

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 12-1-14

Well information:

Operator WPX, Well Name and Number S Chaco Unit # 342H

API# 30-43-21243, Section 2, Township 22 NS, Range 7 EW

Conditions of Approval:

(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☒ Hold C-104 for NSL, NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.



NMOCD Approved by Signature

4-2-2015

Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DEC 05 2014

FORM APPROVED
OMB No. 1004-0136
Expires January 31, 2004

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. N0-G-1312-1814
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator WPX Energy Production, LLC		7. If Unit or CA Agreement, Name and No. CA 133321X
3a. Address P.O. Box 640 Aztec, NM 87410	3b. Phone No. (include area code) (505) 333-1849	8. Lease Name and Well No. S Chaco UT #342H
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 1327' FNL & 200' FEL, sec 2, T22N, R7W At proposed prod. zone 2332' FNL & 240' FEL, sec 1, T22N, R7W		9. API Well No. 30-043-21243
10. Field and Pool, or Exploratory Lybrook Gallup Pool		11. Sec., T., R., M., or Blk. and Survey or Area SHL: Section 2, T22N, R7W BHL: Section 1, T22N, R7W
14. Distance in miles and direction from nearest town or post office* approximately 4 miles east of Lybrook, New Mexico		12. County or Parish Sandoval
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 200'		13. State NM
16. No. of Acres in lease 1,282 160.16	17. Spacing Unit dedicated to this well 320.64 320 acres N2, Sec1, T22N, R7W	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 22'	19. Proposed Depth 10,467' MD / 5,252' TVD	20. BLM/BIA Bond No. on file UTB000178 B001576
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7034' GR	22. Approximate date work will start* February 1, 2015	23. Estimated duration 1 month

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- | | |
|--|--|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUP shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) Andrea Felix	Date 12-1-14
Title Regulatory Specialist		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 3/16/15
Title AFM	Office FEB	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*(Instructions on reverse)

WPX Energy Production, LLC, proposes to develop the South Chaco UT / Lybrook Gallup pool at the above described location in accordance with the attached drilling and surface use plans.

The well pad surface is on lease on Indian Allotted surface and is co-located with the S Chaco UT #343H, 346H, 347H.

This location has been archaeologically surveyed by Western Cultural Resource Management, Inc. Copies of their report have been submitted directly to the BLM and Navajo Nation Historic Preservation Department.

New access road is approximately 1,299.96' on lease on Indian Allotted surface.

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

DRILLING OPERATIONS AUTHORIZED
ARE SUBJECT TO COMPLIANCE WITH
ATTACHED "GENERAL REQUIREMENTS"

NMOCDF

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, N.M. 87505
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, N.M. 87505

Form C-102

Revised August 1, 2011

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30.043-21243	² Pool Code 42289	³ Pool Name LYBROOK GALLUP
⁴ Property Code 314331	⁵ Property Name S CHACO UT	⁶ Well Number 342H
⁷ GRID No. 120782	⁸ Operator Name WPX ENERGY PRODUCTION, LLC	⁹ Elevation 7034

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	2	22 N	7 W	LOT 1	1327	NORTH	200	EAST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	1	22 N	7 W		2332	NORTH	240	EAST	SANDOVAL

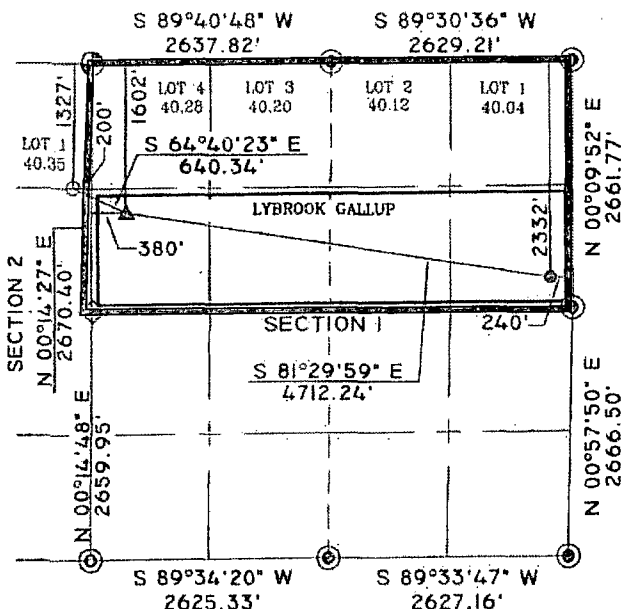
¹² Dedicated Acres 320.64 NZCM 320 ACRES S 1/2 N 1/2 - SECTION 1	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

¹⁶

LEGEND:

- = SURFACE LOCATION
- ⊕ = FOUND 1947 U.S.G.L.O. BRASS CAP
- ▲ = LANDING POINT
- ⊙ = FOUND 1/2" REBAR
- ⊗ = FOUND 1948 U.S.G.L.O. BRASS CAP



NOTE:
BEARINGS & DISTANCES SHOWN ARE REFERENCED TO
NEW MEXICO STATE PLANE, WEST ZONE, NAD 83.

¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Andrea Felix* Date: *12-1-14*
Printed Name: *Andrea Felix*
E-mail Address: *andrea.felix@wpxenergy.com*

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge.

REV 3

03/25/2014

Date of Survey

Signature and Title of Professional Surveyor:

14831

Certificate Number

United Field Services, Inc. 11-25-2014

3/18/15
e-mail to Andrea Felix re: discrepancy in E/O-1415 offset C-102 vs.
planning report.
3/19/15 Plan was changed but no sondry was submitted, Able for sondry
3/30/15 Change of plan received.

WPXENERGY.**WPX ENERGY****Operations Plan**

(Note: This procedure will be adjusted on site based upon actual conditions)

DATE: 10/27/2014 **FIELD:** LYBROOK GALLUP
WELL NAME: S Chaco UT #342H **SURFACE:** India Allotted
SH Location: NENE Sec 2 -22N -07W **ELEVATION:** 7034' GR
BH Location: NWNW Sec 2 -22N -07W **MINERALS:** Indian Allotted
 Sandoval CO., NM
MEASURED DEPTH: 10,467 **LEASE #:** N0-G-1312-1814

I. GEOLOGY: Surface formation – Nacimiento

A. FORMATION TOPS: (KB)

Name	MD	TVD	Name	MD	TVD
Ojo Alamo	1071	1068	Point Lookout	4070	4033
Kirtland	1315	1310	Mancos	4243	4205
Picture Cliffs	1651	1642	Kickoff Point	4685	4644
Lewis	1739	1729	Top Target	5513	5263
Chacra	1977	1964	Landing Point	5753	5311
Cliff House	3162	3136	Base Target	5753	5311
Menefee	3210	3183			
			TD	10467	5252

- B. MUD LOGGING PROGRAM:** Mudlogger on location from surface csg to TD.
C. LOGGING PROGRAM: LWD GR from surface casing to TD.
D. NATURAL GAUGES: Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. DRILLING

- A. MUD PROGRAM:** LSND mud (WBM) will be used to drill the 12-1/4" Surface hole, the 8 3/4" Directional Vertical hole, and the curve portion of the wellbore. A LSND (WBM) or (OBM) will be used to drill the lateral portion of well. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.
- B. BOP TESTING:** While drill pipe is in use, the pipe rams and the blind rams will be function tested once each trip. The anticipated reservoir is expected to be less than 1300 psi, so the BOPE will be tested to **250 psi (Low) for 5 minutes and 1500 psi (High) for 10 minutes**. Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. **All tests and inspections will be recorded in the tour book as to time and results.**

NOTE: Vertical portion of the well (8-3/4 in.) will be directionally drilled as per attached Directional Plan to +/- 4,685' (MD) / 4,644' (TVD). Curve portion of wellbore will be drilled and landed at +/- 90 deg. at +/- 5,753' (MD) / 5,311' (TVD). 7 in. csg will be set at this point. A 6-1/8" Lateral will be drilled as per the attached Directional Plan to +/- 10,467' (MD) / 5,252' (TVD). Will run 4-1/2 in. Production Liner from +/- 5,603 ft. to TD and cemented. Liner will be tied back to surface w / 4-1/2" Casing for stimulation / testing, then removed from the well.

III. MATERIALS**A. CASING PROGRAM:**

CASING TYPE	OH SIZE (IN)	DEPTH (MD) (FT)	CASING SIZE (IN)	WEIGHT(LB)	GRADE
Surface	12.25"	400'+	9.625"	36#	J-55
Intermediate	8.75"	5,753'	7"	23#	K-55
Prod. Liner	6.125"	5,603 - 10,467'	4-1/2"	11.6#	N-80
Tie-Back String	N/A	Surf. - 5,603'	4-1/2"	11.6#	N-80

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing.
2. INTERMEDIATE CASING: 7" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,700 ft., 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft.
3. PRODUCTION LINER: Run 4-1/2" Liner with cement nose guide Float Shoe + 2jts. of 4-1/2" casing + Landing Collar + 4-1/2" pup joint + 1 RSI (Sliding Sleeve) positioned inside the 330ft Hard line. Centralizer program will be determined by Wellbore condition and when Lateral is evaluated by Geoscientists and Reservoir Engineers. Set seals on Liner Hanger. Test TOL to 1500 psi for 15 minutes.
4. TIE-BACK CASING: None

C. CEMENTING:

(Note: Volumes may be adjusted onsite due to actual conditions)

1. SURFACE: 10 bbl Fr Water Spacer + 190 sx (222.3 cu.ft.) of "Premium Cement" + 2% Calcium Chloride Cement + 0.125# pps of Poly-E-Flake, 15.8 #/gal (1.17 cu ft./sk, Vol 39.58 Bbls.). The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 600psi. Total Volume: (222.3 cu-ft/190 sx/39.6 Bbls). TOC at Surface.
2. INTERMEDIATE: 20 bbl (112 cu-ft) Mud Flush III spacer + Lead: +/- 700 sx Foamed 50/50 Poz Cement. 13.0 ppg + 0.1% Halad 766 + 0.2% Versaset + 1.5% Chem-Foamer 760 (Yield :1.43 cu-ft/ sk. / Vol: 1216 cu-ft / 216.5 Bbls.) + TAIL: 100 sx 13.5 #/gal. + 0.2% Versaset + 0.15% HALAD-766 (Yield: 1.28 cu-ft / sk / Vol: 128 cu-ft / 22.8 Bbls.). + Fresh Water Displacement (1,362 cu-ft / +/- 242 Bbls) + 100 sx Top-Out Cement Premium: Yield: (1.17 cu-ft/ sk / (Vol: 117 cu-ft / 20.8 Bbls). Test Casing to 1500 PSI for 30 minutes. Total Cement Volume: (1050 sx / 1461 cu-ft / 260 bbls). Mix with +/- 84,000 SCF Nitrogen. TOC at surface.
3. PRODUCTION LINER: **STAGE 1**: 10 bbl (56 cu-ft) Fr Water Spacer. **STAGE 2**: 40 bbl 9.5 ppg (224.6 cu-ft) Tuned Spacer III + 0.5 gal/bbl Musol + 38.75 ppb Barite + 0.5 gal/bbl SEM-7. **STAGE 3**: 10 bbl Fr Water Spacer. **STAGE 4: Lead Cement**: 50 / 50 Poz Premium + 0.2% Versaset + 0.2% Halad -766, Yield 1.43 cu ft/sk, 13.0 ppg, (10 sx / 14.3 cu ft. / 2.5 bbls). **STAGE 5**: 200 sx. Foamed Lead Cement: 50 / 50 Poz Standard + 0.2% Versaset + 0.2% HALAD-766 + 1.5% Chem-Foamer 760. Yield 1.97 cu-ft/sk. 13.0 ppg (200 sx / 394 cu-ft. / 70.2 bbls.). **STAGE 6**: Tail Cement : 100 sx. 50/50 Poz Standard + 0.2% Versaset + 0.05% HALAD-766 + .05% SA-1015, Weight: 13.5 ppg (100 sx / Yield 1.28 cu ft/sk. / 128 cu ft. / 22.8 bbls) **STAGE 7**: Displace w/ +/- 137 bbl Fr Water. Total Cement (536.3 cu ft / 95.5 bbls). Mix Foamed Cement w/ +/- 75,000 SCF Nitrogen. Est. TOC +/- 5,644 ft.

IV. COMPLETION

A. CBL

1. Run CCL for perforating.

B. PRESSURE TEST

1. Pressure test 4-1/2" casing to 4500 psi max, hold at 1500 psi for 30 minutes. Increase pressure to Open RSI sleeves.

C. STIMULATION

1. Stimulate with approximately 2,805,000# 20/40 mesh sand and 340,000# 16/30 mesh sand in 619,113 gallons water with 42,696 mscf N2 for 17 stages.
2. Isolate stages with flow through frac plug.
3. Drill out frac plugs and flowback lateral.

D. RUNNING TUBING

1. Production Tubing: Run 2-7/8", 6.5#, J-55, EUE tubing with a SN on top of bottom joint. Land tubing near Top of Liner point of curve (~5,800' MD).

- Although this horizontal well will be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 B(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 B(2) NMAC, 19.15.16.15 B(2) NMAC, and 19.15.16.15 B(4) NMAC.

NOTE:

Installation of RSI sleeves at Toe of Lateral.

Proposed Operations:

A 4-1/2" 11.6# N-80 Liner will be run to TD and landed +/- 150 ft. into the 7" 23# K-55 Intermediate casing (set at 6,094 ft. MD) with a Liner Hanger and pack-off assembly then cemented to +/- 300 ft above the liner hanger. TOL will be +/- 5,944 ft. (MD) +/- 78 degree angle. TOC: +/- 5,644 ft. (MD).

After cementing and TOL clean up operations are complete, the TOL will be tested to 1500 psi (per BLM).

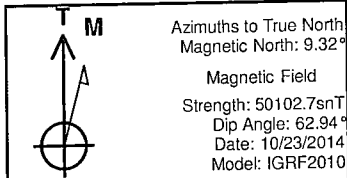
A 4-1/2" 11.6# N-80 tie-back string with seal assembly will be run and stung into the PBR of the liner hanger, tested to 1500 PSI and hung off at the surface.

The Drilling Rig will be rigged down at this point and Completion operations will begin. After Stimulation and Testing operations are complete the 4-1/2" tie-back string will be removed from the well.

Note: Changes to formation tops, casing landing points, well TD and Directional Plan.



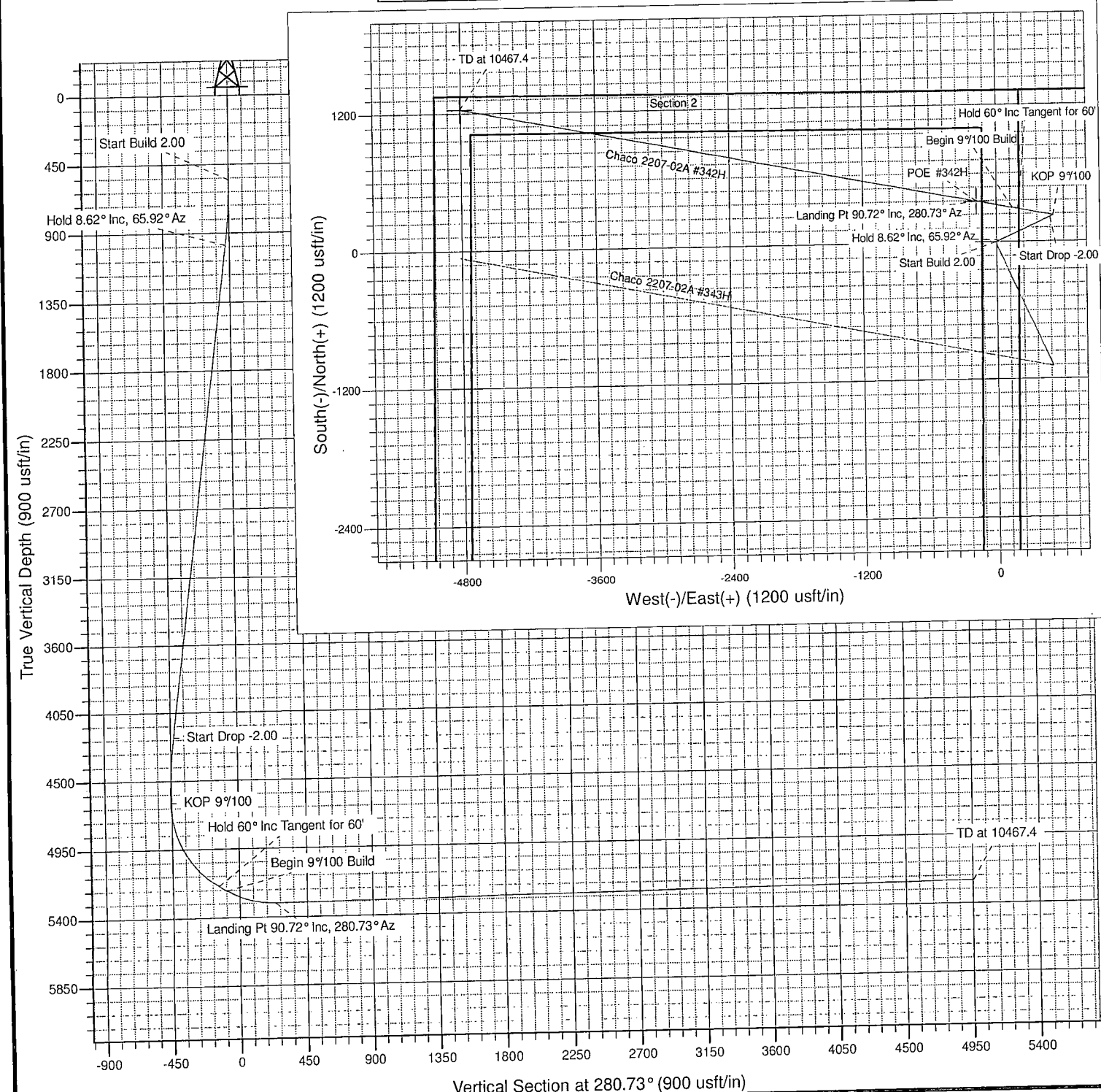
Well Name: Chaco 2207-02A #342H
 Surface Location: Chaco 2207-02A
 NAD 1927 (NADCON CONUS) , US State Plane 1927 (Exact solution) New Mexico Central 3002
 Ground Elevation: 7034.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1884349.23 120572.79 36.172052 -107.535526 342H
 WELL @ 7048.0usft (Original Well Elev)



Project: SJ 02-22N-R07W
 Site: Chaco 2207-02A
 Well: Chaco 2207-02A #342H
 Design #1 23Oct14 kjs

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation	
550.0	550.0	0.00	0.00	0.0	0.0	0.0	0.0	Start Build 2.00	
979.5	981.1	8.62	65.92	13.2	29.6	-26.6	32.4	Hold 8.62° Inc, 65.92° Az	
4214.9	4253.5	8.62	65.92	213.4	477.4	-429.4	523.0	Start Drop -2.00	
4644.4	4684.6	0.00	0.00	226.6	507.0	-455.9	555.3	KOP 9°/100	
5195.7	5351.3	60.00	280.73	285.9	194.3	-137.6	873.6	Hold 60° Inc Tangent for 60'	
5225.7	5411.3	60.00	280.73	295.5	143.2	-85.7	925.6	Begin 9°/100 Build	
5311.0	5752.6	90.72	280.73	356.3	-177.4	240.6	1251.9	Landing Pt 90.72° Inc, 280.73° Az	
5252.0	10467.4	90.72	280.73	1234.4	-4809.3	4955.0	5966.3	TD at 10467.4	

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
TD / PBHL #342H	5252.0	1234.4	-4809.3	1885647.17	115780.28	36.175442	-107.551819
POE #342H	5311.0	356.3	-177.4	1884707.81	120400.15	36.173031	-107.536127





SAN JUAN BASIN

SJ 02-22N-R07W

Chaco 2207-02A

Chaco 2207-02A #342H - Slot 342H

Wellbore #1

Plan: Design #1 23Oct14 kjs

Standard Planning Report - Geographic

23 October, 2014

Database:	COMPASS-SANJUAN	Local Co-ordinate Reference:	Well Chaco 2207-02A #342H - Slot 342H
Company:	SAN JUAN BASIN	TVD Reference:	WELL @ 7048.0usft (Original Well Elev)
Project:	SJ 02-22N-R07W	MD Reference:	WELL @ 7048.0usft (Original Well Elev)
Site:	Chaco 2207-02A	North Reference:	True
Well:	Chaco 2207-02A #342H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 23Oct14 kjs		

Project	SJ 02-22N-R07W, Sandoval County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico Central 3002		

Site	Chaco 2207-02A		
Site Position:		Northing:	1,884,327.24 usft
From:	Map	Easting:	120,572.38 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in
		Latitude:	36.171992
		Longitude:	-107.535527
		Grid Convergence:	-0.76 °

Well	Chaco 2207-02A #342H - Slot 342H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	36.172052
		Longitude:	-107.535526
		Ground Level:	7,034.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	10/23/2014	9.32
			Dip Angle
			(°)
			Field Strength
			(nT)
			50,103

Design	Design #1 23Oct14 kjs		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			280.73

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
550.0	0.00	0.00	550.0	0.0	0.0	0.00	0.00	0.00	0.00	
981.1	8.62	65.92	979.5	13.2	29.6	2.00	2.00	0.00	65.92	
4,253.5	8.62	65.92	4,214.9	213.4	477.4	0.00	0.00	0.00	0.00	
4,684.6	0.00	0.00	4,644.4	226.6	507.0	2.00	-2.00	0.00	180.00	
5,351.3	60.00	280.73	5,195.7	285.9	194.3	9.00	9.00	0.00	280.73	
5,411.3	60.00	280.73	5,225.7	295.5	143.2	0.00	0.00	0.00	0.00	
5,752.6	90.72	280.73	5,311.0	356.3	-177.4	9.00	9.00	0.00	0.01	
10,467.4	90.72	280.73	5,252.0	1,234.4	-4,809.3	0.00	0.00	0.00	0.00	TD / PBHL #342H

Database:	COMPASS-SANJUAN	Local Co-ordinate Reference:	Well Chaco 2207-02A #342H - Slot 342H
Company:	SAN JUAN BASIN	TVD Reference:	WELL @ 7048.0usft (Original Well Elev)
Project:	SJ 02-22N-R07W	MD Reference:	WELL @ 7048.0usft (Original Well Elev)
Site:	Chaco 2207-02A	North Reference:	True
Well:	Chaco 2207-02A #342H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 23Oct14 kjs		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,884,349.23	120,572.79	36.172052	-107.535526
200.0	0.00	0.00	200.0	0.0	0.0	1,884,349.23	120,572.79	36.172052	-107.535526
400.0	0.00	0.00	400.0	0.0	0.0	1,884,349.23	120,572.79	36.172052	-107.535526
550.0	0.00	0.00	550.0	0.0	0.0	1,884,349.23	120,572.79	36.172052	-107.535526
Start Build 2.00									
600.0	1.00	65.92	600.0	0.2	0.4	1,884,349.40	120,573.19	36.172053	-107.535525
800.0	5.00	65.92	799.7	4.4	10.0	1,884,353.55	120,582.80	36.172065	-107.535493
981.1	8.62	65.92	979.5	13.2	29.6	1,884,362.05	120,602.52	36.172089	-107.535426
Hold 8.62° Inc, 65.92° Az									
1,000.0	8.62	65.92	998.2	14.4	32.1	1,884,363.17	120,605.12	36.172092	-107.535417
1,200.0	8.62	65.92	1,195.9	26.6	59.5	1,884,375.04	120,632.66	36.172126	-107.535325
1,400.0	8.62	65.92	1,393.6	38.8	86.9	1,884,386.91	120,660.19	36.172159	-107.535232
1,600.0	8.62	65.92	1,591.4	51.1	114.3	1,884,398.78	120,687.72	36.172193	-107.535139
1,800.0	8.62	65.92	1,789.1	63.3	141.6	1,884,410.65	120,715.25	36.172226	-107.535047
2,000.0	8.62	65.92	1,986.9	75.5	169.0	1,884,422.52	120,742.79	36.172260	-107.534954
2,200.0	8.62	65.92	2,184.6	87.8	196.4	1,884,434.39	120,770.32	36.172294	-107.534861
2,400.0	8.62	65.92	2,382.3	100.0	223.8	1,884,446.26	120,797.85	36.172327	-107.534768
2,600.0	8.62	65.92	2,580.1	112.2	251.1	1,884,458.13	120,825.39	36.172361	-107.534676
2,800.0	8.62	65.92	2,777.8	124.5	278.5	1,884,470.00	120,852.92	36.172394	-107.534583
3,000.0	8.62	65.92	2,975.6	136.7	305.9	1,884,481.88	120,880.45	36.172428	-107.534490
3,200.0	8.62	65.92	3,173.3	148.9	333.2	1,884,493.75	120,907.98	36.172462	-107.534397
3,400.0	8.62	65.92	3,371.0	161.2	360.6	1,884,505.62	120,935.52	36.172495	-107.534305
3,600.0	8.62	65.92	3,568.8	173.4	388.0	1,884,517.49	120,963.05	36.172529	-107.534212
3,800.0	8.62	65.92	3,766.5	185.6	415.4	1,884,529.36	120,990.58	36.172562	-107.534119
4,000.0	8.62	65.92	3,964.3	197.9	442.7	1,884,541.23	121,018.12	36.172596	-107.534027
4,200.0	8.62	65.92	4,162.0	210.1	470.1	1,884,553.10	121,045.65	36.172630	-107.533934
4,253.5	8.62	65.92	4,214.9	213.4	477.4	1,884,556.28	121,053.02	36.172639	-107.533909
Start Drop -2.00									
4,400.0	5.69	65.92	4,360.2	220.8	494.1	1,884,563.50	121,069.77	36.172659	-107.533853
4,600.0	1.69	65.92	4,559.8	226.1	505.9	1,884,568.60	121,081.60	36.172673	-107.533813
4,684.6	0.00	0.00	4,644.4	226.6	507.0	1,884,569.09	121,082.75	36.172675	-107.533809
KOP 9°/100									
4,800.0	10.38	280.73	4,759.1	228.5	496.8	1,884,571.17	121,072.53	36.172680	-107.533844
5,000.0	28.38	280.73	4,947.0	240.8	431.8	1,884,584.34	121,007.75	36.172714	-107.534064
5,200.0	46.38	280.73	5,105.3	263.4	313.0	1,884,608.42	120,889.25	36.172776	-107.534466
5,351.3	60.00	280.73	5,195.7	285.9	194.3	1,884,632.49	120,770.82	36.172838	-107.534868
Hold 60° Inc Tangent for 60'									
5,400.0	60.00	280.73	5,220.1	293.7	152.8	1,884,640.90	120,729.48	36.172859	-107.535009
5,411.3	60.00	280.73	5,225.7	295.5	143.2	1,884,642.84	120,719.89	36.172864	-107.535041
Begin 9°/100 Build									
5,600.0	76.98	280.73	5,294.7	328.1	-28.7	1,884,677.69	120,548.48	36.172954	-107.535623
5,752.6	90.72	280.73	5,311.0	356.3	-177.4	1,884,707.84	120,400.16	36.173031	-107.536127
Landing Pt 90.72° Inc, 280.73° Az - POE #342H									
5,800.0	90.72	280.73	5,310.4	365.1	-223.9	1,884,717.29	120,353.71	36.173055	-107.536285
6,000.0	90.72	280.73	5,307.9	402.4	-420.4	1,884,757.13	120,157.74	36.173158	-107.536951
6,200.0	90.72	280.73	5,305.4	439.6	-616.9	1,884,796.98	119,961.76	36.173260	-107.537616
6,400.0	90.72	280.73	5,302.9	476.9	-813.4	1,884,836.83	119,765.79	36.173362	-107.538282
6,600.0	90.72	280.73	5,300.4	514.1	-1,009.9	1,884,876.67	119,569.81	36.173465	-107.538947
6,800.0	90.72	280.73	5,297.9	551.4	-1,206.4	1,884,916.52	119,373.84	36.173567	-107.539613
7,000.0	90.72	280.73	5,295.4	588.6	-1,402.8	1,884,956.36	119,177.86	36.173669	-107.540279
7,200.0	90.72	280.73	5,292.9	625.9	-1,599.3	1,884,996.21	118,981.89	36.173771	-107.540944
7,400.0	90.72	280.73	5,290.4	663.1	-1,795.8	1,885,036.06	118,785.91	36.173874	-107.541610
7,600.0	90.72	280.73	5,287.9	700.3	-1,992.3	1,885,075.90	118,589.94	36.173976	-107.542276
7,800.0	90.72	280.73	5,285.4	737.6	-2,188.8	1,885,115.75	118,393.97	36.174078	-107.542941

Database:	COMPASS-SANJUAN	Local Co-ordinate Reference:	Well Chaco 2207-02A #342H - Slot 342H
Company:	SAN JUAN BASIN	TVD Reference:	WELL @ 7048.0usft (Original Well Elev)
Project:	SJ 02-22N-R07W	MD Reference:	WELL @ 7048.0usft (Original Well Elev)
Site:	Chaco 2207-02A	North Reference:	True
Well:	Chaco 2207-02A #342H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1 23Oct14 kjs		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,000.0	90.72	280.73	5,282.9	774.8	-2,385.3	1,885,155.59	118,197.99	36.174181	-107.543607
8,200.0	90.72	280.73	5,280.4	812.1	-2,581.8	1,885,195.44	118,002.02	36.174283	-107.544273
8,400.0	90.72	280.73	5,277.9	849.3	-2,778.2	1,885,235.29	117,806.04	36.174385	-107.544938
8,600.0	90.72	280.73	5,275.4	886.6	-2,974.7	1,885,275.13	117,610.07	36.174487	-107.545604
8,800.0	90.72	280.73	5,272.9	923.8	-3,171.2	1,885,314.98	117,414.09	36.174590	-107.546269
9,000.0	90.72	280.73	5,270.4	961.1	-3,367.7	1,885,354.82	117,218.12	36.174692	-107.546935
9,200.0	90.72	280.73	5,267.9	998.3	-3,564.2	1,885,394.67	117,022.14	36.174794	-107.547601
9,400.0	90.72	280.73	5,265.4	1,035.6	-3,760.7	1,885,434.52	116,826.17	36.174896	-107.548266
9,600.0	90.72	280.73	5,262.8	1,072.8	-3,957.2	1,885,474.36	116,630.19	36.174999	-107.548932
9,800.0	90.72	280.73	5,260.3	1,110.1	-4,153.6	1,885,514.21	116,434.22	36.175101	-107.549598
10,000.0	90.72	280.73	5,257.8	1,147.3	-4,350.1	1,885,554.05	116,238.25	36.175203	-107.550263
10,200.0	90.72	280.73	5,255.3	1,184.6	-4,546.6	1,885,593.90	116,042.27	36.175305	-107.550929
10,400.0	90.72	280.73	5,252.8	1,221.8	-4,743.1	1,885,633.75	115,846.30	36.175407	-107.551595
10,467.4	90.72	280.73	5,252.0	1,234.4	-4,809.3	1,885,647.17	115,780.29	36.175442	-107.551819
TD at 10467.4 - TD / PBHL #342H									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
TD / PBHL #342H	0.00	0.00	5,252.0	1,234.4	-4,809.3	1,885,647.17	115,780.29	36.175442	-107.551819
- plan hits target center									
- Point									
POE #342H	0.00	0.00	5,311.0	356.3	-177.4	1,884,707.82	120,400.16	36.173031	-107.536127
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
550.0	550.0	0.0	0.0	Start Build 2.00
981.1	979.5	13.2	29.6	Hold 8.62° Inc, 65.92° Az
4,253.5	4,214.9	213.4	477.4	Start Drop -2.00
4,684.6	4,644.4	226.6	507.0	KOP 9°/100
5,351.3	5,195.7	285.9	194.3	Hold 60° Inc Tangent for 60'
5,411.3	5,225.7	295.5	143.2	Begin 9°/100 Build
5,752.6	5,311.0	356.3	-177.4	Landing Pt 90.72° Inc, 280.73° Az
10,467.4	5,252.0	1,234.4	-4,809.3	TD at 10467.4

6. If drilling has not been initiated on the well pad within 120 days of the well pad being constructed, the operator will consult with the BLM to address a site-stabilization plan.

D. Production Facilities

1. As practical, access will be a teardrop-shaped road through the production area so that the center may be revegetated.
2. Within 90 days of installation, production facilities would be painted Juniper Green to blend with the natural color of the landscape and would be located, to the extent practical, to reasonably minimize visual impact.
3. Berms will be constructed around all storage facilities sufficient in size to contain the storage capacity of tanks. Berm walls will be compacted with appropriate equipment to assure containment.

After the completion phases and pipeline installation, portions of the project area not needed for operation will be reclaimed. When the well is plugged, final reclamation will occur within the remainder of the project area. Reclamation is described in detail in the Reclamation Plan (Appendix C).

7. Methods for Handling Waste

A. Cuttings

- ✓ 1. Drilling operations will utilize a closed-loop system. Drilling of the horizontal laterals will be accomplished with water-based mud. All cuttings will be placed in roll-off bins and hauled to a commercial disposal facility or land farm. WPX will follow Onshore Oil and Gas Order No. 1 regarding the placement, operation, and removal of closed-loop systems. No blow pit will be used.
2. Closed-loop tanks will be adequately sized for containment of all fluids.

B. Drilling Fluids

1. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical. All residual fluids will be hauled to a commercial disposal facility.

C. Spills

1. Any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site.

D. Sewage

1. Portable toilets will be provided and maintained during construction, as needed (see Figure 4 in Appendix B for the location of toilets).

E. Garbage and other water material

1. Garbage, trash, and other waste materials will be collected in a portable, self-contained, and fully enclosed trash container during drilling and completion

