District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
Revised June 6, 2013

For temporary pits, below-grade tanks, and multi-well fluid management pits, submit to the appropriate NMOCD District Office.
For permanent pits submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

11817

Pit, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action:
- ☐ Below grade tank registration
- ☒ Permit of a pit or proposed alternative method
- ☐ Closure of a pit, below-grade tank, or proposed alternative method
- ☐ Modification to an existing permit/or registration
- ☐ Closure plan only submitted for an existing permitted or non-permitted pit, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.
Operator: **Logos Operating, LLC.** OGRID #: **289408**
Address: 4001 North Butler Ave, Building 7101, Farmington, NM 87401
Facility or well name: **Logos 701H & Logos 702H**
API Number: 30-043-21202 /30-043-21219 OCD Permit Number:
U/L or Qtr/Qtr D Section 08 Township 22N Range 05W County: Sandoval
Center of Proposed Design: Latitude 36.157945°N Longitude 107.391328°W NAD: ☐ 1927 ☒ 1983
Surface Owner: ☐ Federal ☐ State ☐ Private ☒ Tribal Trust or Indian Allotment

2.
☒ **Pit:** Subsection F, G or J of 19.15.17.11 NMAC
Temporary: ☒ Drilling ☐ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A ☐ Multi-Well Fluid Management Low Chloride Drilling Fluid ☒ yes ☐ no
☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other
☐ String-Reinforced
Liner Seams: ☒ Welded ☒ Factory ☐ Other Volume: 23,000 bbl Dimensions: L 150' x W 100' x D 15'

3.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: bbl Type of fluid:
Tank Construction material:
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other
Liner type: Thickness mil ☐ HDPE ☐ PVC ☐ Other

RCVD APR 2'14
OIL CONS. DIV.
DIST. 3

4.
☐ **Alternative Method:**
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

5.
Fencing: Subsection D of 19.15.17.11 NMAC *(Applies to permanent pits, temporary pits, and below-grade tanks)*
☐ Chain link, six feet in height, two strands of barbed wire at top *(Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)*
☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
☒ Alternate. Please specify: 4' hog wire with one strand of barbed wire on top

2c

12.
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H_2S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

13.
Proposed Closure: 19.15.17.13 NMAC
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

Type: ☒ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☐ Permanent Pit ☐ Below-grade Tank ☐ Multi-well Fluid Management Pit ☐ Alternative

Proposed Closure Method: ☐ Waste Excavation and Removal
☐ Waste Removal (Closed-loop systems only)
☒ On-site Closure Method (Only for temporary pits and closed-loop systems)
☒ In-place Burial ☐ On-site Trench Burial
☐ Alternative Closure Method

14.
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

15.
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC
Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 25 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☒ No ☐ NA
Ground water is between 25-50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☒ No ☐ NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☒ Yes ☐ No ☐ NA
Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☒ No
Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	☐ Yes ☒ No
Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within 300 feet of a wetland. US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance	

adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☒ No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☒ No
Within a 100-year floodplain. - FEMA map	☐ Yes ☒ No

16.
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC
- ☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.11 NMAC
- ☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Waste Material Sampling Plan - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
- ☐ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

17.
Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Tamra Sessions Title: Operations Technician

Signature: Tamra Sessions Date: 4/1/14

e-mail address: tsessions@logosresourcesllc.com Telephone: 505-330-9333

18.
OCD Approval: ☒ Permit Application (including closure plan) ☐ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: Jonathan D. Kelly **Approval Date:** 4/4/2014

Title: Compliance Officer **OCD Permit Number:**

19.
Closure Report (required within 60 days of closure completion): 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ **Closure Completion Date:**

20.
Closure Method:

☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)
☐ If different from approved plan, please explain.

21.
Closure Report Attachment Checklist: ***Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.***

- ☐ Proof of Closure Notice (surface owner and division)
- ☐ Proof of Deed Notice (required for on-site closure for private land only)
- ☐ Plot Plan (for on-site closures and temporary pits)
- ☐ Confirmation Sampling Analytical Results (if applicable)
- ☐ Waste Material Sampling Analytical Results (required for on-site closure)
- ☐ Disposal Facility Name and Permit Number
- ☐ Soil Backfilling and Cover Installation
- ☐ Re-vegetation Application Rates and Seeding Technique
- ☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude _____ Longitude _____ NAD: ☐ 1927 ☐ 1983

22.

Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): _____ Title: _____

Signature: _____ Date: _____

e-mail address: _____ Telephone: _____

Logos Operating, LLC
San Juan Basin
Variance Explanation

C-144 Item #5 Fencing

Per 19.15.17.11 D (3) *The operator shall fence any other pit or below-grade tank to exclude livestock with a 'four foot fence that has at least four strands of barbed wire' evenly spaced in the interval between one foot and four feet above ground level.*

Logos Operating has requested a variance on the fencing material and plans to use 4' hog wire with one strand of barbed wire on top.

C-144 Temporary Pit Closure Plan Attachment Item #13 a.

Per 19.15.17.13 F (3*) The operator shall place a steel marker at the center of an onsite burial. The steel marker shall be not less than four inches in diameter and shall be cemented in a three-foot deep hole at a minimum. The steel marker shall extend at least four feet above mean ground level and at least three feet below ground level. The operator name, lease name and well number and location, including unit letter, section, township and range, and that the marker designates an onsite burial location shall be welded, stamped or otherwise permanently engraved into the metal of the steel marker. A person shall not build permanent structures over an onsite burial without the appropriate division district office's written approval. A person shall not remove an onsite burial marker without the division's written permission.*

Logos Operating has requested a variance for the visible marker that should 'extend at least four feet above mean ground level'. Logos operating plans to use a steel plate at least 12" x 12", flush with ground level and contain the same information as the four foot riser would have as per the rule. Upon the abandonment of all the wells on the pad, the plate will be removed and replaced with a four foot tall riser containing the same information as per the rule.

C-144 Temporary Pit Closure Plan Attachment Item #4

Per 19.15.17.7 (R) *Temporary pits may be used for one or more wells and must be located at one of the associated permitted well drilling locations. Temporary pits must be closed within six months from the date the operator releases the drilling or workover rig from the first well using the pit.*

Logos Operating has requested a variance on the Pit Closure Plan for Item #4 as Logos will be utilizing this temporary pit for two new drills on the same location and will need to close the temporary pit within 6 months of the drilling rig moving off the first well that uses the pit.

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

POD Number	POD Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
SJ 00274 S-3			SA		4	4	16	22N	05W	287567	4001050*	4029	1313		
RG 59279			TA							283664	3997966	6197	103	42	61
SJ 01189			SJ		4	4	17	23N	05W	286267	4010899*	6994	675		
SJ 00274 S-2			SA		3	3	16	23N	05W	286665	4010877*	7063	600		
SJ 01201			SJ	2	2	3	34	22N	05W	288268	3996680*	8110	160	120	40
SJ 01506			SA	1	1	3	22	23N	06W	278535	4010015*	8706	280		

Average Depth to Water: **81 feet**

Minimum Depth: **42 feet**

Maximum Depth: **120 feet**

Record Count: 6

UTMNAD83 Radius Search (in meters):

Easting (X): 284872 **Northing (Y):** 4004045 **Radius:** 10000

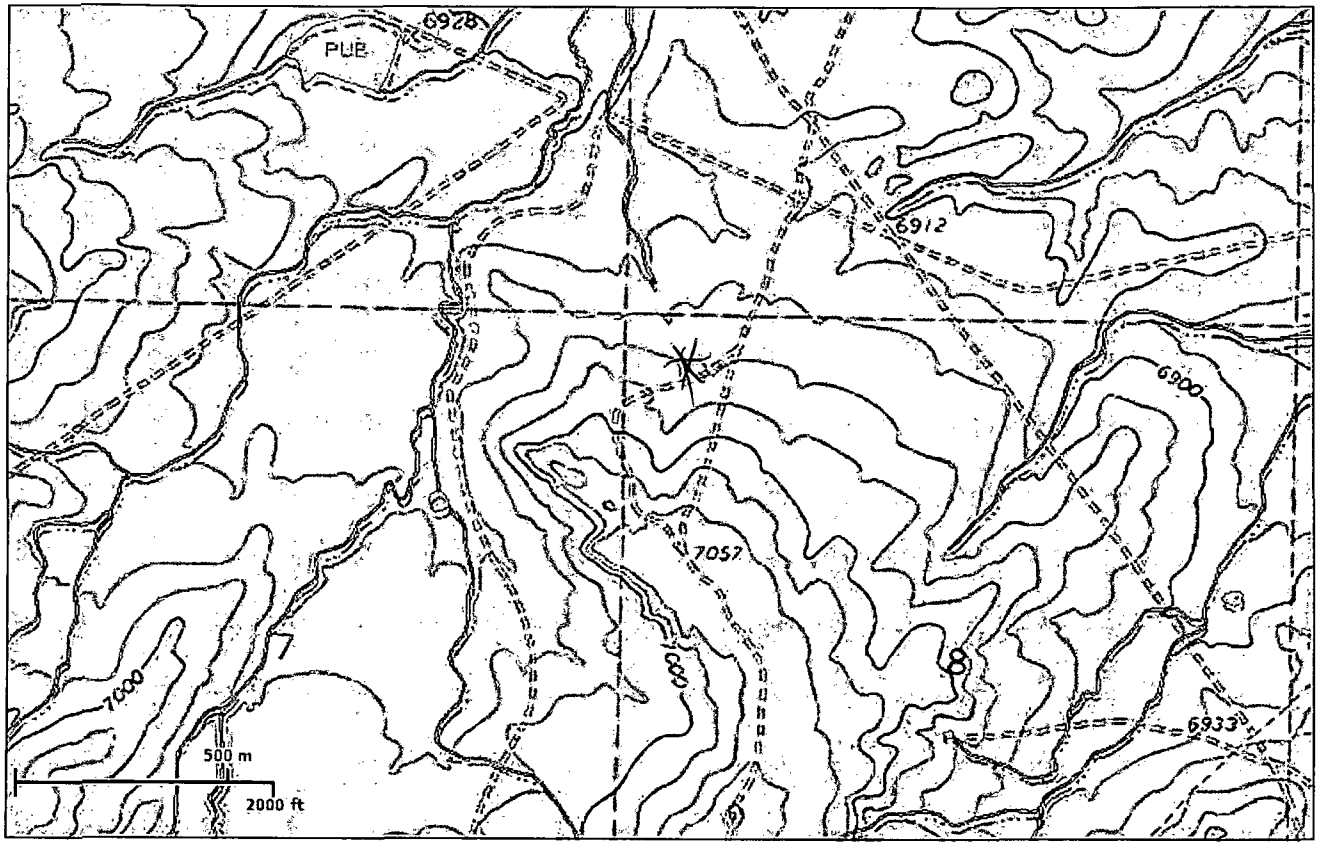
***UTM location was derived from PLSS - see Help**

U.S. Fish and Wildlife Service

National Wetlands Inventory

Logos 701H /
Logos 702H

Apr 1, 2014



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

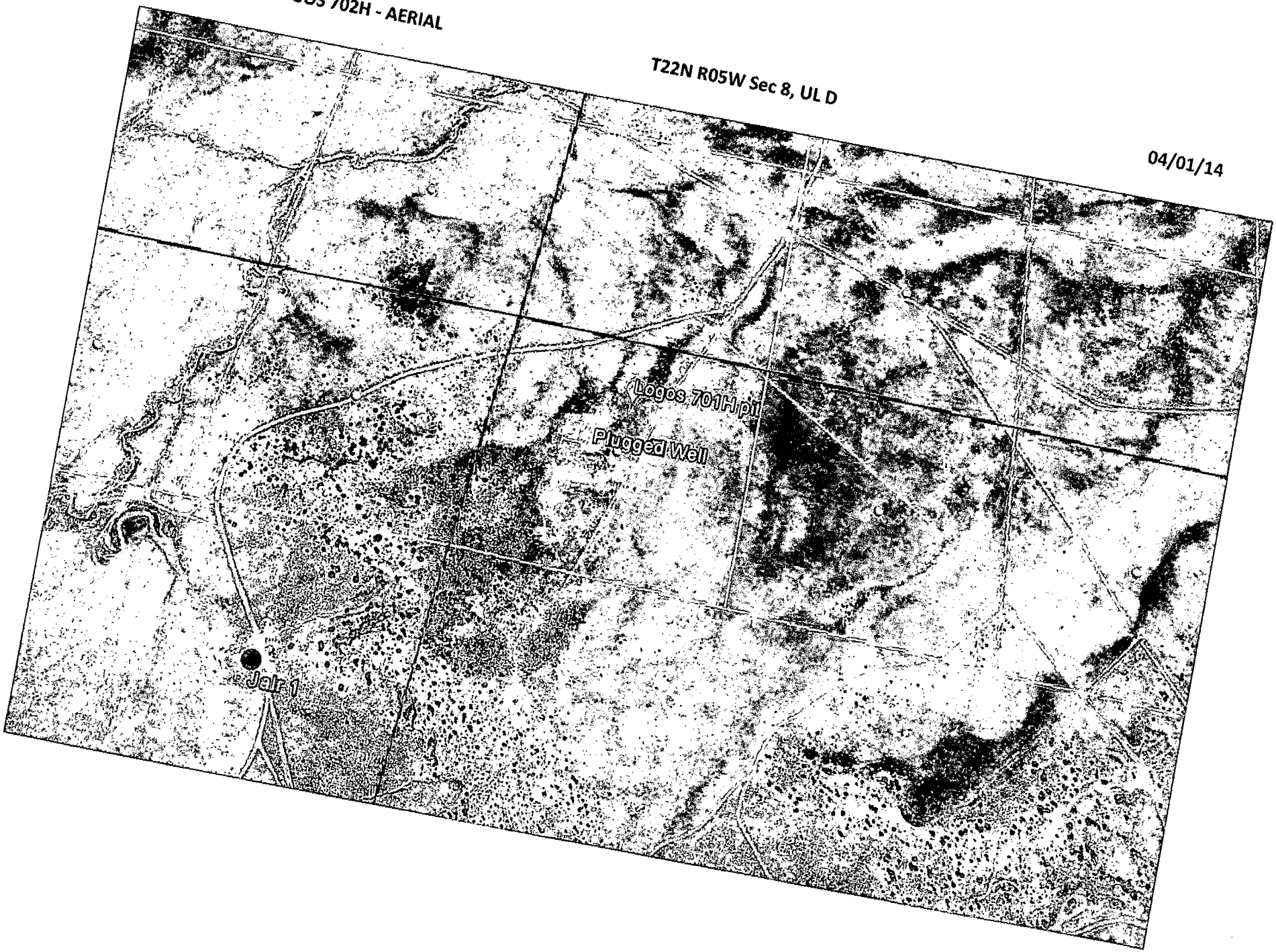
User Remarks:

UL 3, Section 8, T22N, R05W. No wetlands withing 100' of drill site.

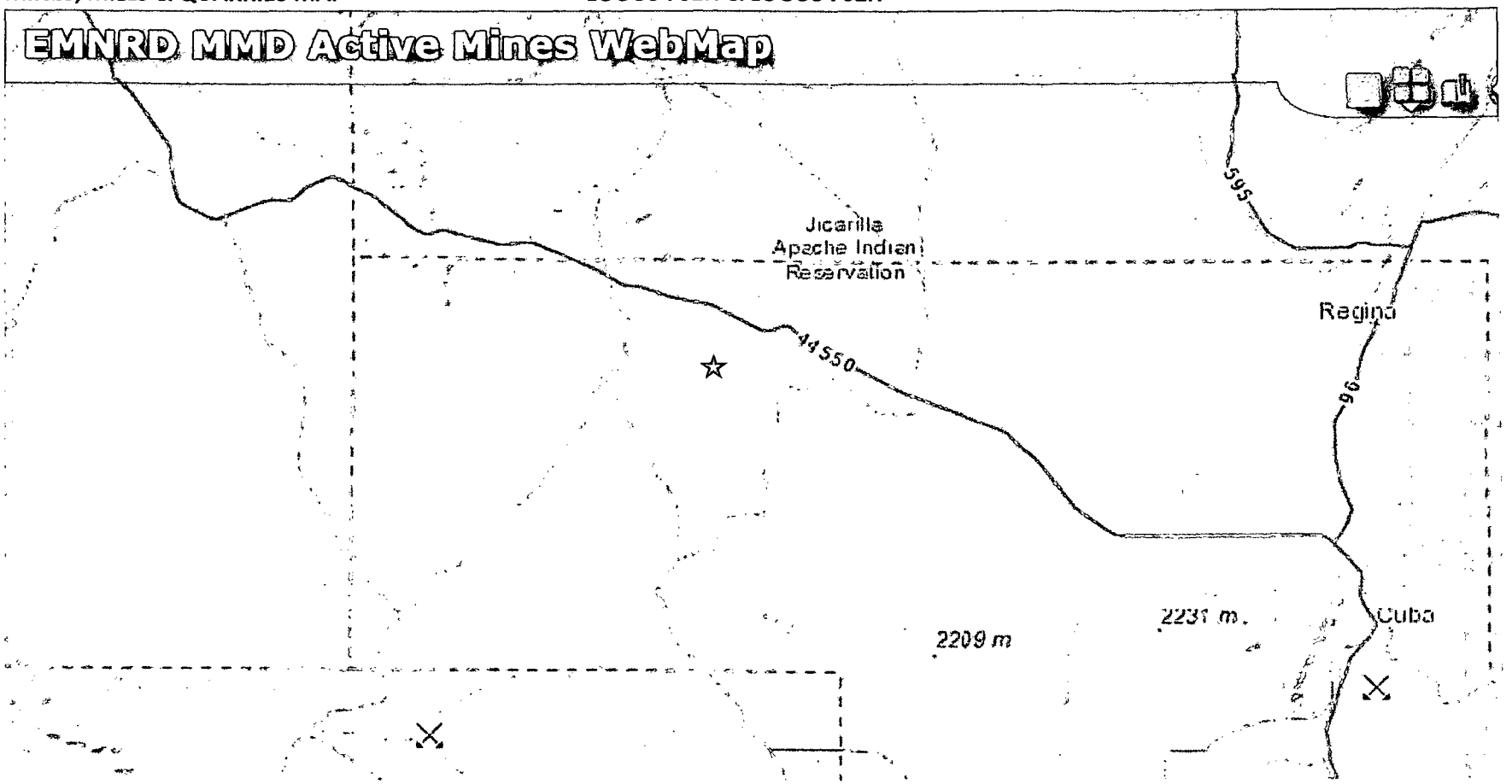
LOGOS 701H & LOGOS 702H - AERIAL

T22N R05W Sec 8, UL D

04/01/14



MINES, MILLS & QUARRIES MAP **LOGOS 701H & LOGOS 702H**



LOGOS 701H & LOGOS 702H - Latitude 36.157945° N / Longitude 107.391328° W (NAD83)

There are no mines, mills or quarries within any close distance.

Data Source: New Mexico Active Mines, Feb 2012 spreadsheet

http://www.emnrd.state.nm.us/MMD/gismapminedata.html

MO-TE DRILLING INC.

DAY SAT

DRILLER Josh | LEFT TOWN | ARRIVED FIELD

HELPER Brando | LEFT FIELD | ARRIVED TOWN

HELPER | TOTAL FOOTAGE TODAY

RIG NO. 208 DATE 9-7-13 CLIENT Logos op LLC

BEGIN WORK ON HOLE NO Logos #7 Test Hole AT FEET

BEGIN WORK ON HOLE NO. AT FEET

TIME FROM	TIME TO	ACTIVITY
7:30	9:00	Move Rig. Rig up
9:00	9:10	DRill 6¼" Hole 0-40' TOH
9:10	10:10	Stand by.
10:10	10:15	Check for water - NO WATER
10:15	10:31	TIH DRill 6¼" Hole 40-65' TOH
10:31	11:31	Stand by.
11:31	11:36	Check for water - NO WATER
11:36	12:04	TIH DRill 6¼" Hole 65-115'
12:04	12:54	Clean hole TOH
12:54	1:54	Stand by.
1:54	2:00	Check for water - water @ 113'

BIT RECORD

SIZE & MAKE	SERIAL NO.	FOOTAGE

CIRCULATION MATERIAL

QUAN.	UNIT	MATERIAL

NO. OF LOADS OF WATER SOURCE

MO-TE DRILLING, INC.

DAY SAT

DRILLER Josh | LEFT TOWN | ARRIVED FIELD

HELPER Brando | LEFT FIELD | ARRIVED TOWN

HELPER | TOTAL FOOTAGE TODAY

RIG NO. 208 DATE 9-7-13 CLIENT Logos op LLC

BEGIN WORK ON HOLE NO Logos #7 Test Hole AT FEET

BEGIN WORK ON HOLE NO. AT FEET

TIME FROM	TIME TO	ACTIVITY
0'	35'	Loose DRY SAND
35'	40'	Soft DRY sandstone
40'	45'	Soft DRY sandstone
45'	47'	Shale (Grey)
47'	65'	Soft DRY sandstone
65'	72'	Soft DRY sandstone
72'	78'	DAMP sandstone
78'	115'	Shale (Grey) DRY

BIT RECORD

SIZE & MAKE	SERIAL NO.	FOOTAGE

CIRCULATION MATERIAL

QUAN.	UNIT	MATERIAL

NO. OF LOADS OF WATER SOURCE

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

MAY 22 2013
Farmington Field Office
Bureau of Land Management

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	2 Pool Code	3 Pool Name
30-043-21155	97977	WILDCAT DAKOTA

4 Property Code	5 Property Name	6 Well Number
311963	LOGOS	7

7 OGRID No.	8 Operator Name	9 Elevation
289408	LOGOS OPERATING, LLC	6880'

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
E	5	22N	5W		1645	NORTH	180	WEST	SANDOVAL

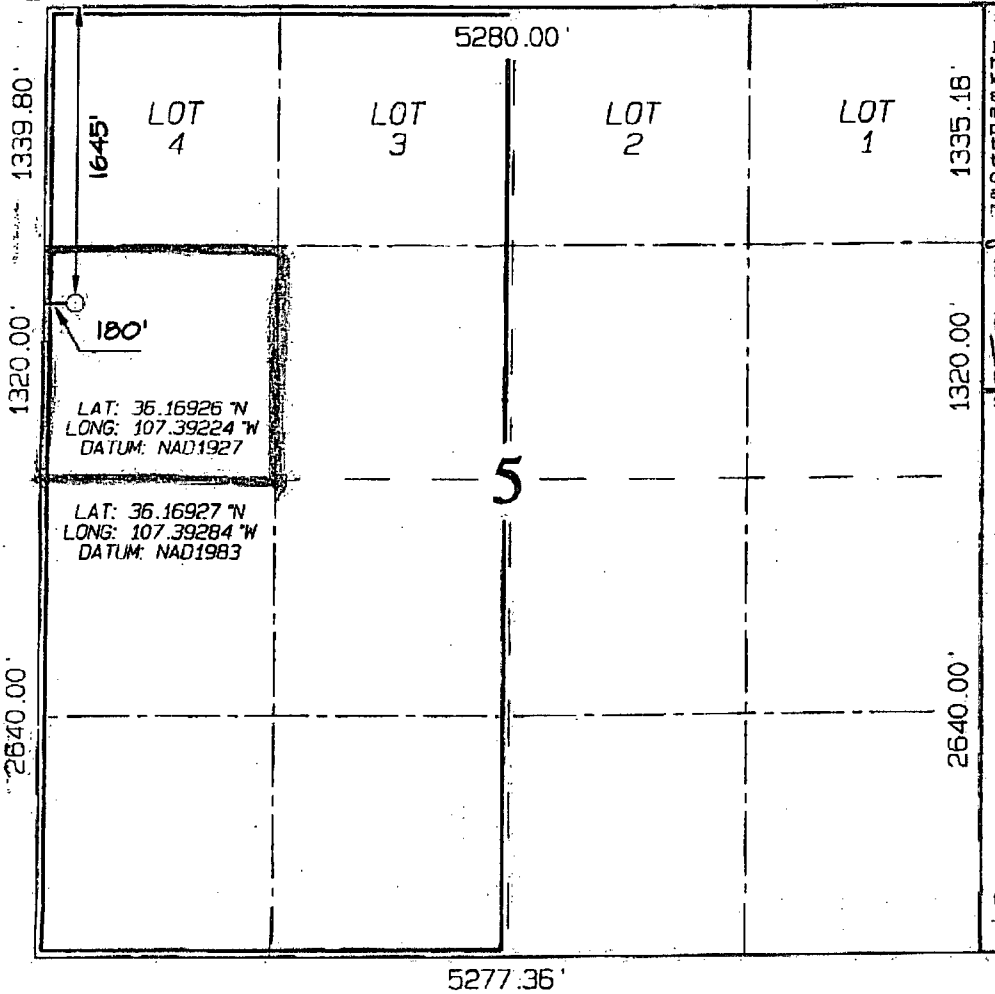
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
40 acres SW/4 NW/4			

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



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 unleased 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: Kristy Graham Date: 5/21/13

Printed Name: Kristy Graham

E-mail Address: kgraham@logosresourcesllc.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 belief.

Date of Survey: MARCH 26, 2013

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS

Certificate Number 15269

Logos Operating, LLC
Logos 701H & Logos 702H
Temporary Reserve Pit Application
Siting Criteria

1. According to the iWaters Database from the State Engineers Office, the closest known water well is 4029 meters (2.5miles) away in Section 16 of T22N R5W. The depth of the well is 1313 feet and no depth to ground water is noted. A test water well drilled on the Logos 7, elevation 6880', found water at 72'. The Logos 701H elevation is 6961', so ground water depth is 153', therefore ground water depth to bottom of pit is greater than 100'.

2. As shown on the attached topographic map and aerial photos, there are no continuously flowing watercourses within 100' of the well, or any significant watercourses, lakebeds, sinkholes or playa lakes within 200' of the well.

3. There are no permanent residences, schools, hospitals, institutions, or churches within 300' of the well.

4. There are no domestic water wells or springs within 200' of the well. See iWaters Database printout.

5. The well is not located within any municipal boundaries.

6. The well is not within 100' of any wetlands. See attached topographic map and aerial photos.

7. There are no subsurface mines in Section 8, T22N, R5W. See attached map from the NM EMNRD Mining and Mineral Division.

8. The *Logos 701H & Logos 702H* are not located in an "unstable" area. The location is not over a mine and is not on the side of a hill. The location of the excavated pit material will not be located within 100' of a continuously flowing watercourse or 200' from any other watercourse.

9. The FEMA map for the subject well is unavailable due to its location being on the reservation. FEMA does not provide floodplain information for Reservation Land.

10. In the event that the composite pit sample that is mixed 3:1 with native soils does not meet the requirements for onsite burial, the pit contents will be removed and disposed of at the Envirotech Land Farm #2 (NMOCD Permit #11).

PLEASE NOTE: THE LOGOS 701H AND LOGOS 702H WILL BE SHARING THE SAME WELL PAD. PLANS ARE TO DRILL THESE TWO WELLS BACK TO BACK AND UTILIZE THE SAME TEMPORARY PIT.

Hydro geological report for Logos 701H & Logos 702H

Regional Hydro geological context:

The Logos 701H & Logos 702H are located on tribal land in Sandoval County, New Mexico. The proposed project area is located south of U.S. Highway 550 in gently to moderately sloping terrain on the east side of an unnamed valley. Topography throughout the area is marked with numerous low ridges and unnamed canyons which generally trend northeast toward Canon Largo. No prominent topographical features are located within the proposed project area.

A records search of the NM Office of the State Engineer – iWATERS database indicates that the closest known water well is 4029 meters (2.5miles) away in Section 16 of T22N R5W. The depth of the well is 1313 feet and no depth to ground water is noted.

According to the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Web Soil Survey, the proposed action area overlies the Doakum-Betonnie fine sandy loams, 0 to 8 percent slopes.

The Doakum-Betonnie fine sandy loams is composed of approximately 45 percent Doakum and similar soils and 45 percent Betonnie and similar soils. The Doakum series consists of deep and very deep, well drained moderately permeable soils that formed in alluvium, fan alluvium, stream alluvium and eolian materials derived dominantly from shale and sandstone. Doakum soils are on mesas, plateaus, cuestas, fan remnants, fan terraces, hills and ridges. Slopes range from 0 to 15 percent. The Betonnie series consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium and eolian sediments derived from sandstone on fan terraces, mesas, cuestas, valley sides, hills, ridges and plateaus. Slopes range from 0 to 8 percent.

PLEASE NOTE: THE LOGOS 701H AND LOGOS 702H WILL BE SHARING THE SAME WELL PAD. PLANS ARE TO DRILL THESE TWO WELLS BACK TO BACK AND UTILIZE THE SAME TEMPORARY PIT.

LOGOS RESOURCES LLC

4001 N. Butler Ave
Farmington, NM 87401
Phone: (505) 436-2627
Fax: (505) 832-3095

Date: April 1, 2014

To: Jicarilla Apache Nation

Re: Surface Owner Notification for On-Site Burial

Ms. Merldine Oka
Jicarilla Apache Nation
Oil and Gas Administration
#6 Dulce Rock Road
Dulce, NM 87528

Re: Logos 701H & Logos 702H, UL D Section 8, T22N, R05W

Dear Ms. Oka,

According to NMOCD rules, Logos Operating, LLC is notifying you that there will be a temporary pit on the subject well and that they intend to bury the drill cuttings in the reserve pit, assuming that they qualify as per Subsection D of 19.15.17.13 NMAC. No action is required on your part. If you have any questions, please do not hesitate to call me.

Regards,

Tamra Sessions

Tamra Sessions
Operations Technician

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, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 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	[2] Pool Code	[3] Pool Name
		WILDCAT GALLUP

[4] Property Code	[5] Property Name	[6] Well Number
311963	LOGOS	701H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6961'

[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
D	8	22-N	5-W		450	NORTH	510	WEST	SANDOVAL

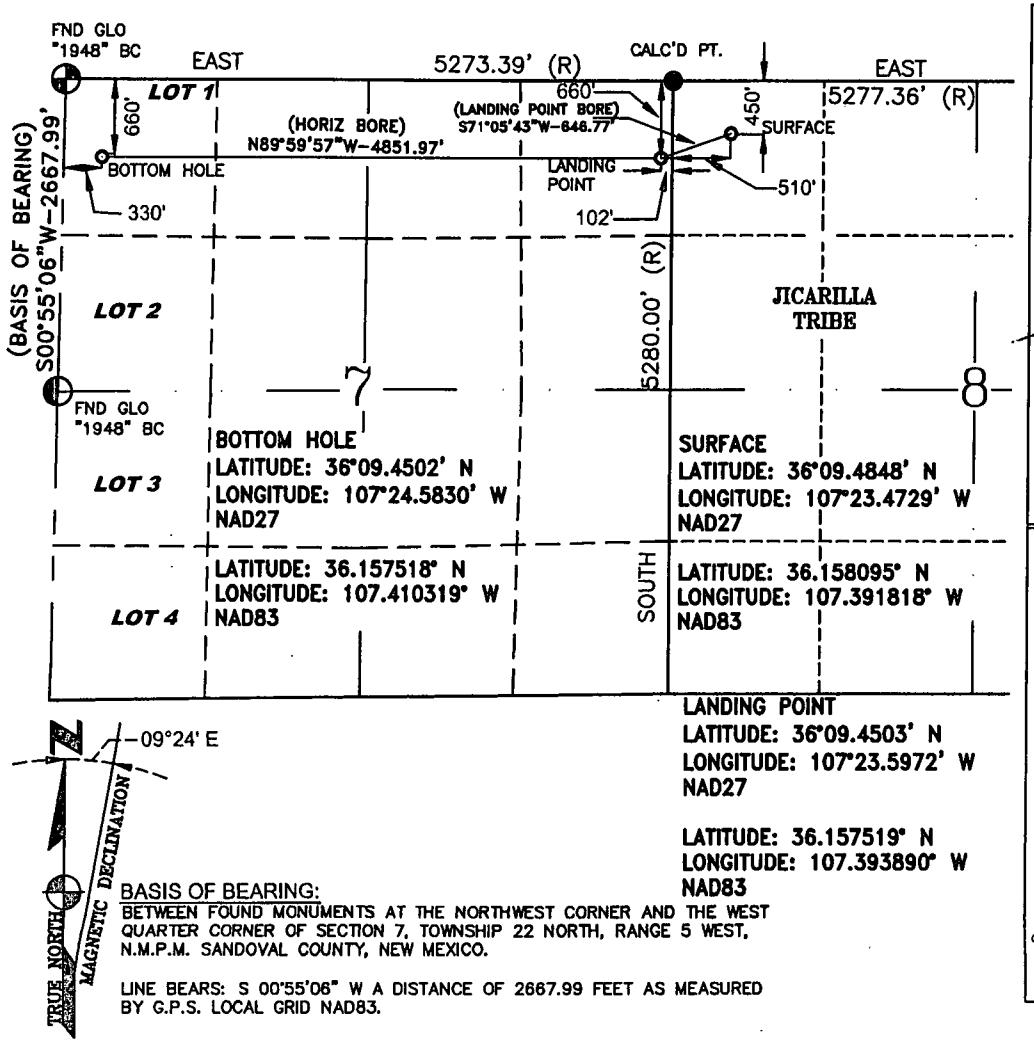
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	7	22-N	5-W		660	NORTH	330	WEST	SANDOVAL

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

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]



BASIS OF BEARING:
BETWEEN FOUND MONUMENTS AT THE NORTHWEST CORNER AND THE WEST QUARTER CORNER OF SECTION 7, TOWNSHIP 22 NORTH, RANGE 5 WEST, N.M.P.M. SANDOVAL COUNTY, NEW MEXICO.

LINE BEARS: S 00°55'06" W A DISTANCE OF 2667.99 FEET AS MEASURED BY G.P.S. LOCAL GRID NAD83.

[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 unleased 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 a working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Tamra Sessions 4/1/14
Signature Date

Tamra Sessions
Printed Name

t.sessions@logosresourcesllc.com
E-mail Address

[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 belief.

MARCH 13, 2013
Date of Survey

Signature and Seal of Professional Surveyor

GLEN W. RUSSELL
NEW MEXICO
15703
LICENSED PROFESSIONAL SURVEYOR

GLEN W. RUSSELL
Certificate Number 15703

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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	[2] Pool Code	[3] Pool Name
		WILDCAT GALLUP

[4] Property Code	[5] Property Name	[6] Well Number
	LOGOS	702H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6961'

[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
D	8	22-N	5-W		440	NORTH	561	WEST	SANDOVAL

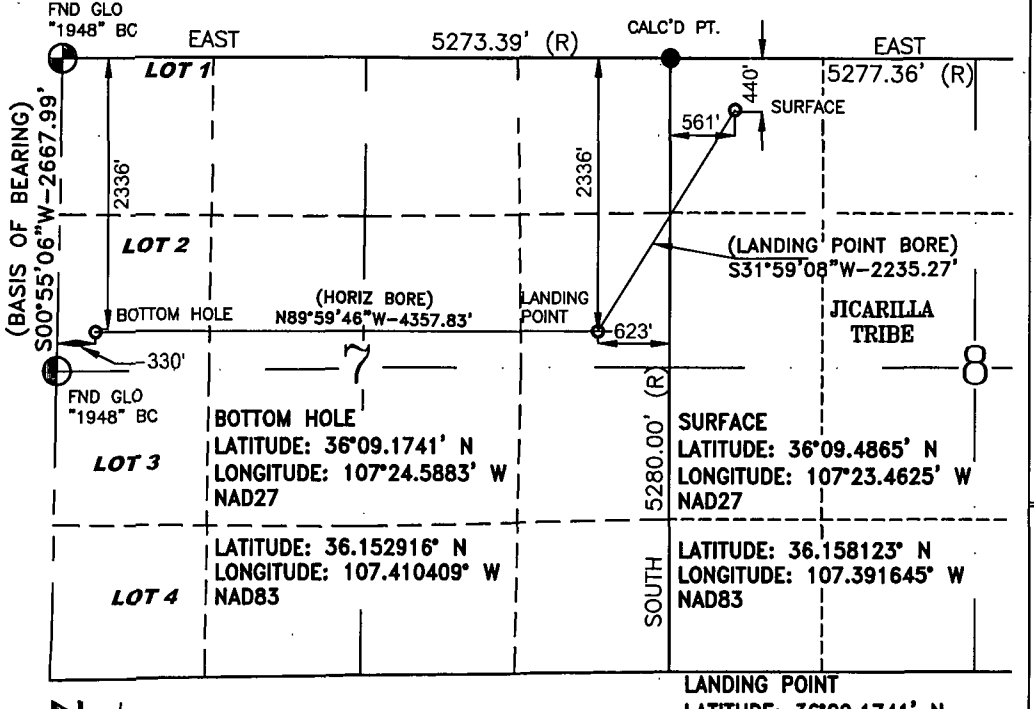
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	7	22-N	5-W		2336	NORTH	330	WEST	SANDOVAL

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

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



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LINE BEARS: S 00°55'06" W A DISTANCE OF 2667.99 FEET AS MEASURED BY G.P.S. LOCAL GRID NAD83.

[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 unleased 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 a working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature Date

Printed Name

E-mail Address

[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 belief.

MARCH 18, 2014
Date of Survey

Signature and Seal of Professional Surveyor:

GLEN W. RUSSELL
NEW MEXICO
15703
LICENSED PROFESSIONAL SURVEYOR

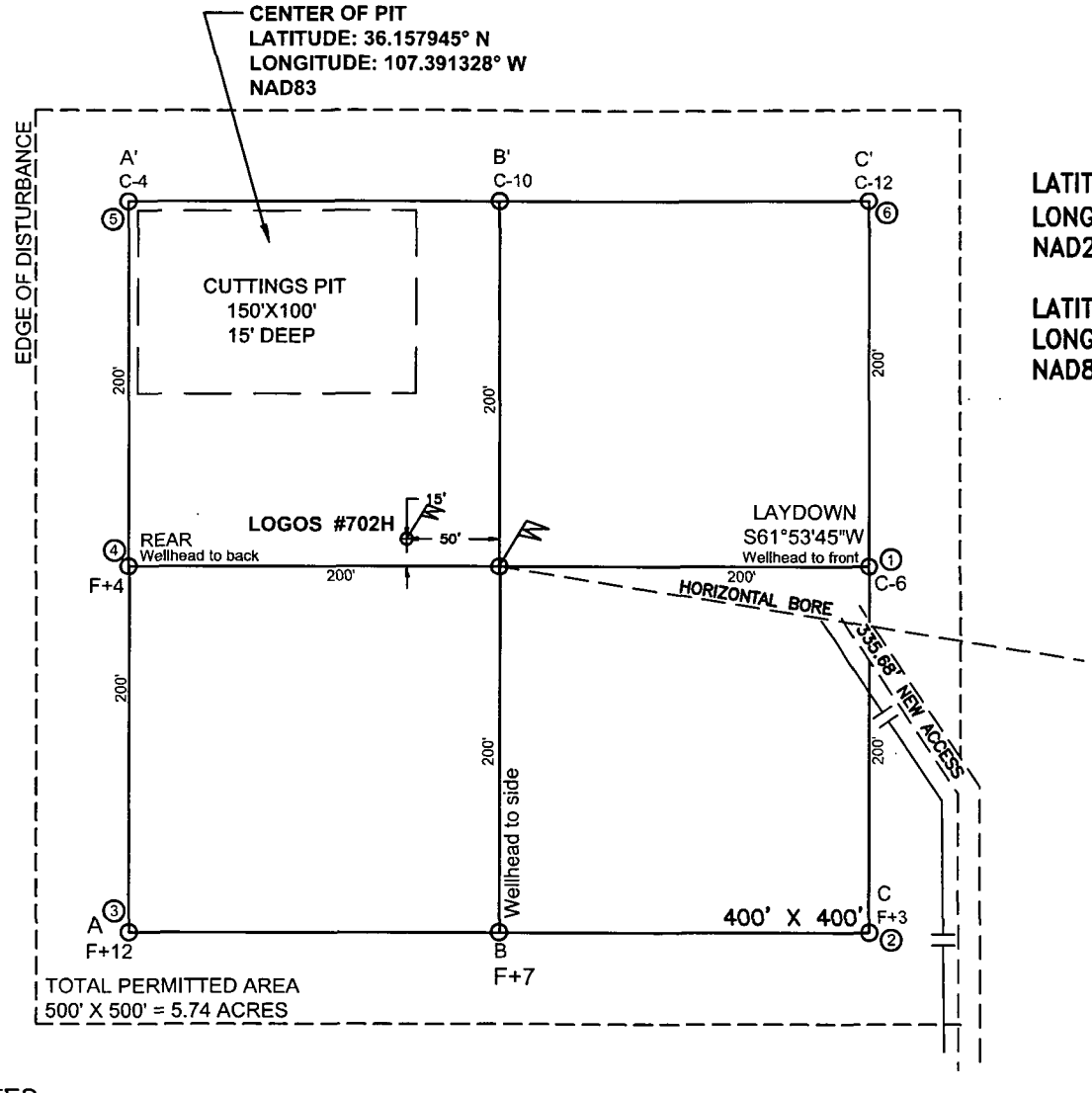
GLEN W. RUSSELL
Certificate Number 15703

LOGOS OPERATING, LLC

LOGOS #701H, 450' FNL & 510' FWL

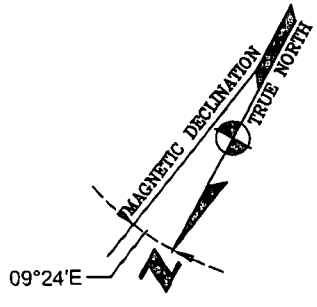
SECTION 8, T-22-N, R-5-W, NMPM, SANDOVAL COUNTY, NM

GROUND ELEVATION: 6961', DATE: OCTOBER 16, 2013/RVSD: MARCH 18, 2014



LATITUDE: 36°09.4848' N
LONGITUDE: 107°23.4729' W
NAD27

LATITUDE: 36.158095° N
LONGITUDE: 107.391818° W
NAD83



50' 0 50' 100'

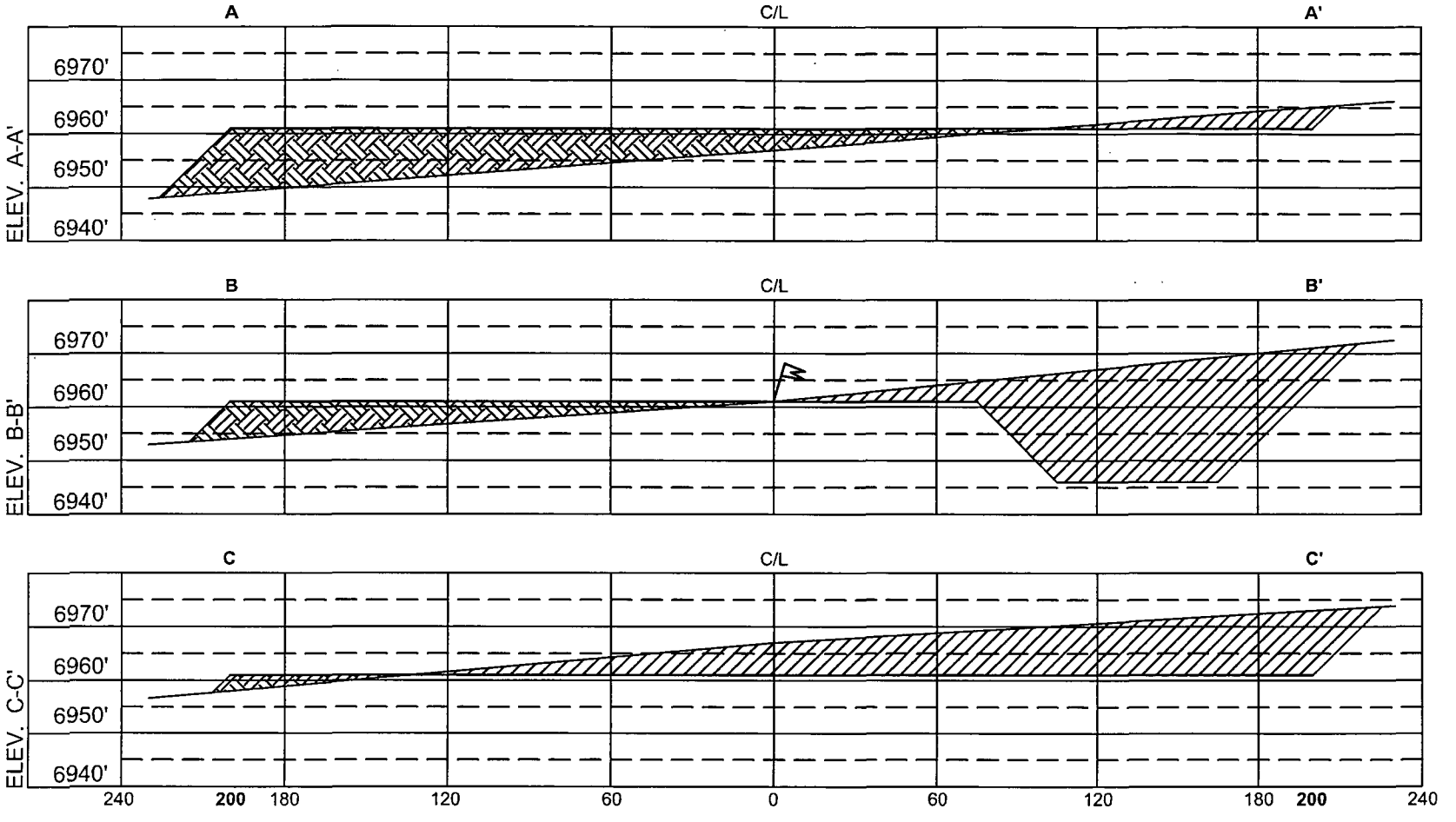
Scale: 1" = 100'

NOTES:

1. VECTOR SURVEYS IS NOT LIABLE FOR UNDERGROUND UTILITIES OR PIPELINES. CONTRACTOR SHOULD CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED BURIED PIPELINES OR CABLES ON WELL PAD AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.
2. RESERVE PIT DIKE: TO BE 8' ABOVE DEEP SIDE (OVERFLOW - 3' WIDE AND 1' ABOVE SHALLOW SIDE).

LOGOS OPERATING, LLC

LOGOS #701H, 450' FNL & 510' FWL
SECTION 8, T-22-N, R-5-W, NMPM, SANDOVAL COUNTY, NM
GROUND ELEVATION: 6961', DATE: OCTOBER 16, 2013



HORIZ. SCALE: 1" =60'
VERT. SCALE: 1" = 30'

NOTE:
VECTOR SURVEYS IS NOT LIABLE FOR UNDERGROUND UTILITIES OR PIPELINES. CONTRACTOR SHOULD CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED BURIED PIPELINES OR CABLES ON WELL PAD AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.

Logos Operating, LLC
San Juan Basin
Temporary Pit Design and Construction Plan

In accordance with Rule 19 15 17 the following information describes the design and construction for temporary pits on Logos Operating Company's locations; this is Logos Operating's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit that does not conform to this plan.

General Plan

1. Logos Operating will design and construct a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public health and environment
2. Prior to constructing the pit, topsoil will be stockpiled in the construction zone for later use in restoration
3. Logos Operating will post a well sign, not less than 12' by 14', on the well site prior to construction of the temporary pit. The sign will list the operator on record as the operator, the location of the well by unit letter, section, township rang, and emergency telephone numbers
4. Logos Operating shall construct all new fences unitizing 48' steel mesh field-fence (hogwire) on the bottom with a single strand of barbed wire on top. T-posts shall be installed every 12 feet and corners shall be anchored utilizing a secondary T-post. Temporary pits will be fenced at all times excluding drilling or overwork operations, when the front side of the fence will be temporarily removed for operational purposes
5. Logos Operating shall construct the temporary pit so that the foundation and interior slopes are firm and free of rocks, debris, sharp edges or irregularities to prevent liner failure
6. Logos Operating shall construct the pit so that the slopes are no steeper than two horizontal feet to 1 vertical foot
7. Pit walls will be walked down by a crawler type tractor following construction
8. All temporary pits will be lined with a 20-mil, string reinforced, LLDPE liner, complying with EPA SW-846 method 9090A requirements
9. Geotextile will be installed beneath the liner when rocks, debris, sharp edges or irregularities cannot be avoided
10. All liners will be anchored in the bottom of a compacted earth-filled trench at least 18 inches deep
11. Logos Operating will minimize liner seams and orient them up and down, not across a slope. Factory seams will be used whenever possible. Logos Operating will ensure all field seams are welded by qualified personnel. Field seams will be overlapped four to six inches and will be oriented parallel to the line of maximum slope. Logos Operating will minimize the number of field seams in corners and irregularly shaped areas
12. The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides, or a manifold system
13. The pit shall be protected from run-off by constructing and maintaining diversion ditched around the location or around the perimeter of the pit in some cases
14. The volume of the pit shall not exceed 10 acre-feet, including freeboard
15. Temporary blow pits will be constructed to allow gravity flow to discharge into lined drill pit
16. The lower half of the blow pit (nearest lined pit) will be lined with the same 20 mil liner. The upper half of the blow pit will remain unlined as allowed in Rule 19 15 17 11 F 11
17. Logos Operating will not allow freestanding liquids to remain on the unlined portion of temporary blow pit

Logos Operating, LLC
San Juan Basin
Temporary Pit Maintenance and Operating Plan

In accordance with Rule 19 15 17 the following information described the operation and maintenance of temporary pits on Logos Operating Company locations. This is Logos Operating's standard procedure for all temporary pits. A separate plan will be submitted for any temporary pit that does not conform to this plan.

General Plan

1 Logos Operating will operate and maintain a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public health and environment
2 Logos Operating will conserve drilling fluids by transferring liquids to pits ahead of the rigs whenever possible. All other drilling fluids will be disposed at Basin Disposal, Inc. Permit # NM-01-005
3 Logos Operating will not discharge or store any hazardous waste in any temporary pit
4 If any pit liner's integrity is compromised or if any penetration of the liner occurs above the liquid's surface, then Logos Operating shall notify the Aztec Division office by phone or email within 48 hours of the discovery and repair the damage or replace the liner
5 If a leak develops below the liquid's level, Logos Operating shall remove all liquids above the damaged liner within 48 hours and repair the damage or replace the liner. Logos Operating shall notify the Aztec Division office by phone or email within 48 hours of the discovery for leaks less than 25 barrels. Logos Operating shall notify the Aztec division office as required pursuant to Subsection B of 19 15 3 116 NMAC shall be reported within twenty-four (24) hours of discovery of leaks greater than 25 barrels. In addition, immediate verbal notification pursuant to Subsection B, Paragraph (1) and Subparagraph (d) of 19 15 3 116 NMAC shall be reported to the division's Environmental Bureau Chief
6 The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides, or manifold system
7 The pit shall be protected from run-off by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some cases
8 Logos Operating shall immediately remove any visible layer or oil from the surface of temporary pit after cessation of a drilling or workover operation. Oil absorbent booms will be utilized to contain and remove oil from the pit's surface. An oil absorbent boom will be stored on-site until closure of pit
9 Only fluids generated during the drilling or workover process may be discharged into a temporary pit
10 Logos Operating will maintain the temporary pit free of miscellaneous solid waste or debris
11 During drilling or workover operations, Logos Operating will inspect the temporary pit at least once daily to ensure compliance with this plan. Inspections will be logged in the IADC reports. Logos Operating will file this log with the Aztec Division office upon closure of the pit
12 After drilling or workover operations, Logos Operating will inspect the temporary pit weekly so long as liquids remain in the temporary pit. A log of the inspections will be stored at Logos Operating's office electronically and will be filed with the Aztec Division office upon closure of the pit
13 Logos Operating shall maintain at least two feet of freeboard for a temporary pit
14 Logos Operating shall remove all free liquids from a temporary pit within 60 days from the date the operator releases the drilling or workover rig
15 Logos Operating shall remove all free liquids from cavitations put within 48 hours after completing cavitations. Logos Operating may request additional time to remove liquids from Aztec Division office if it is not feasible to remove liquids within 48 hours

Logos Operating, LLC
San Juan Basin
Temporary Pit Closure Plan

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of temporary pits on Logos Operating Company's locations. This is Logos Operating's standard procedure for all temporary pits. A Separate plan will be submitted for any temporary pit that does not conform to this plan.

All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of the pit closure. Closure report will be filed on C-144 and incorporated the following:

- Detail on Capping and Covering, where applicable
- Plot Plan (Pit diagram)
- Inspection reports
- Sampling Results
- C-105
- Copy of Deed Notice will be filed with County Clerk

General Plan

1 All free standing liquids will be removed at the start of the pit closure process from the pit and disposed of in a division-approved facility or recycle, reuse or reclaim the liquids in a manner that the appropriate division district office approves
2 The preferred method of closure for all temporary pits will be on-site burial, assuming that all criteria listed in sub-section (D) of 19.15.17.13 are met
3 The surface owner shall be notified of Logos Operating's proposed closure plan using a means that provides proof of notice i.e., certified mail, return receipt requested
4 Within 6 months of the Rig Off status occurring on the first well using the pit, Logos Operating will ensure that temporary pits are closed, re-contoured, and reseeded
5 Notice of Closure will be given to the Aztec Division office between 72 hours and one week of closure via email, or verbally, The notification of closure will include the following:
    i. Operator's name
    ii. Location by Unit Letter, Section, Township, and Range. Well name and API Number
6 Pit contents shall be mixed with non-waste containing, earthen material in order to achieve the solidification process. The solidification process will be accomplished using a combination of natural drying and mechanically mixing. Pit contents will be mixed with non-waste, earthen material to a consistency that is deemed a safe and stable. The mixing ratio shall not exceed 3 parts clean soil to 1 part pit contents
7 A five point composite sample will be taken of the pit using sampling tools and all samples tested per 19.15.17.13 (D)(5). In the event that the criteria are not met, all contents will be handled per 19.15.17.13 (D)(7) i.e., Dig and haul

Components	Tests Method	Limit (mg/Kg)
Benzene	EPA SW-846 8021B or 8015M	10
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418.1	2500
GRO/DRO	EPA SW-846 8015M	1000
Chlorides	EPA 300.0	80,000

8 Upon completion of solidification and testing, Logos will fold the outer edges of the trench liner to overlap the waste material in the pit area, then install a geomembrane cover over the waste material in the pit to prevent collections of infiltration water after the soil cover is in place; geomembrane a 20-mil, string reinforced, LLDPE liner, or equivalent complying with EPA SW-846 method 9090A requirements.

9 Pit area will be backfilled with compacted, non-waste containing, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0. A minimum of four feet of cover shall be achieved and the cover shall include one foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater

10 Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be placed in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape

11 Notification will be sent to OCD when the reclaimed area is seeded

12 Logos Operating shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM or Forest Service stipulated seed mixed will be used on federal lands. Vegetative cover will be established that will reflect a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and will equal seventy (70%) of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover thorough two successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occurs

13 The temporary pit will be located with a steel marker, no less than four inches in diameter, cemented in a hole three feet deep in the center of the onsite burial upon the abandonment of all the wells on the pad. The marker will be a four foot tall riser with the operator's information at the time of all wells on the pad are abandoned. The operator's information will include the following: Operator Name, Lease Name, Well Name and Number, unit Number, Section, Township, Range and an indicator that the marker is an onsite burial location

   a. If the well goes into production, then an alternate interim marking system will be used to allow for safer and more efficient operations. A minimum 4" O.D. steel pipe will be set at least 36" deep at the center of the pit. A threaded collar will be on the top of the pipe. A minimum 12" x 12" steel plate will be welded atop the threaded collar. Top of the plate will be flush with ground level. The steel plate will contain the Operator Name, Lease Name, Well Number, and location information including unit letter, section, township and range, and that the marker designates an onsite burial location. This information will be welded, stamped or otherwise permanently engraved into the metal of the plate. Upon the abandonment of all the wells on the pad, the plate will be removed and replaced with a four foot tall riser containing the same information as described for the steel plate.