during the first semiannual groundwater monitoring event of 2010" and "[c]ollection of filtered samples from five selected wells..."

NMED Comment: The Investigation Report and future documents must identify the well locations by name, or reference the section that lists the wells by name (e.g., groundwater samples will be collected from the eleven wells identified in Section 4.3.2 (Groundwater Sample Collection from Deeper Wells) during the first semiannual...). See General Comment 2 and Specific Comment 8.

13. Section 4.3.2 (Groundwater Sample Collection from Deeper Wells), page 25 and Section 5.2 (Ground Sample Collection from Deeper Wells), page 28-29:

NMED Comment: The Permittee discusses the collection of groundwater samples from 11 wells and lists the proposed chemical analyses. Comment 4, item c of NMED's September 3, 2009 NOD listed the required analyses for groundwater samples. The Permittee did not include the analysis of major cations/anions (e.g., Ca, Mg, K, Na, Cl, F, sulfates), total dissolved solids, nitrite/nitrate, methane, alkalinity, dissolved iron, and manganese as previously required by NMED. NMED acknowledges that during the meeting in January 2010, it was discussed that not all the information requested in the September 2009 NOD was appropriate; however, chemical analysis was not specifically discussed. The Investigation Report must provide an explanation for omitting the analysis of major cations/anions (e.g., Ca, Mg, K, Na, Cl, F, sulfates), total

dissolved solids, nitrite/nitrate, methane, alkalinity, dissolved iron, and manganese from the 11 wells sampled. The Permittee may be required to conduct additional chemical analysis for samples obtained from these wells in the future.

14. Section 5.3 Evaluation of DRO Concentrations in Groundwater), page 30:

Permittee Statement: "[i]n the event that the review indicates that non-petroleum hydrocarbons are present in the samples, alternatives will be evaluated for a more accurate evaluation of the sample concentrations. These alternatives will be described in a status report and discussed with NMED prior to implementation."

NMED Comment: The alternatives must be described in the Investigation Report. See Specific Comment 3.

15. Section 5.5 (Optional Installation of Additional Groundwater Monitoring Wells), page 31:

Permittee Statement: "[i]n the event that the review of DRO or arsenic concentrations indicates that the true extent of impacts of either of these compounds emanating from the EPs has not been defined in the downgradient direction, additional groundwater wells may be installed. The location and depth of the additional wells, if necessary, will be proposed in a status report submitted to NMED.

"The optional additional wells will not be installed until NMED concurrence on the location and depth of these wells has been obtained. This subsection provides the well installation procedures in the event that a determination is made to install additional wells."

NMED Comment:

a. If the Permittee determines that additional monitoring wells are necessary, the rationale and proposed installation and drilling methods must be presented in a work plan and not a status report.

b. NMED does not pre-approve well installation activities prior to knowing if wells will be installed. For example, it is unknown if additional monitoring wells will be needed and Sections 5.5 (Optional Installation of Additional Groundwater Monitoring Wells), 5.5.1 (Drilling Methods), 5.5.2 (Well Construction), 5.5.3 (Well Development), 5.5.4 (Groundwater Sampling), 5.5.5 (Analytical Methods), 5.5.6 (Quality Assurance, Quality Control Samples), and 5.5.7 (Decontamination

Procedures and Investigation Derived Wastes) all discuss activities that will occur only if it is determined that additional wells are necessary.

c. NMED does not approve Sections 5.5 through Section 5.5.7 because they pertain to activities that may not occur, or may change if additional wells are needed.

d. The need for additional wells must be discussed and recommended in the Investigation Report.

16. Section 7 (Schedule), page 39:

Permittee Statement: "[t]he data obtained during these activities will be summarized and reported to NMED in a status report, along with a recommendation for installation of additional wells or a recommendation that no additional delineation is warranted. Any other recommendations for additional activities will be made based upon the results obtained and will be included in the status report. In the event that additional well installation is recommended, the additional wells will be installed within 90 days of receipt of concurrence from NMED on the locations and depths of those wells. The Phase III Corrective Action Investigation Report will summarize the actual activities performed and the data obtained along with recommendations for future monitoring or corrective actions. This report will be submitted within 150 days after completion of installation and sampling of additional wells, if such is warranted based on the results of this investigation. If additional wells are not warranted, then the report will be submitted within 120 days of the status report described above."

NMED Comment: Upon completion of all activities outlined in this Work Plan, an Investigation Report not a status report must be submitted. NMED will notify the Permittee in writing of further required corrective action.

17. Table 2 (Summary of Soil Analytical Data From Corrective Action Investigation and Additional Corrective Action Investigation):

NMED Comment: In Table 2 (Summary of Soil Analytical Data From Corrective Action Investigation and Additional Corrective Action Investigation), some of the standards are incorrect (e.g. residential standard for arsenic is 3.90 mg/kg and ethylbenzene is 69,700 µg/l; the table indicates 3.59 mg/kg and 69,600 µg/L, respectively). No revision is necessary; however, the Permittee must take note of these typographical errors and take care to correct them in future documents.

18. Table 3 (Summary of Groundwater Analytical Data Evaporation Pond Wells from 2004 to 2009):

NMED Comment: Table 3 does not include groundwater standards for some constituents where a standard exists (e.g., antimony, beryllium, 2-butanone (MEK)). No revision is necessary; however, standards must be included in future documents.

19. Figures:

NMED Comment: In the Figures section, some figures include action levels that are incorrectly denoted. For example, Figure 10 (Ethylbenzene Concentrations In Shallow Soil (<5 Feet BGS)) includes an action level for ethylbenzene at 69,600 µg/kg; the action level is 69,700 µg/kg. No revision is necessary.

20. Appendix B (Trend Plots for Select COCs in Shallow Saturated Zone Wells):

NMED Comment: The trend plots include data for OCD-8. It is not clear if the data are for OCD-8A or OCD-8B, as there is no well OCD-8. No revision is necessary; however, if the trend plots are included in the Investigation Report, this error must be corrected.

The Permittee must submit an Investigation Report to NMED on or before April 18, 2011. Upon review of the Investigation Report, additional investigation at the evaporation ponds may be required.

If you have any questions regarding this letter please contact Hope Monzeglio of my staff at (505) 476-6045.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED HWB
D. Cobrain, NMED HWB
H. Monzeglio, NMED HWB
C. Chavez, OCD
J. Lackey, NRC
P. Krueger, ARCADIS
File: Reading and NRC 2011
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