

**NM1-62**

**Permit  
Application**

**Volume 4  
Part 2 of 11**

**APPLICATION FOR PERMIT  
SUNDANCE WEST**

**VOLUME IV: SITING AND HYDROGEOLOGY  
SECTION 2: HYDROGEOLOGY**

**ATTACHMENT IV.2.A**

**COMPLETION REPORT – DRILLING, SAMPLING, AND MONITORING WELL  
INSTALLATION – SUNDANCE SERVICES, INC., LEA COUNTY, NEW MEXICO –  
JUNE 2009**

**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING  
WELL INSTALLATION**

**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

**JUNE 2009**

**SUBMITTED TO:**

New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87505  
Phone: (505) 476-3440

**PREPARED FOR:**

Sundance Services, Inc.  
P.O. Box 1737  
Eunice, NM 88231

**PREPARED BY:**

Gordon Environmental, Inc.  
213 South Camino del Pueblo  
Bernalillo, New Mexico 87004  
Phone: (505) 867-6990



**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING WELL INSTALLATION**

**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

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B	OFFICE OF THE STATE ENGINEER WELL RECORDS AND LOGS
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**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING WELL INSTALLATION**

**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

**1.0 INTRODUCTION**

Gordon Environmental, Inc. (GEI), on behalf of Sundance Services, Inc. (SSI), has overseen the drilling of seven borings; and installation of two groundwater monitoring wells at the proposed SSI West Site near Eunice in southeastern New Mexico. Rodgers Environmental Services, Inc. (Rodgers) of Albuquerque, New Mexico was contracted by GEI to complete the following services for this project:

- Drill five borings using a combination of hollow stem auger (HSA) and air rotary drilling methods (borings MP-1 through MP-5).
- Drill two additional borings using HSA drilling methods, and install groundwater monitoring wells at those locations (MP-2P and MP-4P).

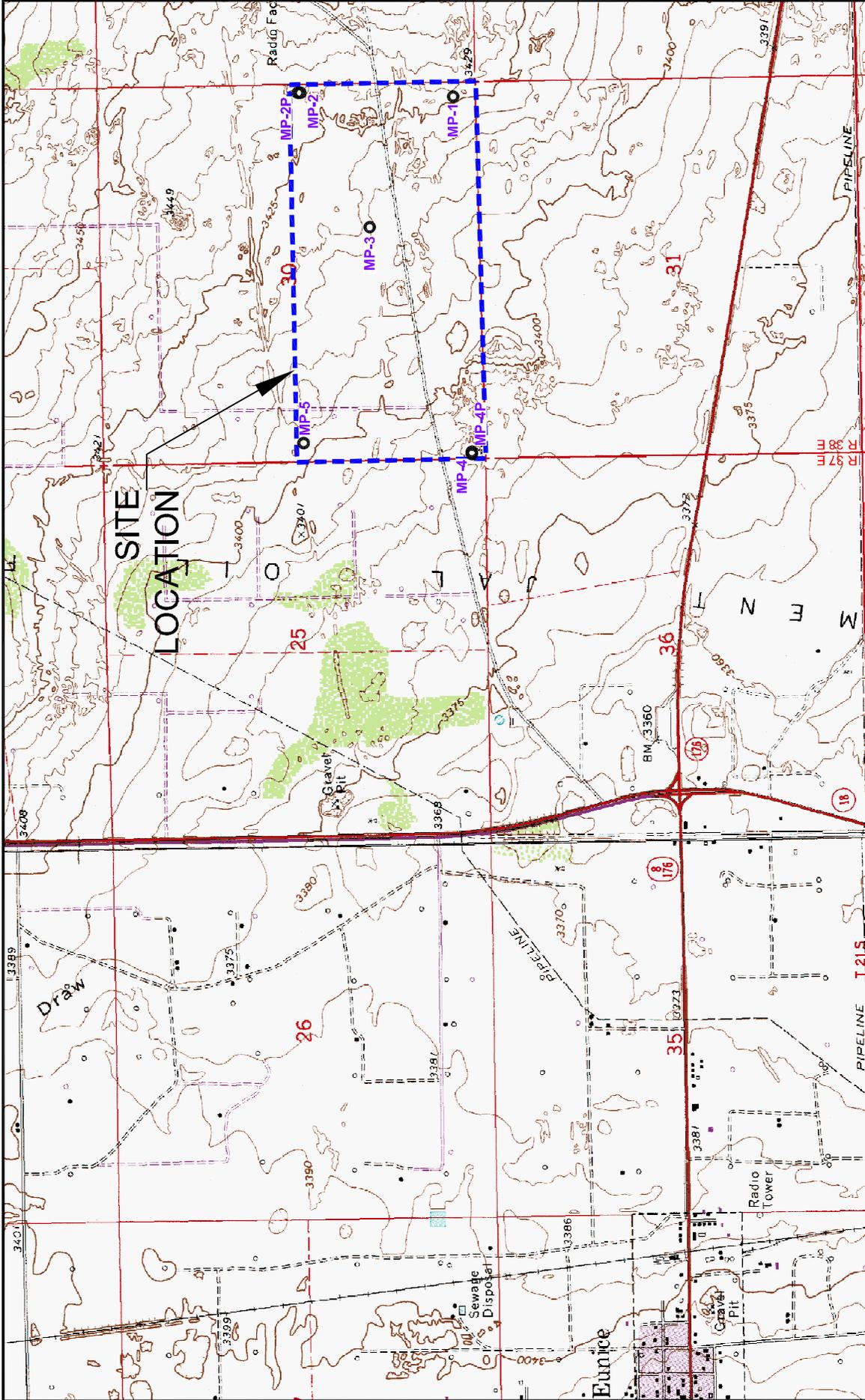
This Completion Report (Report) provides documentation of the project and as-built conditions. The Report includes:

- a description and location of the site
- background information regarding the need and purpose for the work
- drilling, sampling, and well construction

Selected photographs of the work are included in **Attachment A**. Also included are the permits granted from the Office of the State Engineer, approving the drilling program (**Attachment B**).

**2.0 SITE LOCATION**

The proposed SSI West facility is located one mile north of Highway N.M. 234; approximately four miles east of Eunice in Lea County, southeastern New Mexico (**Figure 1**). The site area is approximately 320 acres and comprises the S ½, Sec 30, T21S, R38E, NMPM. The site is owned by Wallach et al., and is leased by SSI.



## SITE LOCATION MAP

SUNDANCE WEST  
SUNDANCE SERVICES INC.  
LEA COUNTY, NEW MEXICO

Gordon Environmental, Inc.  
*Consulting Engineers*

213 S. Camino del Pueblo  
Bernalillo, New Mexico, USA  
Phone: 505-867-6990  
Fax: 505-867-6891

DATE: 06/30/09	CAD: MP BOREHOLES QUAD.dwg	PROJECT #: 530.01.01	<b>FIGURE 1</b>
DRAWN BY: MLH	REVIEWED BY: LMC		
APPROVED BY: IKG	gei@gordonenvironmental.com		

### LEGEND

- - - - - SITE BOUNDARY
- - - - - BOREHOLE LOCATION
- MP-1
- MP-2
- MP-5

MAP BASE:  
EUNICE N. MEX. 1969, PHOTOREVISED 1979 AND  
EUNICE N. TEX.-N. MEX. 1969, PHOTOREVISED 1979  
124000, USGS 7.5 MIN. SERIES TOPOGRAPHIC QUADRANGLES  
Drawing/Platcad 2003/530.01.01/FIGURES/MP BOREHOLES QUAD.dwg  
Date/Time: Jun. 30, 2009-10:33:12  
Copyright © All Rights Reserved, Gordon Environmental, Inc. 2009

### **3.0 BACKGROUND**

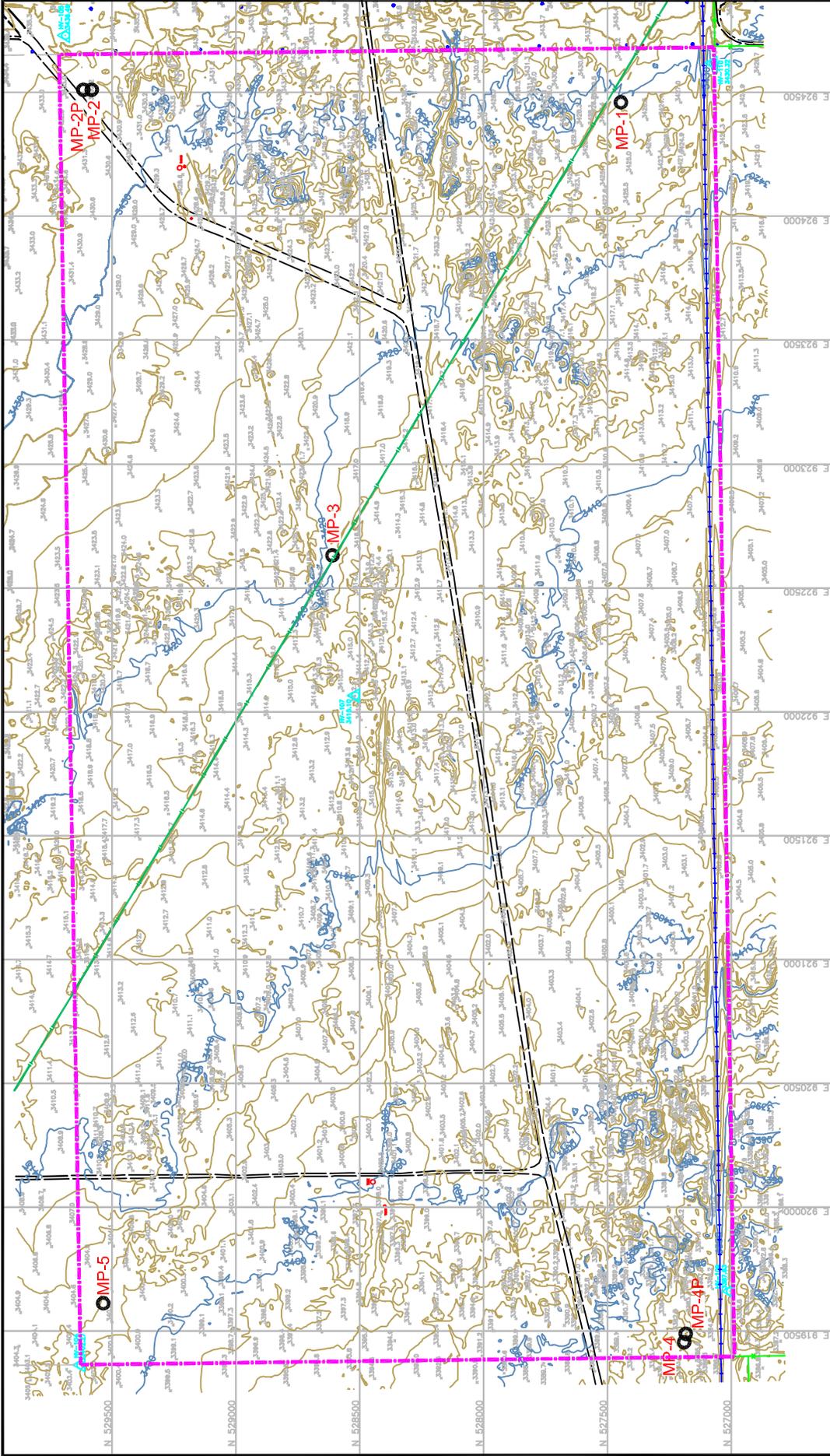
In accordance with the requirements set forth in 19.15.36.8.C(15) NMAC; this Report documents the field program to collect site-specific geological and hydrological data for the proposed facility. The primary purpose of the investigation was to confirm the depth-to-groundwater was suitable to meet the 100' vertical setback for an OCD Part 36 Landfill.

Five soil borings (MP-1 through MP-5) were drilled at the locations shown on **Figure 2**. Two additional soil borings were drilled adjacent to MP-2 and MP-4 (MP-2P and MP-4P, respectively) in order to install shallow groundwater monitoring wells near these locations (**Figure 2**). Borings MP-1 through MP-5 were drilled at locations within the site area to characterize the shallow geology and hydrogeology to depths up to 150 feet below existing site grade. Wells MP-2P and MP-4P were completed subsequent to drilling and sampling borings MP-1 through MP-5 to monitor thin, isolated zone(s) of free water perched on top of, and/or within, the upper Chinle Formation (Chinle) as described herein. **Section 4** presents a detailed description of the drilling, sampling, and well installation.

#### **3.1 Local Hydrogeological Studies**

The local hydrogeology and geotechnical conditions have been studied more intensively than any other locale that we are familiar with. There are four projects within 1.5 miles that have each implemented subsurface investigations in response to regulatory siting requirements:

1. Waste Control Specialists, Inc. (TCEQ, NRC, USEPA)
2. Lea County Landfill (NMED)
3. LES Nuclear Enrichment Facility (NRC)
4. Sundance Services, Inc. (OCD)



AERIAL SURVEY BY THOMAS B. MANN & ASSOCIATES  
 AERIAL MAPPING SERVICES  
 5115 COPPER NE, ALBUQUERQUE, NM 87108  
 DATE OF PHOTOGRAPHY 10-01-08

## BORINGS AND MONITORING WELL LOCATIONS

SUNDANCE WEST  
 SUNDANCE SERVICES INC.  
 LEA COUNTY, NEW MEXICO

Gordon Environmental, Inc.  
*Consulting Engineers*  
 213 S. Camino del Pueblo  
 Bernalillo, New Mexico, USA  
 Phone: 505-867-6990  
 Fax: 505-867-6991

DATE: 06/30/09  
 DRAWN BY: MLH  
 APPROVED BY: IKG

CAD: MP\_BOREHOLES.dwg  
 REVIEWED BY: IKG

PROJECT #: 530.01.01  
**FIGURE 2**

**LEGEND**

	PIPELINE		MP BOREHOLE LOCATION
	SECTION, 1/4 SECTION LINE		MP MONITORING WELL LOCATION
	UNPAVED ROAD		
	POST		
	POWER POLE		
	LIGHT POLE		
	MISC./UNIDENTIFIED OBJECT		
	RAILROAD TRACK		
	PIPE CULVERT		
	BOX CULVERT		
	STORAGE TANK		
	CONCRETE SLAB		

**SCALE**

0' 300' 600'

#### 4.0 DRILLING, SAMPLING, AND WELL INSTALLATION

This section provides a summary of the work performed and details of the as-built conditions. **Attachment B** includes the *Well Record & Log* submitted by Rodgers to the New Mexico Office of the State Engineer (OSE) for each of the borings and wells. **Table 1** provides surveyed coordinates for the borings and wells.

**Table 1**  
**Summary of Surveyed Coordinates for Borings and Monitoring Wells**

Boring	MP-1	MP-2	MP-3	MP-4	MP-5	MP-2P	MP-4P
Northing <sup>1</sup>	527446.10	529582.26	528611.24	527183.88	529535.82	529615.38	527183.88
Easting <sup>1</sup>	924459.82	924510.78	922630.93	919459.02	919611.93	924510.99	919489.02
Elevation <sup>1</sup>							
Ground Surface <sup>2</sup>	3428.30	3432.2	3417.99	3384	3402.93	3433.58	3384.62
Concrete Pad <sup>2</sup>	NA	NA	NA	NA	NA	3433.58	3384.62
Top of Steel Casing	NA	NA	NA	NA	NA	3436.51	3387.56
Top of PVC Casing <sup>3</sup>	NA	NA	NA	NA	NA	3435.90	3387.09

Notes:

Survey by Pettigrew & Associates, Hobbs, New Mexico

N/A – Not applicable; borings MP-1 through MP-5 were plugged and abandoned

<sup>1</sup>NAVD88

<sup>2</sup>Ground surface elevation approximately equal to elevation of concrete pad

<sup>3</sup>Measuring point for groundwater static water levels

#### 4.1 Borings MP-1 through MP-5

Borings MP-1 through MP-5 were drilled using a single, portable CME 75 drill rig capable of using both hollow-stem auger (HSA) and air rotary methods. HSA was used in the upper 25 to 50 feet of the borings until claystone/siltstone of the Chinle was encountered. The Chinle was drilled to a total depth of 150 feet in each boring using air rotary.

Drilling began on April 16, 2009; and concluded on April 23, 2009. Samples of drill cuttings were collected at five-foot intervals for visual and physical classification of the subsurface materials (**Attachment A**). During HSA drilling, split spoon samples were also collected at selected intervals for visual classification and laboratory analysis for geotechnical properties. **Attachment C** includes the boring logs for borings MP-1 through MP-5.

As illustrated in the boring logs in **Attachment C**, the shallow stratigraphy consists of very fine to medium-textured sand from the surface to the top of the Chinle. This layer is referred to as the Ogalalla/Antlers/Gatuña (OAG) formation in other local studies (Section 3.1). The sand may contain variable silt. Variable thickness of caliche and/or caliche-cemented sand is typical at depths of approximately 10 feet below the surface. The Chinle redbeds below the unconsolidated sand are typically claystone to siltstone, with very isolated thin zones of very fine-to fine textured sand/sandstone. All materials encountered in borings MP-1 through MP-5 were dry to slightly moist with the exception of moist to wet sand at a depth of 21 to 26 feet below the surface in boring MP-2 (see boring log in **Attachment C**); and moist fine sand intervals at 47 to 48 feet, and 56 to 58 feet below the surface in boring MP-4 (see boring log in **Attachment C**). The following section describes installation of wells MP-2P and MP-4P in response to the isolated wet zones encountered in borings MP-2 and MP-4, respectively. Borings MP-1 through MP-5 were plugged and abandoned using cement-bentonite grout slurry (see well records in **Attachment B**).

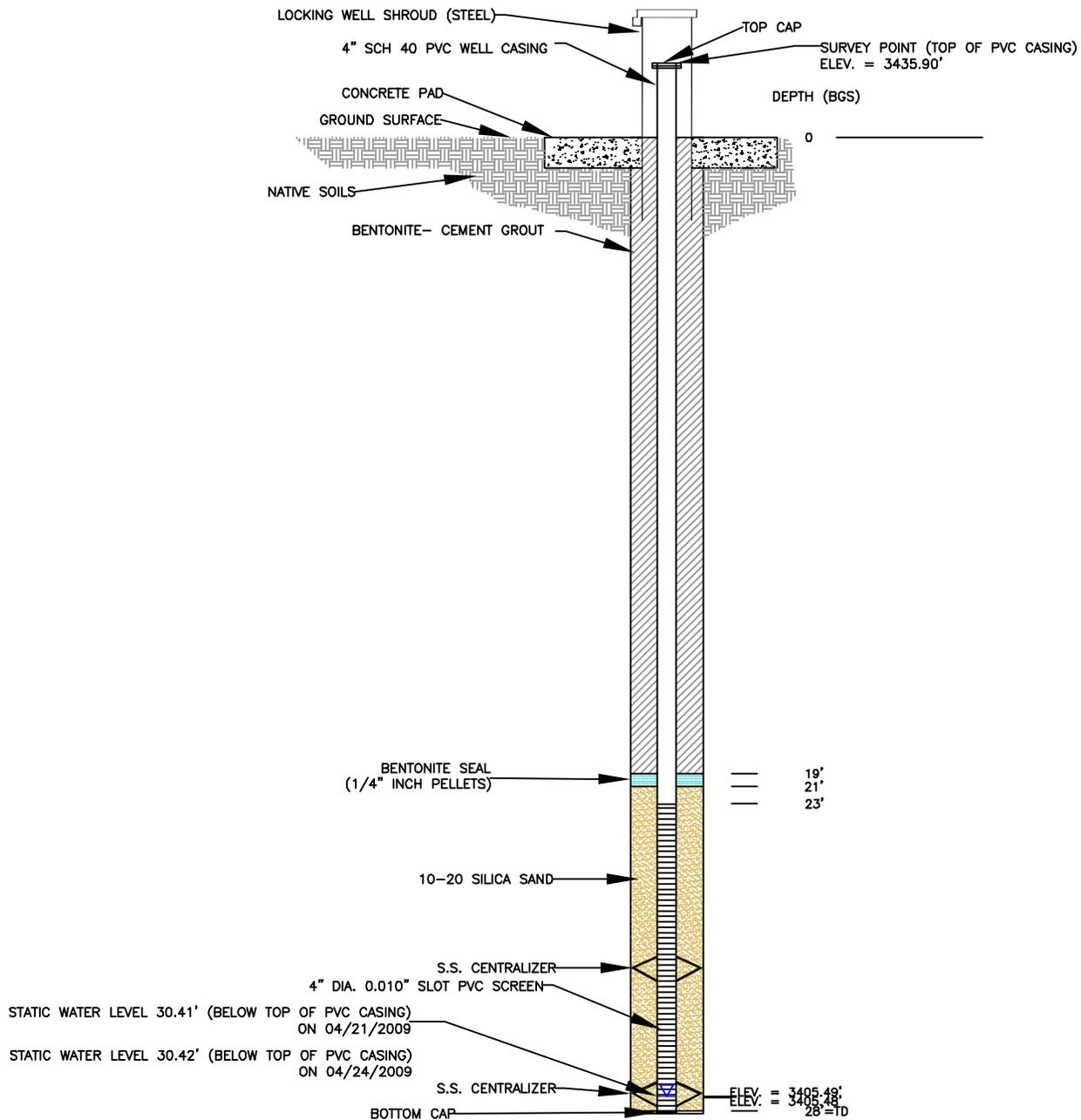
#### **4.2 Perched Monitoring Wells MP-2P and MP-4P**

Following drilling of the MP borings (see **Section 4.1**), shallow monitoring wells MP-2P and MP-4P were constructed at the locations shown on **Figure 2** to monitor any isolated zone(s) of saturation on top of and/or within the upper Chinle at those locations. The wells were constructed in response to moist/wet zones encountered in borings MP-2 and MP-4, respectively, as described in **Section 4.1** and illustrated on the boring logs (see **Attachment C**).

Each well was constructed with an adequate length of screen and annular sand pack to capture any free water within the zones where moist/wet materials were encountered. **Attachment D** includes the boring logs for borings MP-2P and MP-4P. **Figures 3** and **4** are the as-built construction schematics for monitoring wells MP-2P and MP-4P, respectively. **Table 2** summarizes the as-built construction specifications for MP-2P and MP-4P. **Table 2** also summarizes depth to groundwater measurements after the wells were installed.

**Table 2**  
**As-built Construction Specifications for Monitoring Wells**

Monitoring Well	MP-2P		MP-4P	
	<i>Elevation (fmsl)</i>	<i>Depth (fbgs)</i>	<i>Elevation (fmsl)</i>	<i>Depth (fbgs)</i>
Ground Surface <sup>1</sup>	3433.58	-	3384.62	-
Groundwater	3405.49	30.41 <sup>a</sup>	3331.99	55.10 <sup>d</sup>
	3405.48	30.42 <sup>b</sup>	3332.24	54.85 <sup>c</sup>
	3404.92	30.98 <sup>c</sup>		
Top of PVC Casing	3435.90	+2.32	3387.09	+2.47
Total Well Depth	3405.58	28	3324.62	60
Well Screen Top	3410.58	23	3334.62	50
Well Screen Bottom	3405.58	28	3324.62	60
Filter Pack Top	3412.58	21	3336.62	48
Filter Pack Bottom	3405.58	28	3324.62	60
Annular Bentonite Seal Top	3414.58	19	3338.62	46
Annular Bentonite Seal Bottom	3412.58	21	3336.62	48
Annular Grout Seal Top	3433.58	0	3384.62	0
Annular Grout Seal Bottom	3414.58	19	3338.62	46
Borehole Diameter	7.25 inches (minimum)			
Length of Well Screen	MP-2P = 5 feet; MP-4P = 10 feet			
Well Screen	4-inch ID Schedule 40 PVC pipe, with 0.010 inch machined slots			
Well Casing	4-inch ID Schedule 40 PVC pipe, flush-threaded			
Filter Pack Material	10/20 Colorado silica sand			
Annular Bentonite Seal	Hydrated, coated bentonite pellets			
Annular Grout Seal	Cement-bentonite grout containing 2% to 5% bentonite			
NOTES: <sup>1</sup> equals approximate elevation of concrete pad <sup>a</sup> depth to groundwater measured below top of PVC casing on April 21, 2009 <sup>b</sup> depth to groundwater measured below top of PVC casing on April 22, 2009 <sup>c</sup> depth to groundwater measured below top of PVC casing on June 24, 2009 <sup>d</sup> depth to groundwater measured below top of PVC casing on May 1, 2009 fmsl = feet above mean sea level fbgs = feet below ground surface (“+” indicates feet above ground surface)				



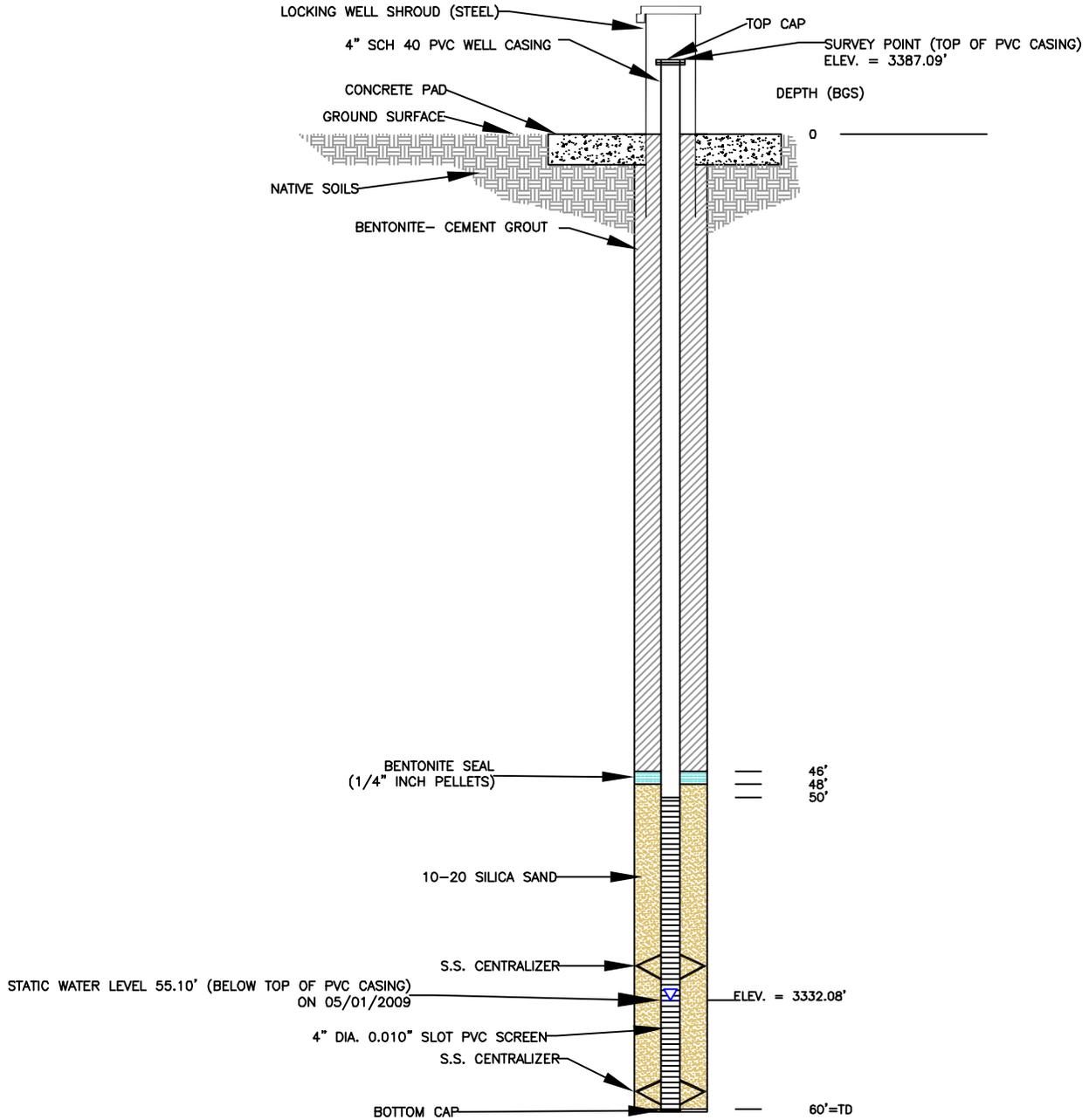
NOTE: DRAWING NOT TO SCALE

MP-2P WELL COMPLETION SCHEMATIC  
 SUNDANCE WEST  
 SUNDANCE SERVICES INC.  
 LEA COUNTY, NEW MEXICO



213 S. Camino del Pueblo  
 Bernalillo, New Mexico, USA  
 Phone: 505-867-6990  
 Fax: 505-867-6991

DATE: 06/30/09	CAD: WELL COMPLETION SCHEMATIC MP2P.dwg	PROJECT #: 530.01.01
DRAWN BY: MLH	REVIEWED BY: LMC	
APPROVED BY: IKG	gei@gordonenvironmental.com	FIGURE 3



NOTE: DRAWING NOT TO SCALE

## MP-4P WELL COMPLETION SCHEMATIC

SUNDANCE WEST  
SUNDANCE SERVICES INC.  
LEA COUNTY, NEW MEXICO



Gordon Environmental, Inc.  
Consulting Engineers

213 S. Camino del Pueblo  
Bernalillo, New Mexico, USA  
Phone: 505-867-6990  
Fax: 505-867-6991

DATE: 06/30/09	CAD: WELL COMPLETION SCHEMATIC MP4P.dwg	PROJECT #: 530.01.01
DRAWN BY: MLH	REVIEWED BY: LMC	
APPROVED BY: IKG	gei@gordonenvironmental.com	<b>FIGURE 4</b>

**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING WELL INSTALLATION**

**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

**ATTACHMENT A  
PROJECT PHOTOGRAPHS**



Photograph 1. Rodgers set up on MP-1 with CME-75 combination HSA and air rotary drill rig and related equipment.



Photograph 2. HSA drilling MP-1.



Photograph 3. Split spoon sample; top of Chinle Formation at 27'.



Photograph 4. HSA drilling top of Chinle Formation at MP-1.



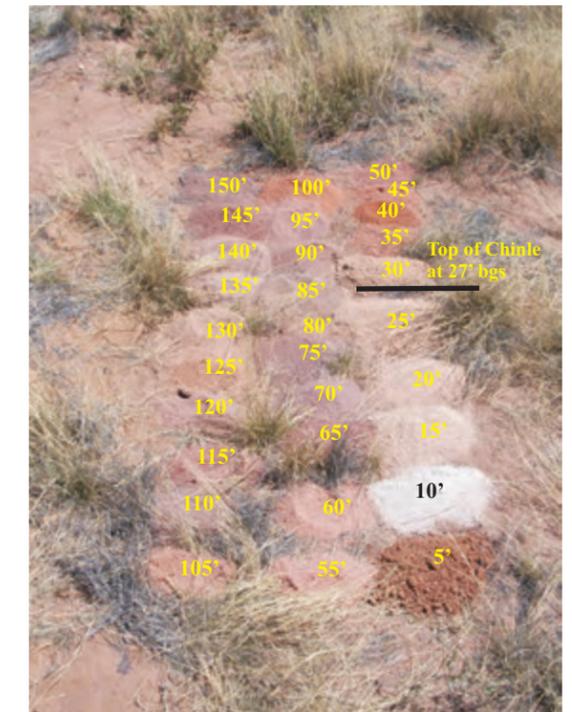
Photograph 5. Converting from HSA drilling to air rotary at MP-1 (also typical of other boring locations).



Photograph 6. Converting to air rotary drilling at MP-1 (also typical of other boring locations).



Photograph 7. Air rotary drilling Chinle Formation at MP-1.



Photograph 8. Cuttings samples at 5-foot intervals below ground surface (as shown) at MP-1 (top of Chinle Formation as indicated).

 <p><b>GORDON ENVIRONMENTAL, INC.</b></p> <p><i>Consulting Engineers</i></p> <p>213 S. Camino del Pueblo Bernatillo, New Mexico 87004</p> <p>(505) 867-6990 (505) 867-6991 Fax</p>	<p><b>SUNDANCE WEST</b> SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO</p> <p><b>ATTACHMENT A</b> <b>PHOTOGRAPHS 1 THROUGH 8</b> Completion Report</p>		
	DATE: 29 JUN 09	BY: LMC	SCALE: NA
FILE: E:\GEI\Sundance\West Area\Photos1.cdr			



Photograph 9. Rodgers set up on MP-2 with CME-75 combination HSA and air rotary drill rig and related equipment.



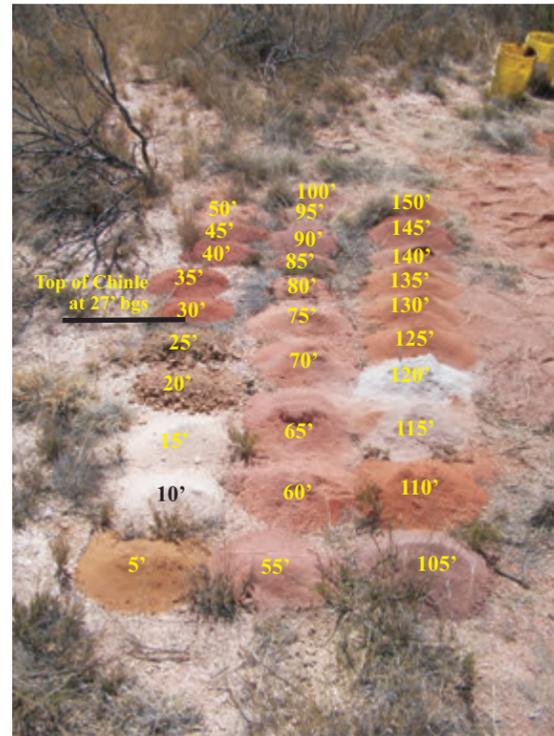
Photograph 10. HSA drilling caliche in boring MP-2.



Photograph 11. Split spoon sample; top of Chinle Formation at 27'.



Photograph 12. Air rotary drilling dry Chinle Formation at MP-2.



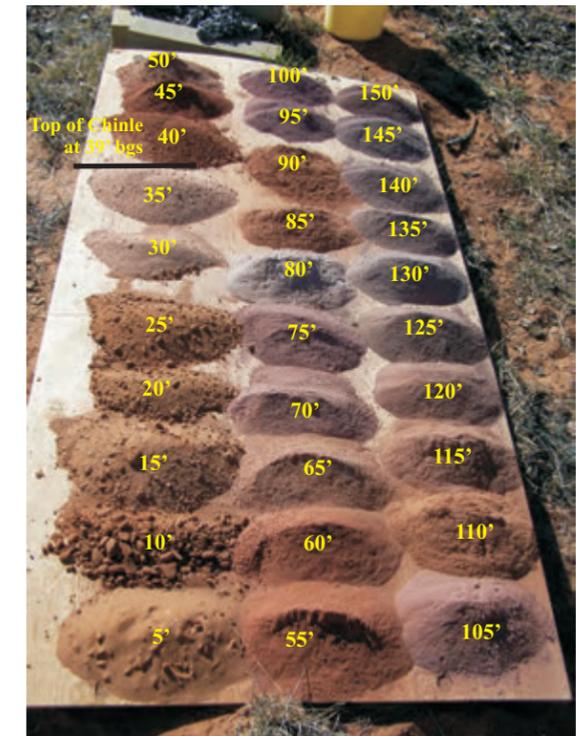
Photograph 13. Cuttings samples at 5-foot intervals below ground surface (as shown) at MP-2 (top of Chinle Formation as indicated).



Photograph 14. Air rotary drilling dry Chinle Formation at MP-3.



Photograph 15. Rodgers set up on MP-3 with CME-75 combination HSA and air rotary drill rig and related equipment.



Photograph 16. Cuttings samples at 5-foot intervals below ground surface (as shown) at MP-3 (top of Chinle Formation as indicated).

 <b>GORDON ENVIRONMENTAL, INC.</b>  <i>Consulting Engineers</i>	<b>SUNDANCE WEST</b> <i>SUNDANCE SERVICES, INC.</i> <i>LEA COUNTY, NEW MEXICO</i>			
	<b>ATTACHMENT A</b> <b>PHOTOGRAPHS 9 THROUGH 16</b> <i>Completion Report</i>			
213 S. Camino del Pueblo Bernalillo, New Mexico 87004	(505) 867-6990 (505) 867-6991 Fax	DATE: 29 JUN 09	BY: LMC	SCALE: NA
		FILE: E:\GEI\Sundance\West Area\Photos2.cdr		



Photograph 17. Rodgers drilling dry Chinle Formation at MP-4 using air rotary.



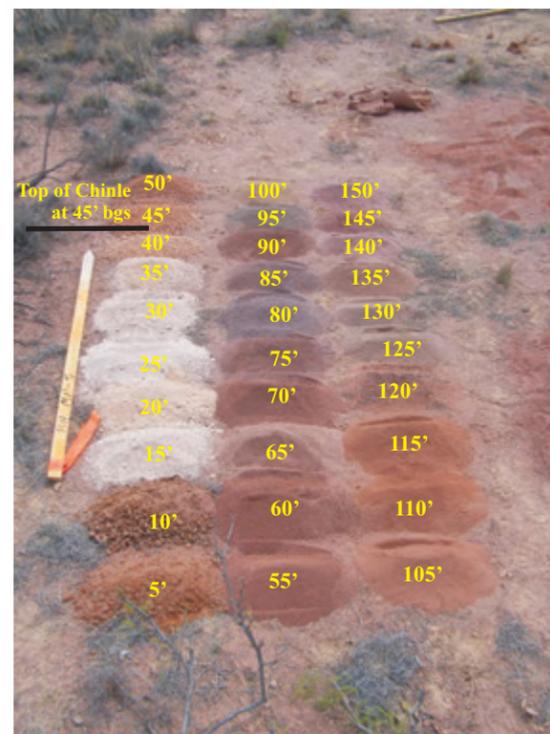
Photograph 18. Cuttings samples at 5-foot intervals below ground surface (as shown) at MP-4 (top of Chinle Formation as indicated).



Photograph 19. Rodgers set up on MP-4 with CME-75 combination HSA and air rotary drill rig and related equipment.



Photograph 20. Rodgers set up on MP-5 with CME-75 combination HSA and air rotary drill rig and related equipment.



Photograph 21. Cuttings samples at 5-foot intervals below ground surface (as shown) at MP-5 (top of Chinle Formation as indicated).



Photograph 22. Boring MP-5 plugged using cement-bentonite grout slurry (also typical of other borings).



Photograph 23. Well MP-2P (plugged boring MP-2 in background).



Photograph 24. Well MP-4P (railroad tracks in background).

 <b>GORDON ENVIRONMENTAL, INC.</b>  <i>Consulting Engineers</i>  213 S. Camino del Pueblo Bernalillo, New Mexico 87004	<b>SUNDANCE WEST</b> SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO		
	<b>ATTACHMENT A</b> <b>PHOTOGRAPHS 17 THROUGH 24</b> Completion Report		
(505) 867-6990 (505) 867-6991 Fax	DATE: 29 JUN 09	BY: LMC	SCALE: NA
	FILE: E:\GEI\Sundance\West Area\Photos3.cdr		

**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING WELL INSTALLATION**

**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

**ATTACHMENT B**

**OFFICE OF THE STATE ENGINEER WELL RECORDS AND LOGS**



**STATE OF NEW MEXICO**  
**OFFICE OF THE STATE ENGINEER**  
**ROSWELL**

**John R. D'Antonio, Jr., P.E.**  
State Engineer

1900 West Second Street  
Roswell, NM 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

April 10, 2009

Sundance Services, Inc.  
% Larry M. Coons, P.E.  
Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004

RE: Monitoring Wells – CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. **IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.**

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

A handwritten signature in cursive script, appearing to read "Andy Morley".

Andy Morley, Staff Manager  
(575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

**NEW MEXICO STATE ENGINEER  
PERMIT TO MONITOR**

**SPECIFIC CONDITIONS OF APPROVAL**

- 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 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1019 must be completed and the Well Log filed on or before 04/30/2010.

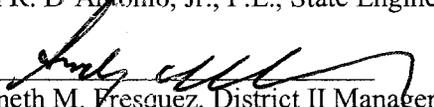
**ACTION OF STATE ENGINEER**

Notice of Intention Rcvd:		Date Rcvd. Corrected:
Formal Application Rcvd:	04/01/2009	Pub. Of Notice Ordered:
Date Returned – Correction:		Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 9 day of April A.D., 2009.

John R. D'Antonio, Jr., P.E., State Engineer

By:   
Kenneth M. Fresquez, District II Manager

File Number: \_\_\_\_\_  
(For OSE Use Only)

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**1. APPLICANT:**

Name: Sundance Services, Inc. Work Phone: 575-394-2511  
Contact: Mr. Joe Carrillo, Plant Manager Home Phone: \_\_\_\_\_  
Address: 1001 6th Street  
City: Eunice State: NM Zip: 88231

**2. LOCATION OF WELL (A, B, C, or D required, E or F if known):** MP-5

- A. SW 1/4 SW 1/4 NW 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.  
in Lea County County.
- B. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System  
\_\_\_\_\_ Zone in the \_\_\_\_\_ Grant.  
U.S.G.S. Quad Map \_\_\_\_\_
- C. Latitude: 32 d 26 m 59.7 s Longitude: 103 d 6 m 25.6 s
- D. East 677928 (m), North 3591884 (m), UTM Zone 13, NAD \_\_\_\_\_ (27 or 83)
- E. Tract No. \_\_\_\_\_, Map No. \_\_\_\_\_ of the \_\_\_\_\_ Hydrographic Survey
- F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the  
\_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.
- G. Other: \_\_\_\_\_
- H. Give State Engineer File Number of existing well: \_\_\_\_\_
- I. On land owned by (required): Sundance Services, Inc. (through lease authorization)

**3. WELL INFORMATION:**

Approximate depth 125 feet; Outside diameter of casing 2 inches.  
Name of well driller and driller license number Rodgers - NMWD 225

**4. ADDITIONAL STATEMENT OR EXPLANATIONS:**

To evaluate subsurface groundwater.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - 1 A 10:58

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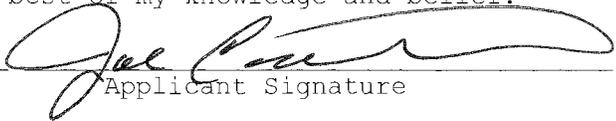
File Number: CP-1019  
Form: wr-07

Trn Number: 428023

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**ACKNOWLEDGEMENT**

(I, We) Joe Carrillo for Sundance Services, Inc. affirm that the  
(Please Print)  
foregoing statements are true to the best of my knowledge and belief.

\_\_\_\_\_  
Applicant Signature  Applicant Signature

**ACTION OF STATE ENGINEER**

This application is approved/~~denied~~/~~permitted~~/~~approved~~ provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare, and further subject to the following conditions: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
see attached conditions of approval  
\_\_\_\_\_

Witness my hand and seal this 9 day of April, 20 09

John R. D'Antonio, Jr., P.E., State Engineer

By:   
Kenneth M. Fresquez, District II Manager

STATE ENGINEER OFFICE  
ROSSELL, NEW MEXICO  
2009 APR - 1 A 10:58

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MP-5

## Locator Tool Report

### General Information:

Application ID: 28                      Date: 04-02-2009                      Time: 10:49:12

WR File Number: CP  
Purpose: POINT OF DIVERSION

Applicant First Name: SUNDANCE  
Applicant Last Name: SERVICES

GW Basin: CAPITAN  
County: LEA

Critical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT

### PLSS Description (New Mexico Principal Meridian):

SW 1/4 of SW 1/4 of SW 1/4 of NW 1/4 of Section 30, Township 21S, Range 38E.

### Coordinate System Details:

#### Geographic Coordinates:

Latitude: 32 Degrees 26 Minutes 59.7 Seconds N  
Longitude: 103 Degrees 6 Minutes 25.6 Seconds W

#### Universal Transverse Mercator Zone: 13N

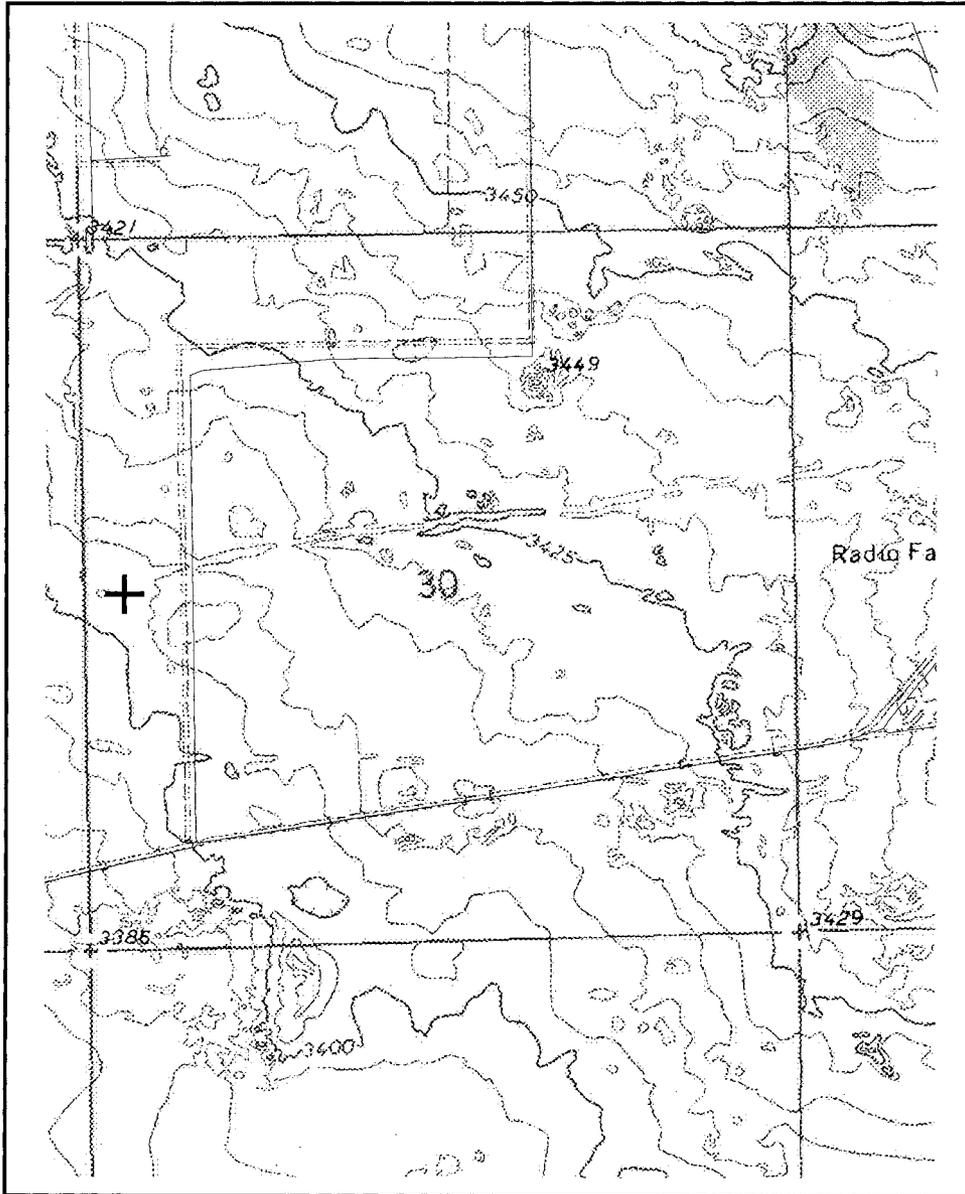
NAD 1983(92) (Meters)	N: 3,591,884	E: 677,928
NAD 1983(92) (Survey Feet)	N: 11,784,374	E: 2,224,170
NAD 1927 (Meters)	N: 3,591,709	E: 677,888
NAD 1927 (Survey Feet)	N: 11,783,798	E: 2,224,037

#### State Plane Coordinate System Zone: New Mexico East

NAD 1983(92) (Meters)	N: 161,417	E: 280,293
NAD 1983(92) (Survey Feet)	N: 529,582	E: 919,595
NAD 1927 (Meters)	N: 161,425	E: 267,652
NAD 1927 (Survey Feet)	N: 529,610	E: 878,121

**NEW MEXICO OFFICE OF STATE ENGINEER**

**Locator Tool Report**



WR File Number: CP

Scale: 1:17,314

Northing/Easting: UTM83(92) (Meter): N: 3,591,884 E: 677,928

Northing/Easting: SPCS83(92) (Feet): N: 529,582 E: 919,595

GW Basin: Capitan



**STATE OF NEW MEXICO**  
**OFFICE OF THE STATE ENGINEER**  
**ROSWELL**

**John R. D'Antonio, Jr., P.E.**  
State Engineer

1900 West Second Street  
Roswell, NM 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

April 10, 2009

Sundance Services, Inc.  
% Larry M. Coons, P.E.  
Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004

RE: Monitoring Wells – CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. **IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.**

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

A handwritten signature in cursive script, appearing to read "Andy Morley".

Andy Morley, Staff Manager  
(575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

**NEW MEXICO STATE ENGINEER  
PERMIT TO MONITOR**

**SPECIFIC CONDITIONS OF APPROVAL**

- 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 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1018 must be completed and the Well Log filed on or before 04/30/2010.

**ACTION OF STATE ENGINEER**

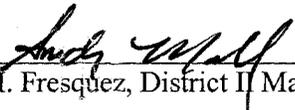
Notice of Intention Rcvd:  
Formal Application Rcvd: 04/01/2009  
Date Returned - Correction:

Date Rcvd. Corrected:  
Pub. Of Notice Ordered:  
Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 9 day of April A.D., 2009.

John R. D'Antonio, Jr., P.E., State Engineer

By:   
Kenneth M. Fresquez, District II Manager

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**1. APPLICANT:**

Name: Sundance Services, Inc. Work Phone: 575-394-2511  
Contact: Mr. Joe Carrillo, Plant Manager Home Phone: \_\_\_\_\_  
Address: 1001 6th Street  
City: Eunice State: NM Zip: 88231

**2. LOCATION OF WELL (A, B, C, or D required, E or F if known): MP-4**

- A. SW 1/4 SW 1/4 SW 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M. in Lea County
- B. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in the \_\_\_\_\_ Grant. U.S.G.S. Quad Map \_\_\_\_\_
- C. Latitude: 32 d 26 m 37.4 s Longitude: 103 d 6 m 26.2 s
- D. East 677925 (m), North 3591197 (m), UTM Zone 13, NAD \_\_\_\_ (27 or 83)
- E. Tract No. \_\_\_\_\_, Map No. \_\_\_\_\_ of the \_\_\_\_\_ Hydrographic Survey
- F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the \_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.
- G. Other: \_\_\_\_\_
- H. Give State Engineer File Number of existing well: \_\_\_\_\_
- I. On land owned by (required): Sundance Services, Inc. (through lease authorization)

**3. WELL INFORMATION:**

Approximate depth 125 feet; Outside diameter of casing 2 inches.  
Name of well driller and driller license number Rodgers - NMWD 225

**4. ADDITIONAL STATEMENT OR EXPLANATIONS:**

To evaluate subsurface groundwater.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

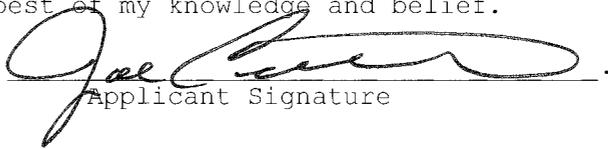
STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - 1 A 10:58

Do Not Write Below This Line

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**ACKNOWLEDGEMENT**

(I, We) Joe Carrillo for Sundance Services, Inc. affirm that the  
(Please Print)  
foregoing statements are true to the best of my knowledge and belief.

\_\_\_\_\_  
Applicant Signature  Applicant Signature

**ACTION OF STATE ENGINEER**

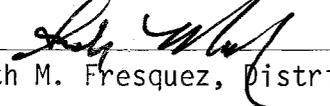
This application is approved ~~conditionally approved~~ provided it is not  
exercised to the detriment of any others having existing rights, and is not  
contrary to the conservation of water in New Mexico nor detrimental to the  
public welfare, and further subject to the following conditions: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

see attached conditions of approval

Witness my hand and seal this 9 day of April, 20 09

John R. D'Antonio, Jr., P.E. State Engineer

By:   
Kenneth M. Fresquez, District II Manager

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - 1 A 10: 58

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MP-4

**Locator Tool Report**

**General Information:**

Application ID: 28                      Date: 04-02-2009                      Time: 10:47:21

WR File Number: CP  
Purpose: POINT OF DIVERSION

Applicant First Name: SUNDANCE  
Applicant Last Name: SERVICES

GW Basin: CAPITAN  
County: LEA

Critical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT

**PLSS Description (New Mexico Principal Meridian):**

NW 1/4 of SW 1/4 of SW 1/4 of SW 1/4 of Section 30, Township 21S, Range 38E.

**Coordinate System Details:**

**Geographic Coordinates:**

Latitude: 32 Degrees 26 Minutes 37.4 Seconds N  
Longitude: 103 Degrees 6 Minutes 26.2 Seconds W

**Universal Transverse Mercator Zone: 13N**

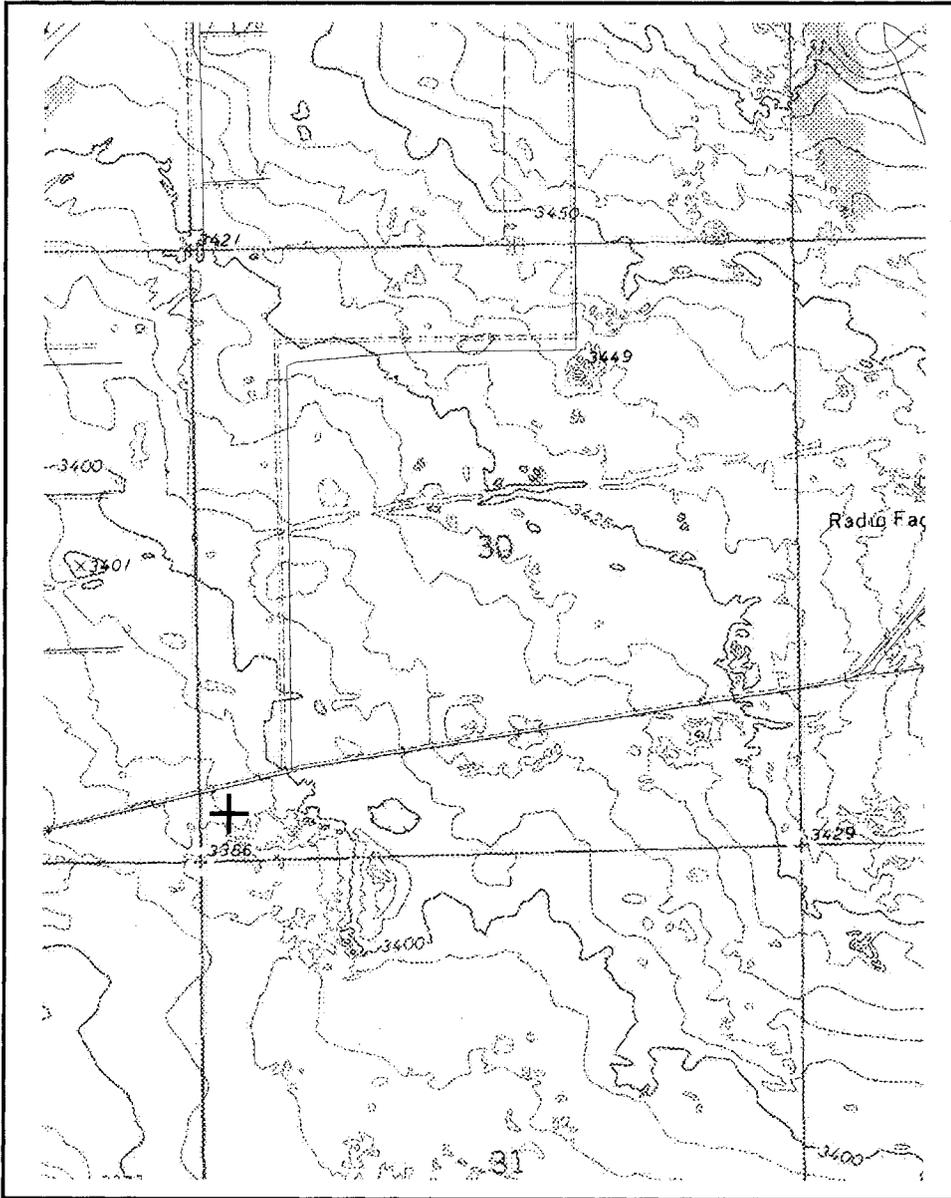
NAD 1983(92) (Meters)	N: 3,591,197	E: 677,925
NAD 1983(92) (Survey Feet)	N: 11,782,118	E: 2,224,160
NAD 1927 (Meters)	N: 3,591,021	E: 677,885
NAD 1927 (Survey Feet)	N: 11,781,542	E: 2,224,027

**State Plane Coordinate System Zone: New Mexico East**

NAD 1983(92) (Meters)	N: 160,729	E: 280,286
NAD 1983(92) (Survey Feet)	N: 527,326	E: 919,571
NAD 1927 (Meters)	N: 160,738	E: 267,644
NAD 1927 (Survey Feet)	N: 527,354	E: 878,097

**NEW MEXICO OFFICE OF STATE ENGINEER**

**Locator Tool Report**



WR File Number: CP

Scale: 1:20,224

Northing/Easting: UTM83(92) (Meter): N: 3,591,197 E: 677,925

Northing/Easting: SPCS83(92) (Feet): N: 527,326 E: 919,571

GW Basin: Capitan



**STATE OF NEW MEXICO**  
**OFFICE OF THE STATE ENGINEER**  
**ROSWELL**

**John R. D'Antonio, Jr., P.E.**  
State Engineer

1900 West Second Street  
Roswell, NM 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

April 10, 2009

Sundance Services, Inc.  
% Larry M. Coons, P.E.  
Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004

RE: Monitoring Wells – CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. **IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.**

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

*AM*  
*for*

Andy Morley, Staff Manager  
(575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

**NEW MEXICO STATE ENGINEER  
PERMIT TO MONITOR**

**SPECIFIC CONDITIONS OF APPROVAL**

- 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 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1017 must be completed and the Well Log filed on or before 04/30/2010.

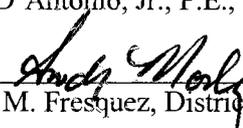
**ACTION OF STATE ENGINEER**

Notice of Intention Rcvd:		Date Rcvd. Corrected:
Formal Application Rcvd:	04/01/2009	Pub. Of Notice Ordered:
Date Returned - Correction:		Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 9 day of April A.D., 2009.

John R. D'Antonio, Jr., P.E., State Engineer

By:   
Kenneth M. Fresquez, District II Manager

File Number: \_\_\_\_\_  
(For OSE Use Only)

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**1. APPLICANT:**

Name: Sundance Services, Inc. Work Phone: 575-394-2511  
Contact: Mr. Joe Carrillo, Plant Manager Home Phone: \_\_\_\_\_  
Address: 1001 6th Street  
City: Eunice State: NM Zip: 88231

**2. LOCATION OF WELL (A, B, C, or D required, E or F if known): MP-3**

- A. NE 1/4 NW 1/4 SE 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.  
in Lea County
- B. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System  
Zone in the \_\_\_\_\_ Grant.  
U.S.G.S. Quad Map \_\_\_\_\_
- C. Latitude: 32 d 26 m 49.8 s Longitude: 103 d 5 m 51.7 s
- D. East 678820 (m), North 3591594 (m), UTM Zone 13, NAD (27 of 83)
- E. Tract No. \_\_\_\_\_, Map No. \_\_\_\_\_ of the \_\_\_\_\_ Hydrographic Survey
- F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the  
\_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.
- G. Other: \_\_\_\_\_
- H. Give State Engineer File Number of existing well: \_\_\_\_\_
- I. On land owned by (required): Sundance Services, Inc. (through lease authorization)

**3. WELL INFORMATION:**

Approximate depth 125 feet; Outside diameter of casing 2 inches  
Name of well driller and driller license number Rodgers - NMWD 225

**4. ADDITIONAL STATEMENT OR EXPLANATIONS:**

To evaluate subsurface groundwater.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - / A 10:57

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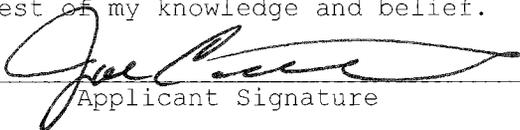
File Number: CP-1017  
Form: wr-07

Trn Number: 428019

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**ACKNOWLEDGEMENT**

(I, We) Joe Carrillo for Sundance Services, Inc. affirm that the  
(Please Print)  
foregoing statements are true to the best of my knowledge and belief.

\_\_\_\_\_  
Applicant Signature  Applicant Signature

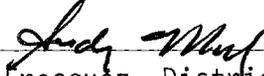
**ACTION OF STATE ENGINEER**

This application is approved ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ provided it is not  
exercised to the detriment of any others having existing rights, and is not  
contrary to the conservation of water in New Mexico nor detrimental to the  
public welfare, and further subject to the following conditions: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
see attached conditions of approval  
\_\_\_\_\_  
\_\_\_\_\_

Witness my hand and seal this 9 day of April, 2009

John R. D'Antonio, Jr., P.E. State Engineer

By:   
Kenneth M. Fresquez, District II Manager

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - 1 A 10: 58

Do Not Write Below This Line

MP-3

### Locator Tool Report

#### General Information:

Application ID: 28                      Date: 04-02-2009                      Time: 10:44:33

WR File Number: CP  
Purpose: POINT OF DIVERSION

Applicant First Name: SUNDANCE  
Applicant Last Name: SERVICES

GW Basin: CAPITAN  
County: LEA

Critical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT

#### PLSS Description (New Mexico Principal Meridian):

NE 1/4 of SW 1/4 of NW 1/4 of SE 1/4 of Section 30, Township 21S, Range 38E.

#### Coordinate System Details:

##### Geographic Coordinates:

Latitude:        32 Degrees 26 Minutes 49.8 Seconds N  
Longitude:      103 Degrees 5 Minutes 51.7 Seconds W

##### Universal Transverse Mercator Zone: 13N

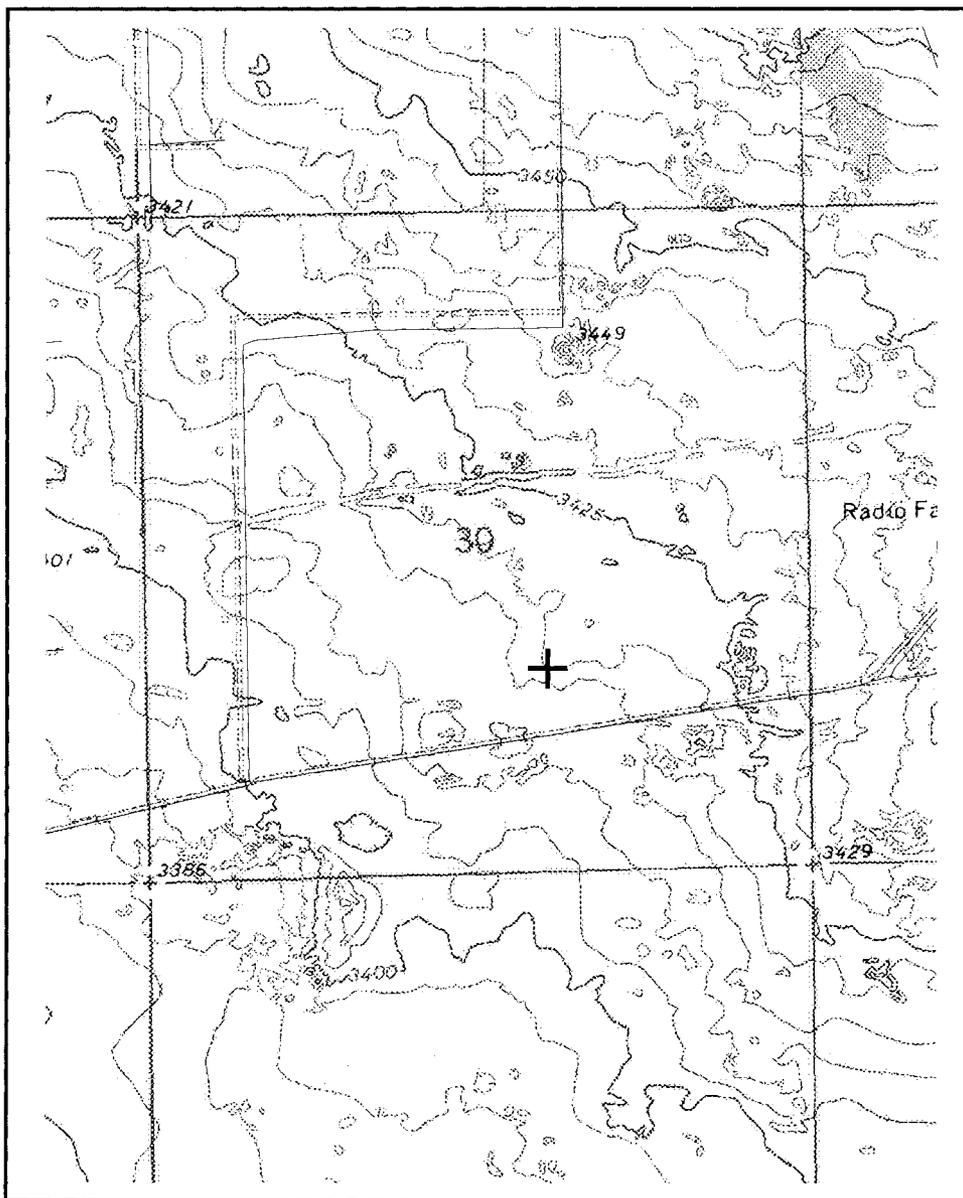
NAD 1983(92) (Meters)	N: 3,591,594	E: 678,820
NAD 1983(92) (Survey Feet)	N: 11,783,423	E: 2,227,094
NAD 1927 (Meters)	N: 3,591,419	E: 678,779
NAD 1927 (Survey Feet)	N: 11,782,846	E: 2,226,961

##### State Plane Coordinate System Zone: New Mexico East

NAD 1983(92) (Meters)	N: 161,121	E: 281,183
NAD 1983(92) (Survey Feet)	N: 528,612	E: 922,513
NAD 1927 (Meters)	N: 161,130	E: 268,541
NAD 1927 (Survey Feet)	N: 528,640	E: 881,039

**NEW MEXICO OFFICE OF STATE ENGINEER**

**Locator Tool Report**



WR File Number: CP

Scale: 1:18,520

Northing/Easting: UTM83(92) (Meter): N: 3,591,594 E: 678,820

Northing/Easting: SPCS83(92) (Feet): N: 528,612 E: 922,513

GW Basin: Capitan



**STATE OF NEW MEXICO**  
**OFFICE OF THE STATE ENGINEER**  
**ROSWELL**

**John R. D'Antonio, Jr., P.E.**  
State Engineer

1900 West Second Street  
Roswell, NM 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

April 10, 2009

Sundance Services, Inc.  
% Larry M. Coons, P.E.  
Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004

RE: Monitoring Wells – CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. **IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.**

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

*AM*  
*for*

Andy Morley, Staff Manager  
(575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

**NEW MEXICO STATE ENGINEER  
PERMIT TO MONITOR**

**SPECIFIC CONDITIONS OF APPROVAL**

- 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 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1016 must be completed and the Well Log filed on or before 04/30/2010.

**ACTION OF STATE ENGINEER**

Notice of Intention Rcvd:		Date Rcvd. Corrected:
Formal Application Rcvd:	04/01/2009	Pub. Of Notice Ordered:
Date Returned – Correction:		Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 9 day of April A.D., 2009.

John R. D'Antonio, Jr., P.E., State Engineer

By:   
Kenneth M. Fresquez, District II Manager

File Number: \_\_\_\_\_  
(For OSE Use Only)

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**1. APPLICANT:**

Name: Sundance Services, Inc. Work Phone: 575-394-2511  
Contact: Mr. Joe Carrillo, Plant Manager Home Phone: \_\_\_\_\_  
Address: 1001 6th Street  
City: Eunice State: NM Zip: 88231

**2. LOCATION OF WELL (A, B, C, or D required, E or F if known):** MP-2

- A. NE 1/4 NE 1/4 SE 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M. in Lea County.
- B. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in the \_\_\_\_\_ Grant. U.S.G.S. Quad Map \_\_\_\_\_
- C. Latitude: 32 d 26 m 59.5 s Longitude: 103 d 5 m 28.6 s
- D. East \_\_\_\_\_ (m), North \_\_\_\_\_ (m), UTM Zone 13, NAD \_\_\_\_\_ (27 or 83)
- E. Tract No. \_\_\_\_\_, Map No. \_\_\_\_\_ of the \_\_\_\_\_ Hydrographic Survey
- F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the \_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.
- G. Other: \_\_\_\_\_
- H. Give State Engineer File Number of existing well: \_\_\_\_\_
- I. On land owned by (required): Sundance Services, Inc. (through lease authorization)

**3. WELL INFORMATION:**

Approximate depth 125 feet; Outside diameter of casing 2 inches.  
Name of well driller and driller license number Rodgers - NMWD 225

**4. ADDITIONAL STATEMENT OR EXPLANATIONS:**

To evaluate subsurface groundwater.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - 1 A 10:57

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File Number: CP-1016  
Form: wr-07

Trn Number: 428017

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**ACKNOWLEDGEMENT**

(I, We) Joe Carrillo for Sundance Services, Inc. affirm that the  
(Please Print)  
foregoing statements are true to the best of my knowledge and belief.

\_\_\_\_\_  
Applicant Signature  Applicant Signature

**ACTION OF STATE ENGINEER**

This application is approved ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare, and further subject to the following conditions: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
see attached conditions of approval  
\_\_\_\_\_  
\_\_\_\_\_

Witness my hand and seal this 9 day of April, 20 09

John R. D'Antonio, Jr., P.E. State Engineer

By: Lady Moody  
Kenneth M. Fresquez, District II Manager

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR - / A 10:57

Do Not Write Below This Line

MP-2

**Locator Tool Report**

**General Information:**

Application ID: 28                      Date: 04-02-2009                      Time: 10:42:31

WR File Number: CP  
Purpose: POINT OF DIVERSION

Applicant First Name: SUNDANCE  
Applicant Last Name: SERVICES

GW Basin: CAPITAN  
County: LEA

Critical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT

**PLSS Description (New Mexico Principal Meridian):**

NE 1/4 of NE 1/4 of NE 1/4 of SE 1/4 of Section 30, Township 21S, Range 38E.

**Coordinate System Details:**

**Geographic Coordinates:**

Latitude: 32 Degrees 26 Minutes 59.5 Seconds N  
Longitude: 103 Degrees 5 Minutes 28.6 Seconds W

**Universal Transverse Mercator Zone: 13N**

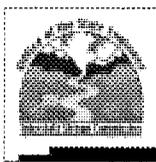
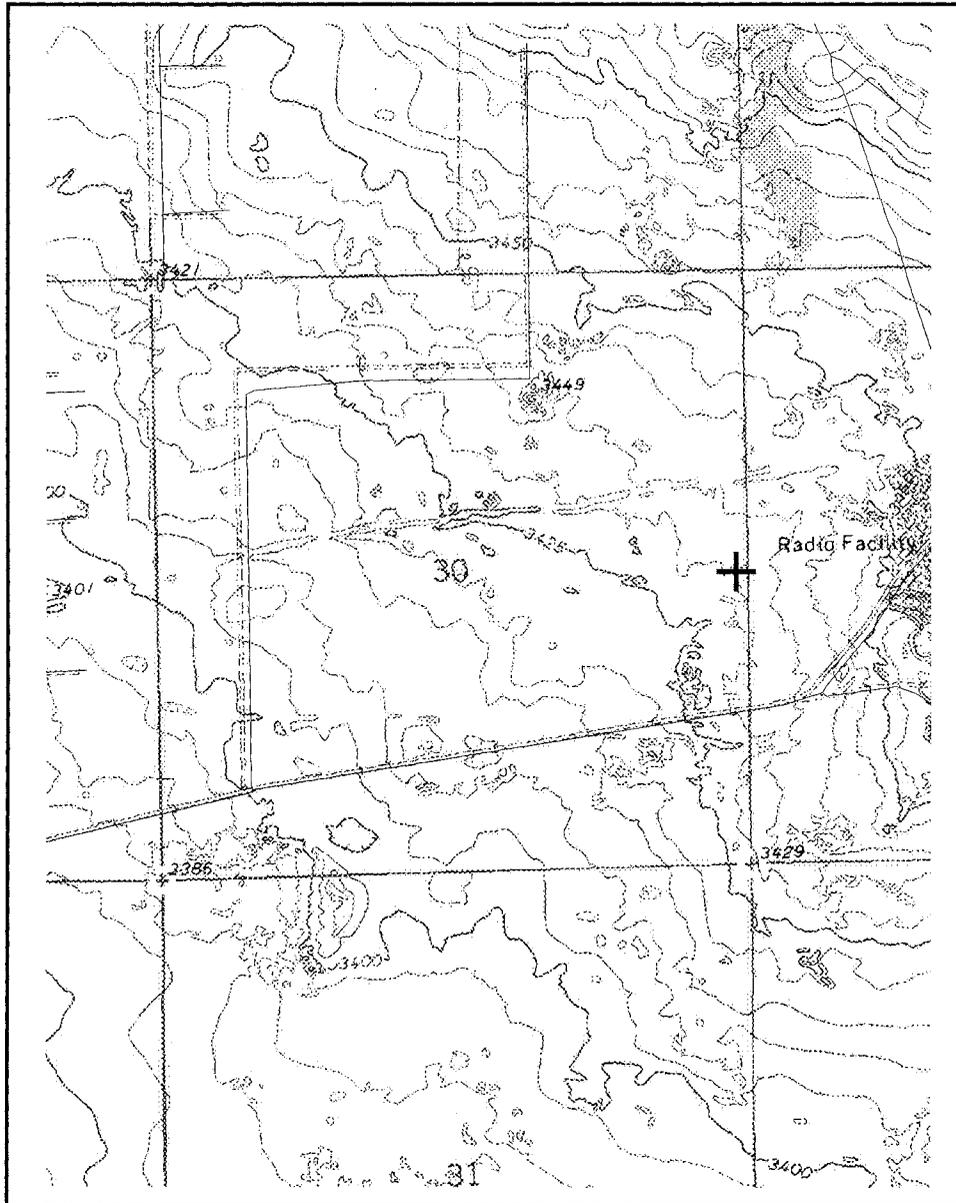
NAD 1983(92) (Meters)	N: 3,591,905	E: 679,418
NAD 1983(92) (Survey Feet)	N: 11,784,441	E: 2,229,057
NAD 1927 (Meters)	N: 3,591,729	E: 679,378
NAD 1927 (Survey Feet)	N: 11,783,865	E: 2,228,925

**State Plane Coordinate System Zone: New Mexico East**

NAD 1983(92) (Meters)	N: 161,428	E: 281,783
NAD 1983(92) (Survey Feet)	N: 529,618	E: 924,483
NAD 1927 (Meters)	N: 161,436	E: 269,142
NAD 1927 (Survey Feet)	N: 529,646	E: 883,009

**NEW MEXICO OFFICE OF STATE ENGINEER**

**Locator Tool Report**



WR File Number: CP

Scale: 1:20,678

Northing/Easting: UTM83(92) (Meter): N: 3,591,905 E: 679,418

Northing/Easting: SPCS83(92) (Feet): N: 529,618 E: 924,483

GW Basin: Capitan



**STATE OF NEW MEXICO**  
**OFFICE OF THE STATE ENGINEER**  
**ROSWELL**

**John R. D'Antonio, Jr., P.E.**  
State Engineer

1900 West Second Street  
Roswell, NM 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

April 10, 2009

Sundance Services, Inc.  
% Larry M. Coons, P.E.  
Gordon Environmental, Inc.  
213 S. Camino del Pueblo  
Bernalillo, NM 87004

RE: Monitoring Wells – CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. **IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.**

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

*Mjw*  
*for*

Andy Morley, Staff Manager  
(575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

**NEW MEXICO STATE ENGINEER  
PERMIT TO MONITOR**

**SPECIFIC CONDITIONS OF APPROVAL**

- 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 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1015 must be completed and the Well Log filed on or before 04/30/2010.

**ACTION OF STATE ENGINEER**

Notice of Intention Rcvd:		Date Rcvd. Corrected:
Formal Application Rcvd:	04/01/2009	Pub. Of Notice Ordered:
Date Returned – Correction:		Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 9 day of April A.D., 2009.

John R. D'Antonio, Jr., P.E., State Engineer

By: *Kenneth M. Fresquez*  
Kenneth M. Fresquez, District II Manager

File Number: \_\_\_\_\_  
(For OSE Use Only)

**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**1. APPLICANT:**

Name: Sundance Services, Inc. Work Phone: 575-394-2511  
Contact: Mr. Joe Carrillo, Plant Manager Home Phone: \_\_\_\_\_  
Address: 1001 6th Street  
City: Eunice State: NM Zip: 88231

**2. LOCATION OF WELL (A, B, C, or D required, E or F if known): MP-1**

- A. SE 1/4 SE 1/4 SE 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.  
in Lea County
- B. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System  
\_\_\_\_\_ Zone in the \_\_\_\_\_ Grant.  
U.S.G.S. Quad Map \_\_\_\_\_
- C. Latitude: 32 d 26 m 38.0 s Longitude: 103 d 5 m 29.1 s
- D. East 679416 (m), North 3591242 (m), UTM Zone 13, NAD \_\_\_\_\_ (27 of 83)
- E. Tract No. \_\_\_\_\_, Map No. \_\_\_\_\_ of the \_\_\_\_\_ Hydrographic Survey
- F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the  
\_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.
- G. Other: \_\_\_\_\_
- H. Give State Engineer File Number of existing well: \_\_\_\_\_
- I. On land owned by (required): Sundance Services, Inc. (through lease authorization)

**3. WELL INFORMATION:**

Approximate depth 125 feet; Outside diameter of casing 2 inches.  
Name of well driller and driller license number Rodgers - NMWD 225

**4. ADDITIONAL STATEMENT OR EXPLANATIONS:**

To evaluate subsurface groundwater.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
2009 APR -1 A 10:58

Do Not Write Below This Line

File Number: CP-1015  
Form: wr-07

Trn Number: 428013



**NEW MEXICO OFFICE OF THE STATE ENGINEER  
APPLICATION FOR PERMIT  
TO DRILL AN EXPLORATORY WELL**

**ACKNOWLEDGEMENT**

(I, We) Joe Carrillo for Sundance Services, Inc. affirm that the  
(Please Print)  
foregoing statements are true to the best of my knowledge and belief.

\_\_\_\_\_  
Applicant Signature

  
Applicant Signature

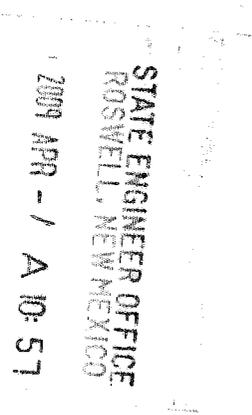
**ACTION OF STATE ENGINEER**

This application is approved/~~XXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare, and further subject to the following conditions: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
see attached conditions of approval  
\_\_\_\_\_  
\_\_\_\_\_

Witness my hand and seal this 9 day of April, 20 09

John R. D'Antonio, Jr., P.E. State Engineer  
By:   
Kenneth M. Fresquez, District II Manager



Do Not Write Below This Line

File Number: CP-1015  
Form: wr-07

Trn Number: 428013

**Locator Tool Report**

MP-1

**General Information:**

Application ID:32                      Date: 04-02-2009                      Time: 09:39:32

WR File Number: CP  
Purpose: POINT OF DIVERSION

Applicant First Name: SUNDANCE  
Applicant Last Name: SERVICES

GW Basin: CAPITAN  
County: LEA

Critical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT

**PLSS Description (New Mexico Principal Meridian):**

NE 1/4 of SE 1/4 of SE 1/4 of SE 1/4 of Section 30, Township 21S, Range 38E.

**Coordinate System Details:**

**Geographic Coordinates:**

Latitude:        32 Degrees 26 Minutes 38.0 Seconds N  
Longitude:      103 Degrees 5 Minutes 29.1 Seconds W

**Universal Transverse Mercator Zone: 13N**

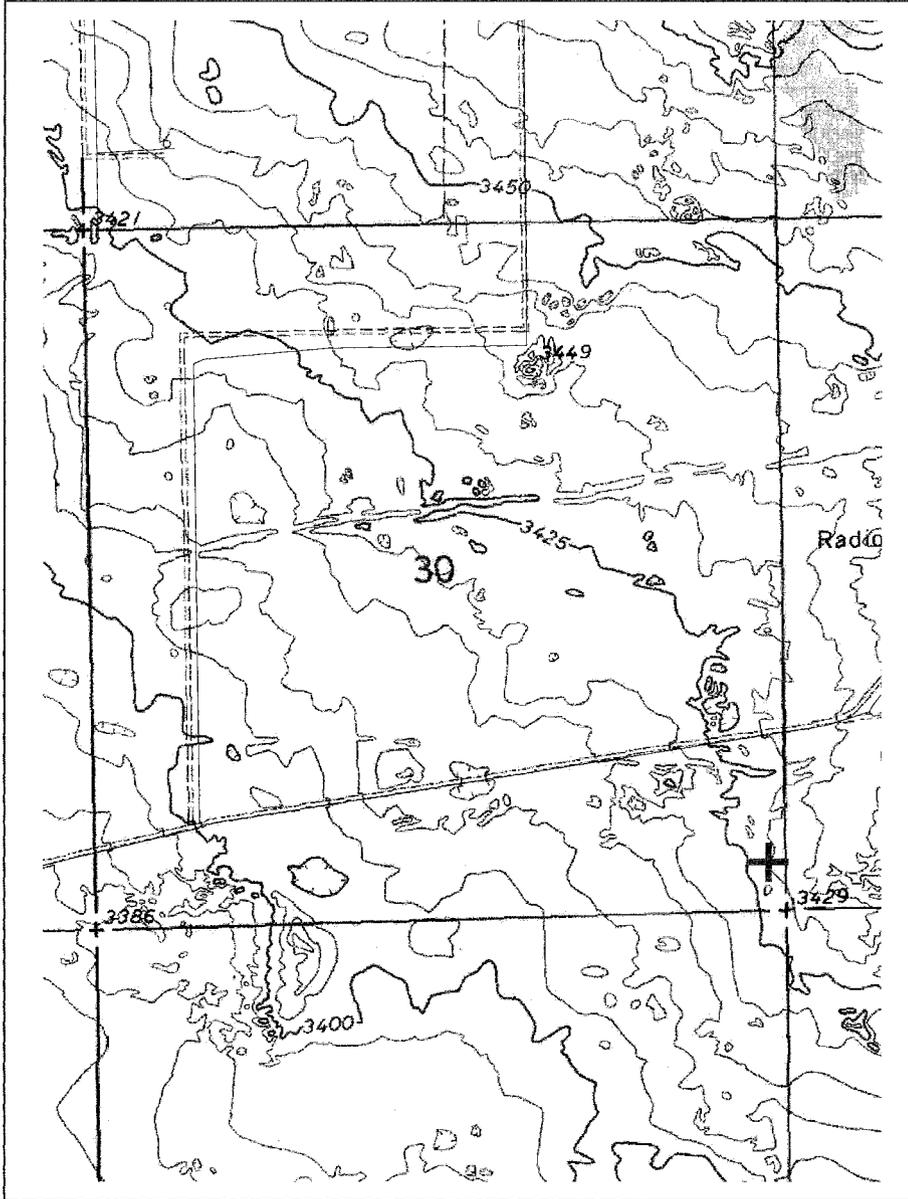
NAD 1983(92) (Meters)	N: 3,591,242	E: 679,416
NAD 1983(92) (Survey Feet)	N: 11,782,267	E: 2,229,052
NAD 1927 (Meters)	N: 3,591,067	E: 679,376
NAD 1927 (Survey Feet)	N: 11,781,691	E: 2,228,919

**State Plane Coordinate System Zone: New Mexico East**

NAD 1983(92) (Meters)	N: 160,765	E: 281,777
NAD 1983(92) (Survey Feet)	N: 527,444	E: 924,464
NAD 1927 (Meters)	N: 160,774	E: 269,136
NAD 1927 (Survey Feet)	N: 527,472	E: 882,990

**NEW MEXICO OFFICE OF STATE ENGINEER**

**Locator Tool Report**



WR File Number: CP

Scale: 1:17,702

Northing/Easting: UTM83(92) (Meter): N: 3,591,242

E: 679,416

Northing/Easting: SPCS83(92) (Feet): N: 527,444

E: 924,464

GW Basin: Capitan



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

<b>1. GENERAL AND WELL LOCATION</b>	POD NUMBER (WELL NUMBER)				OSE FILE NUMBER(S) CP 1015				
	WELL OWNER NAME(S) Sundance Services, Inc. Contact: Mr. Joe Carrillo, Plant Manager				PHONE (OPTIONAL) 575-394-2511				
	WELL OWNER MAILING ADDRESS 1001 6th Street				CITY Eunice	STATE NM	ZIP 88231		
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE	MINUTES 26	SECONDS 38.00 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84				
	LONGITUDE	103	5 29.10 W						
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS									
<b>2. OPTIONAL</b>	(2.5 ACRE) NE ¼	(10 ACRE) SE ¼	(40 ACRE) SE ¼	(160 ACRE) SE ¼	SECTION 30	TOWNSHIP 21	<input type="checkbox"/> NORTH <input checked="" type="checkbox"/> SOUTH	RANGE 38	<input checked="" type="checkbox"/> EAST <input type="checkbox"/> WEST
	SUBDIVISION NAME in Lea County				LOT NUMBER	BLOCK NUMBER	UNIT/TRACT		
	HYDROGRAPHIC SURVEY					MAP NUMBER	TRACT NUMBER		
<b>3. DRILLING INFORMATION</b>	LICENSE NUMBER WD225	NAME OF LICENSED DRILLER John Aguirre			NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.				
	DRILLING STARTED 4/16/09	DRILLING ENDED 4/20/09	DEPTH OF COMPLETED WELL (FT)		BORE HOLE DEPTH (FT) 150	DEPTH WATER FIRST ENCOUNTERED (FT)			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT)			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:								
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow stem auger and air rotary								
	DEPTH (FT) FROM TO		BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)	
<b>4. WATER BEARING STRATA</b>	DEPTH (FT) FROM TO		THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)				YIELD (GPM)	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA						TOTAL ESTIMATED WELL YIELD (GPM)			

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION	PAGE 1 OF 2	

<b>5. SEAL AND PUMP</b>	TYPE OF PUMP: <input type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET <input type="checkbox"/> NO PUMP – WELL NOT EQUIPPED <input type="checkbox"/> TURBINE <input type="checkbox"/> CYLINDER <input type="checkbox"/> OTHER – SPECIFY:						
	ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT)		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
		FROM	TO				

<b>6. GEOLOGIC LOG OF WELL</b>	DEPTH (FT)		THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
	FROM	TO			
	0	4	4	Sand; fine; med. to reddish tan; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
	4	6	2	Sand; silty fine; reddish tan; s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	6	11	5	Caliche w/small gravel; white to pinkish cream; s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	11	25	14	Sand; silty fine; lt. reddish tan; s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	25	150	125	Claystone to siltstone; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

<b>7. TEST &amp; ADDITIONAL INFO</b>	WELL TEST	METHOD: <input type="checkbox"/> BAILER <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> OTHER – SPECIFY:
		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	ADDITIONAL STATEMENTS OR EXPLANATIONS: MP-1. Well grouted back to total depth. No water encountered.	

<b>8. SIGNATURE</b>	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:	
	<p style="margin-top: 20px;">_____</p> SIGNATURE OF DRILLER	<p style="margin-top: 20px;">05/20/09</p> DATE



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

<b>1. GENERAL AND WELL LOCATION</b>	POD NUMBER (WELL NUMBER)				OSE FILE NUMBER(S) CP 1016																																																																																																														
	WELL OWNER NAME(S) Sundance Services, Inc.; Contact Mr. Joe Carrillo, Plant Manager				PHONE (OPTIONAL) 545-394-2511																																																																																																														
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<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2">LICENSE NUMBER WD225</td> <td colspan="4">NAME OF LICENSED DRILLER John Aguirre</td> <td colspan="4">NAME OF WELL DRILLING COMPANY Rodgers &amp; Co., Inc.</td> </tr> <tr> <td colspan="2">DRILLING STARTED 4/19/09</td> <td colspan="2">DRILLING ENDED 4/19/09</td> <td colspan="2">DEPTH OF COMPLETED WELL (FT) 28</td> <td colspan="2">BORE HOLE DEPTH (FT) 28</td> <td colspan="2">DEPTH WATER FIRST ENCOUNTERED (FT) Unknown</td> </tr> <tr> <td colspan="8">COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)</td> <td colspan="2">STATIC WATER LEVEL IN COMPLETED WELL (FT) N/A</td> </tr> <tr> <td colspan="10">DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:</td> </tr> <tr> <td colspan="10">DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow stem auger</td> </tr> <tr> <td colspan="2">DEPTH (FT)</td> <td colspan="2">BORE HOLE DIA. (IN)</td> <td colspan="2">CASING MATERIAL</td> <td colspan="2">CONNECTION TYPE (CASING)</td> <td colspan="2">INSIDE DIA. CASING (IN)</td> <td colspan="2">CASING WALL THICKNESS (IN)</td> <td colspan="2">SLOT SIZE (IN)</td> </tr> <tr> <td colspan="2">FROM TO</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td colspan="2">0 23</td> <td colspan="2">7.25</td> <td colspan="2">PVC casing</td> <td colspan="2">Flush thread joint</td> <td colspan="2">2</td> <td colspan="2">Sch 40 PVC</td> <td colspan="2"></td> </tr> <tr> <td colspan="2">23 28</td> <td colspan="2">7.25</td> <td colspan="2">PVC screen</td> <td colspan="2">Flush thread joint</td> <td colspan="2">2</td> <td colspan="2">Sch 40 PVC</td> <td colspan="2">0.010</td> </tr> </table>										LICENSE NUMBER WD225		NAME OF LICENSED DRILLER John Aguirre				NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.				DRILLING STARTED 4/19/09		DRILLING ENDED 4/19/09		DEPTH OF COMPLETED WELL (FT) 28		BORE HOLE DEPTH (FT) 28		DEPTH WATER FIRST ENCOUNTERED (FT) Unknown		COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)								STATIC WATER LEVEL IN COMPLETED WELL (FT) N/A		DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:										DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow stem auger										DEPTH (FT)		BORE HOLE DIA. (IN)		CASING MATERIAL		CONNECTION TYPE (CASING)		INSIDE DIA. CASING (IN)		CASING WALL THICKNESS (IN)		SLOT SIZE (IN)		FROM TO														0 23		7.25		PVC casing		Flush thread joint		2		Sch 40 PVC				23 28		7.25		PVC screen		Flush thread joint		2		Sch 40 PVC		0.010	
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<b>4. WATER BEARING STRATA</b>	METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA N/A						TOTAL ESTIMATED WELL YIELD (GPM) N/A																																																																																																												

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER		POD NUMBER		TRN NUMBER	
LOCATION					PAGE 1 OF 2

<b>5. SEAL AND PUMP</b>	TYPE OF PUMP: <input type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET <input checked="" type="checkbox"/> NO PUMP - WELL NOT EQUIPPED <input type="checkbox"/> TURBINE <input type="checkbox"/> CYLINDER <input type="checkbox"/> OTHER - SPECIFY:						
	ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT)		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
		FROM	TO				
		0	19	7.25	Cement/bentointe	4.9	Tremie
19	21	7.25	Bentonite pellets	.5	Tremie		
21	28	7.25	10/20 silica sand	1.8	Tremie		

<b>6. GEOLOGIC LOG OF WELL</b>	DEPTH (FT)		THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
	FROM	TO			
	0	8	8	Sand; v. fine to fine; med. rust/tan; dry to s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	8	13	5	Caliche; white to light tan	<input type="checkbox"/> YES <input type="checkbox"/> NO
	13	27	14	Sand; v. fine to fine; lt. tan	<input type="checkbox"/> YES <input type="checkbox"/> NO
	27	28	1	Claystone to siltstone; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

<b>7. TEST &amp; ADDITIONAL INFO</b>	WELL TEST	METHOD: <input type="checkbox"/> BAILER <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> OTHER - SPECIFY:
		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	ADDITIONAL STATEMENTS OR EXPLANATIONS: MP-2.	

<b>8. SIGNATURE</b>	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:	
	  _____	  05/20/09 _____
	SIGNATURE OF DRILLER	DATE



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

<b>1. GENERAL AND WELL LOCATION</b>	POD NUMBER (WELL NUMBER)				OSE FILE NUMBER(S)											
	WELL OWNER NAME(S)				PHONE (OPTIONAL)											
	WELL OWNER MAILING ADDRESS				CITY		STATE		ZIP							
	1001 6th Street				Eunice		NM		88231							
WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	LATITUDE	32	26	49.80	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND							
	LONGITUDE	103	5	51.70	W	* DATUM REQUIRED: WGS 84										
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS																
<b>2. OPTIONAL</b>	(2.5 ACRE)		(10 ACRE)		(40 ACRE)		(160 ACRE)		SECTION		TOWNSHIP	<input type="checkbox"/> NORTH		RANGE	<input checked="" type="checkbox"/> EAST	
	NE ¼		SW ¼		NW ¼		SE ¼		30		21	<input checked="" type="checkbox"/> SOUTH		38	<input type="checkbox"/> WEST	
	SUBDIVISION NAME								LOT NUMBER		BLOCK NUMBER		UNIT/TRACT			
	in Lea County															
HYDROGRAPHIC SURVEY										MAP NUMBER		TRACT NUMBER				
<b>3. DRILLING INFORMATION</b>	LICENSE NUMBER			NAME OF LICENSED DRILLER				NAME OF WELL DRILLING COMPANY								
	WD225			John Aguirre				Rodgers & Co., Inc.								
	DRILLING STARTED		DRILLING ENDED		DEPTH OF COMPLETED WELL (FT)		BORE HOLE DEPTH (FT)		DEPTH WATER FIRST ENCOUNTERED (FT)							
	4/20/09		4/21/09				150									
	COMPLETED WELL IS:								STATIC WATER LEVEL IN COMPLETED WELL (FT)							
	<input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)															
	DRILLING FLUID:								<input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:							
	DRILLING METHOD:								<input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER - SPECIFY:							
	DEPTH (FT)		BORE HOLE DIA. (IN)		CASING MATERIAL		CONNECTION TYPE (CASING)		INSIDE DIA. CASING (IN)		CASING WALL THICKNESS (IN)		SLOT SIZE (IN)			
	FROM	TO														
<b>4. WATER BEARING STRATA</b>	DEPTH (FT)		THICKNESS (FT)		FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)						YIELD (GPM)					
	FROM	TO														
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA								TOTAL ESTIMATED WELL YIELD (GPM)								

<b>5. SEAL AND PUMP</b>	TYPE OF PUMP: <input type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET <input type="checkbox"/> NO PUMP – WELL NOT EQUIPPED						
	<input type="checkbox"/> TURBINE <input type="checkbox"/> CYLINDER <input type="checkbox"/> OTHER – SPECIFY:						
	ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT)		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
		FROM	TO				

<b>6. GEOLOGIC LOG OF WELL</b>	DEPTH (FT)		THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
	FROM	TO			
	0	6	6	Sand; fine; reddish tan; s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	6	11	5	Sand; silty fine; reddish tan; s. moist to dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
	11	14	3	Caliche; white to pinkish tan	<input type="checkbox"/> YES <input type="checkbox"/> NO
	14	39	25	Sand; silty v. fine to fine; reddish tan w/grey lenses; s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	39	150	111	Claystone to siltstone; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

<b>7. TEST &amp; ADDITIONAL INFO</b>	WELL TEST	METHOD: <input type="checkbox"/> BAILER <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> OTHER – SPECIFY:
		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	ADDITIONAL STATEMENTS OR EXPLANATIONS: MP-3. Well grouted back to total depth; no water encountered.	

<b>8. SIGNATURE</b>	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:	
	_____ SIGNATURE OF DRILLER	05/20/09 _____ DATE



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)				OSE FILE NUMBER(S) CP 1018			
WELL OWNER NAME(S) Sundance Services, Inc.; Contact: Mr. Joe Carrillo, Plant Manager				PHONE (OPTIONAL) 575-394-2511			
WELL OWNER MAILING ADDRESS 1001 6th Street				CITY Eunice		STATE ZIP NM 88231	
WELL LOCATION (FROM GPS)	DEGREES		MINUTES		SECONDS		* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84
	LATITUDE	32	26	37.40	N		
	LONGITUDE	103	6	26.20	W		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS							

2. OPTIONAL

(2.5 ACRE) NW ¼	(10 ACRE) SW ¼	(40 ACRE) SW ¼	(160 ACRE) SW ¼	SECTION 30	TOWNSHIP 21 <input type="checkbox"/> NORTH <input checked="" type="checkbox"/> SOUTH	RANGE 38 <input checked="" type="checkbox"/> EAST <input type="checkbox"/> WEST
SUBDIVISION NAME in Lea County				LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
HYDROGRAPHIC SURVEY					MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER WD225	NAME OF LICENSED DRILLER John Aguirre			NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.			
DRILLING STARTED 4/24/09	DRILLING ENDED 4/24/09	DEPTH OF COMPLETED WELL (FT) 60	BORE HOLE DEPTH (FT) 60	DEPTH WATER FIRST ENCOUNTERED (FT) Unknown			
COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) N/A			
DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:							
DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow stem auger							
DEPTH (FT)		BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
FROM	TO						
0	50	10.75	PVC casing	Flush thread joint	2	Sch 40 PVC	
50	60	10.75	PVC screen	Flush thread joint	2	Sch 40 PVC	0.010

4. WATER BEARING STRATA

DEPTH (FT)		THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
FROM	TO			
45	60	15	Claystone to siltstone; dry	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA N/A				TOTAL ESTIMATED WELL YIELD (GPM) N/A

<b>5. SEAL AND PUMP</b>	TYPE OF PUMP: <input type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET <input checked="" type="checkbox"/> NO PUMP – WELL NOT EQUIPPED						
	<input type="checkbox"/> TURBINE <input type="checkbox"/> CYLINDER <input type="checkbox"/> OTHER – SPECIFY:						
	ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT)		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
		FROM	TO				
		0	46	10.75	Cement/bentonite	27.5	Tremie
46		48	10.75	Bentonite pellets	1.2	Tremie	
48	60	10.75	silica sand	7.2	Tremie		

<b>6. GEOLOGIC LOG OF WELL</b>	DEPTH (FT)		THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
	FROM	TO			
	0	45	45	Sand; silty v. fine to fine; lt. buff to pinkish tan; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
	45	60	15	Claystone to siltstone; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

<b>7. TEST &amp; ADDITIONAL INFO</b>	WELL TEST	METHOD: <input type="checkbox"/> BAILER <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> OTHER – SPECIFY:
		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	ADDITIONAL STATEMENTS OR EXPLANATIONS: MP-4.	

<b>8. SIGNATURE</b>	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:	
	<p style="margin-left: 100px;">_____</p> <p style="margin-left: 100px;">SIGNATURE OF DRILLER</p>	<p style="margin-left: 100px;">05/20/09</p> <p style="margin-left: 100px;">DATE</p>



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)		OSE FILE NUMBER(S) CP 1019	
WELL OWNER NAME(S) Sundance Services, Inc.; Contact: Mr. Joe Carrillo, Plant Manager		PHONE (OPTIONAL) 545-394-2511	
WELL OWNER MAILING ADDRESS 1001 6th Street		CITY Eunice	STATE NM
		ZIP 88231	
WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS
	LATITUDE 32	26	59.70 N
	LONGITUDE 103	6	25.60 W
* ACCURACY REQUIRED: ONE TENTH OF A SECOND			
* DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS			

2. OPTIONAL

(2.5 ACRE) SW ¼	(10 ACRE) SW ¼	(40 ACRE) SW ¼	(160 ACRE) NW ¼	SECTION 30	TOWNSHIP 21	<input type="checkbox"/> NORTH <input checked="" type="checkbox"/> SOUTH	RANGE 38	<input checked="" type="checkbox"/> EAST <input type="checkbox"/> WEST
SUBDIVISION NAME in Lea County				LOT NUMBER	BLOCK NUMBER	UNIT/TRACT		
HYDROGRAPHIC SURVEY					MAP NUMBER	TRACT NUMBER		

3. DRILLING INFORMATION

LICENSE NUMBER WD225	NAME OF LICENSED DRILLER John Aguirre		NAME OF WELL DRILLING COMPANY Rodgers & Co., Inc.				
DRILLING STARTED 4/23/09	DRILLING ENDED 4/23/09	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT) 150	DEPTH WATER FIRST ENCOUNTERED (FT)			
COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)			STATIC WATER LEVEL IN COMPLETED WELL (FT)				
DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:							
DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow stem auger							
DEPTH (FT)		BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
FROM	TO						

4. WATER BEARING STRATA

DEPTH (FT)		THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
FROM	TO			
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA			TOTAL ESTIMATED WELL YIELD (GPM)	

<b>5. SEAL AND PUMP</b>	TYPE OF PUMP: <input type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET <input type="checkbox"/> NO PUMP – WELL NOT EQUIPPED						
	<input type="checkbox"/> TURBINE <input type="checkbox"/> CYLINDER <input type="checkbox"/> OTHER – SPECIFY:						
	ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT)		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
		FROM	TO				

<b>6. GEOLOGIC LOG OF WELL</b>	DEPTH (FT)		THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
	FROM	TO			
	0	11	11	Sand; fine; reddish tan; s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	11	45	34	Sand; silty v. fine to fine; lt. pinkish cream to tan; dry to s. moist	<input type="checkbox"/> YES <input type="checkbox"/> NO
	45	150	105	Claystone to siltstone; dry	<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO
					<input type="checkbox"/> YES <input type="checkbox"/> NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

<b>7. TEST &amp; ADDITIONAL INFO</b>	WELL TEST	METHOD: <input type="checkbox"/> BAILER <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> OTHER – SPECIFY:
		TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.
	ADDITIONAL STATEMENTS OR EXPLANATIONS: MP-5. Well grouted back to total depth; no water encountered.	

<b>8. SIGNATURE</b>	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:	
	<p style="text-align:center;">_____</p> <p style="text-align:center;">SIGNATURE OF DRILLER</p>	<p style="text-align:center;">05/20/09</p> <p style="text-align:center;">_____</p> <p style="text-align:center;">DATE</p>

**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING WELL INSTALLATION**

**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

**ATTACHMENT C**

**BORING LOGS FOR BORINGS MP-1 THROUGH MP-5**



Total Depth  
150'

Log of Borehole No.: MP-1

Page 1 of 2  
File No.: 530.01.01/03

Client:  
SUNDANCE SERVICES INC.

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information		
NA Ft. While Drilling (below ground surface)	N: 527446.10 E: 924459.82	Date Started: 04-16-09 Date Comp: 04-17-09	Drilling Co.: RODGERS & CO. Driller: JOHN Helper: JUAN	GEI Rep.: LMC Drill Meth.: HSA 0-35' AR 35'-150' Sampling Meth.: SPLIT SPOON
NA Ft. at completion (below ground surface) <small>water level data approximate</small>	Elevation: 3428.30 <small>SURVEYED COORDS.</small>	Location: SUNDANCE SERVICES WEST SITE		

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
4'		Sand; fine; med. to reddish tan; dry		Soft
6'		Sand; silty fine; reddish tan; s. moist		Soft
11'		Caliche w/ small gravel; white to pinkish cream; s.moist		Soft
25'		Sand; silty fine; lt. reddish tan; s. moist		Caliche/caliche cementation @ 21' bgs
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
		↓		↓
		Claystone to siltstone; dry (CONTINUED)		

KEY

HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY    BGS = BELOW GROUND SURFACE



Log of Borehole No.: **MP-1** Total Depth **150'** Page **2 of 2**  
 File No.: **530.01.01/03**  
 Client: **SUNDANCE SERVICES INC.**

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information			
NA Ft. While Drilling (below ground surface)	N: <u>527446.10</u> E: <u>924459.82</u>	Date Started: <u>04-16-09</u> Date Comp: <u>04-17-09</u>	Drilling Co.: <u>RODGERS &amp; CO.</u> Driller: <u>JOHN</u> Helper: <u>JUAN</u>	GEI Rep.: <u>LMC</u> Drill Meth.: <u>HSA 0-35' AR 35'-150'</u> Sampling Meth.: <u>SPLIT SPOON</u>	
NA Ft. at completion (below ground surface) water level data approximate	Elevation: <u>3428.30</u> SURVEYED COORDS.	Location: <u>SUNDANCE SERVICES WEST SITE</u>			

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
150'		Claystone to siltstone; dry		

**KEY**

HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY



Log of Borehole No.: MP-2  
 Total Depth: 150'  
 Page 1 of 2  
 File No.: 530.01.01/03  
 Client: SUNDANCE SERVICES INC.

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information		
21' Ft. While Drilling (below ground surface)	N: 529582.26 E: 924510.78	Date Started: 04-18-09 Date Comp: 04-18-09	Drilling Co.: RODGERS & CO. Driller: JOHN Helper: JUAN	GEI Rep.: LMC Drill Meth.: HSA 0-30' AR 30'-150' Sampling Meth.: SPLIT SPOON
NA Ft. at completion (below ground surface) water level data approximate	Elevation: 3432.2 APPROXIMATE COORDS.	Location: SUNDANCE SERVICES WEST SITE		

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
8'		Sand; v. fine to fine; med. rust/tan; dry to s. moist		Soft Slightly indurated @ 8' bgs
13'		Caliche; white to light tan		
27'		Sand; v. fine to fine; lt. tan		Slightly indurated @ 16' bgs Gravel (1/4" dia) from 16-17' bgs Moist @ 21' bgs Wet lt. grey fine sand in ss @ 26' bgs
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
		Claystone to siltstone; dry (CONTINUED)		

KEY

WATER ENCOUNTERED DURING DRILLING

HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY



Log of Borehole No.: **MP-2** Total Depth **150'** Page 2 of 2  
 File No.: **530.01.01/03**  
 Client: **SUNDANCE SERVICES INC.**

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information		
<b>21</b> Ft. While Drilling (below ground surface)	N: <b>529582.26</b> E: <b>924510.78</b>	Date Started: <b>04-18-09</b> Date Comp: <b>04-18-09</b>	Drilling Co.: <b>RODGERS &amp; CO.</b> Driller: <b>JOHN</b> Helper: <b>JUAN</b>	GEI Rep.: <b>LMC</b> Drill Meth.: <b>HSA 0-30' AR 30'-150'</b> Sampling Meth.: <b>SPLIT SPOON</b>
<b>NA</b> Ft. at completion (below ground surface) water level data approximate	Elevation: <b>3432.2</b> APPROXIMATE COORDS.	Location: <b>SUNDANCE SERVICES WEST SITE</b>		

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
150'		Claystone to siltstone; dry		

KEY WATER ENCOUNTERED DURING DRILLING  
 HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY



Total Depth  
**150'**

Log of Borehole No.: **MP-3**

Page 1 of 2  
File No.: 530.01.01/03

Client:  
**SUNDANCE SERVICES INC.**

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information			
NA Ft. While Drilling (below ground surface)	N: <b>528611.24</b> E: <b>922630.93</b>	Date Started: <b>04-21-09</b> Date Comp: <b>04-21-09</b>	Drilling Co.: <b>RODGERS &amp; CO.</b> Driller: <b>JOHN</b> Helper: <b>JUAN</b>	GEI Rep.: <b>LMC</b> Drill Meth.: <b>HSA 0-40' AR 40'-150'</b> Sampling Meth.: <b>SPLIT SPOON</b>	
NA Ft. at completion (below ground surface) <small>water level data approximate</small>	Elevation: <b>3417.99</b> <small>SURVEYED COORDS.</small>	Location: <b>SUNDANCE SERVICES WEST SITE</b>			

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
6'		Sand; fine; reddish tan; s. moist		Soft dune sand; well sorted
11'		Sand; silty fine; reddish tan; s. moist to dry		Gravel @ 8' bgs
14'		Caliche; white to pinkish tan		Variable hard and soft
39'		Sand; silty v. fine to fine; reddish tan w/ grey lenses; s. moist		Variable minor gravel
75'		Claystone to siltstone; dry		Chinle rebeds; color varies from red to tan to grey to yellow/rust
		↓ Claystone to siltstone; dry (CONTINUED)		↓

**KEY**

HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY



Total Depth  
150'

Log of Borehole No.: MP-3

Page 2 of 2  
File No.: 530.01.01/03

Client:  
SUNDANCE SERVICES INC.

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information		
NA Ft. While Drilling (below ground surface)	N: 528611.24 E: 922630.93	Date Started: 04-21-09 Date Comp: 04-21-09	Drilling Co.: RODGERS & CO. Driller: JOHN Helper: JUAN	GEI Rep.: LMC Drill Meth.: HSA 0-40' AR 40'-150' Sampling Meth.: SPLIT SPOON
NA Ft. at completion (below ground surface) <small>water level data approximate</small>	Elevation: 3417.99 <small>SURVEYED COORDS.</small>			

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
75'	[Red hatched pattern]	Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
150'		Claystone to siltstone; dry		

KEY

HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY



Log of Borehole No.: **MP-4** Total Depth **150'** Page 1 of 2  
 File No.: 530.01.01/03  
 Client: **SUNDANCE SERVICES INC.**

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information			
47 & 56 Ft. While Drilling (below ground surface) NA Ft. at completion (below ground surface) water level data approximate	N: 527183.88 E: 919459.02 Elevation: 3384 APPROXIMATE COORDS.	Date Started: 04-22-09 Date Comp: 04-22-09 Location: SUNDANCE SERVICES WEST SITE	Drilling Co.: RODGERS & CO. Driller: JOHN Helper: JUAN	GEI Rep.: LMC Drill Meth.: HSA 0-35' AR 35'-150' Sampling Meth.: SPLIT SPOON	

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
45'		Sand; silty v. fine to fine; lt. buff to pinkish tan; dry		Variable caliche/caliche cementation from 0 - 15' bgs
75'	 ▽	Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust Moist v. fine to fine sand zones from 47-48' and 56-58' bgs
		↓ Claystone to siltstone; dry (CONTINUED)		↓

**KEY**

HSA = HOLLOW STEM AUGER

SS = SPLIT SPOON

▽ WATER ENCOUNTERED DURING DRILLING

AR = AIR ROTARY



Log of Borehole No.: **MP-4** Total Depth **150'** Page 2 of 2  
 File No.: 530.01.01/03  
 Client: **SUNDANCE SERVICES INC.**

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information		
NA Ft. While Drilling (below ground surface)	N: <b>527183.88</b> E: <b>919459.02</b>	Date Started: <b>04-22-09</b> Date Comp: <b>04-22-09</b>	Drilling Co.: <b>RODGERS &amp; CO.</b> Driller: <b>JOHN</b> Helper: <b>JUAN</b>	GEI Rep.: <b>LMC</b> Drill Meth.: <b>HSA 0-35' AR 35'-150'</b> Sampling Meth.: <b>SPLIT SPOON</b>
NA Ft. at completion (below ground surface)	Elevation: <b>3384</b>	Location: <b>SUNDANCE SERVICES WEST SITE</b>		
water level data approximate	APPROXIMATE COORDINATES			

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
150'		Claystone to siltstone; dry		

KEY WATER ENCOUNTERED DURING DRILLING  
 HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY



Log of Borehole No.: **MP-5** Total Depth **150'** Page 1 of 2  
 File No.: 530.01.01/03  
 Client: **SUNDANCE SERVICES INC.**

<b>Water Level Data</b>	<b>Location COORDS's and Elevation (NAVD88)</b>	<b>Borehole Information</b>		
NA Ft. While Drilling (below ground surface)	N: <u>529535.82</u>	Date Started: <u>04-23-09</u>	Drilling Co.: <u>RODGERS &amp; CO.</u>	GEI Rep.: <u>LMC</u>
NA Ft. at completion (below ground surface)	E: <u>919611.93</u>	Date Comp: <u>04-23-09</u>	Driller: <u>JOHN</u>	Drill Meth.: <u>HSA 0-50' AR 50'-150'</u>
water level data approximate	Elevation: <u>3402.93</u>	Location: <u>SUNDANCE SERVICES WEST SITE</u>	Helper: <u>JUAN</u>	Sampling Meth.: <u>SPLIT SPOON</u>

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
11'		Sand; fine; reddish tan; s. moist		Soft dune sand; well sorted Dry and s. indurated @ 8' bgs
45'		Sand; silty v. fine to fine; lt. pinkish cream to tan; dry to s. moist		Variable caliche/caliche cementation Gravel to 1" dia @ 35' bgs
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust S. moist v. fine to fine sand zone from 55-60' bgs
		Claystone to siltstone; dry (CONTINUED)		

KEY

HSA = HOLLOW STEM AUGER SS = SPLIT SPOON AR = AIR ROTARY



Total Depth  
150'

Log of Borehole No.: MP-5

Page 2 of 2  
File No.: 530.01.01/03

Client: SUNDANCE SERVICES INC.

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information			
NA Ft. While Drilling (below ground surface)	N: 529535.82 E: 919611.93	Date Started: 04-23-09 Date Comp: 04-23-09	Drilling Co.: RODGERS & CO. Driller: JOHN Helper: JUAN	GEI Rep.: LMC	Drill Meth.: HSA 0-50' AR 50'-150'
NA Ft. at completion (below ground surface) <small>water level data approximate</small>	Elevation: 3402.93 <small>SURVEYED COORDS.</small>	Location: SUNDANCE SERVICES WEST SITE		Sampling Meth.: SPLIT SPOON	

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes
75'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
150'		Claystone to siltstone; dry		

KEY

HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY

**COMPLETION REPORT  
DRILLING, SAMPLING, AND MONITORING WELL INSTALLATION**

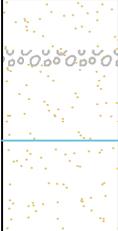
**SUNDANCE SERVICES, INC.  
LEA COUNTY, NEW MEXICO**

**ATTACHMENT D**

**BORING LOGS FOR BORINGS MP-2P AND MP-4P**

	Log of Borehole No.: <b>MP-2P</b>	Total Depth <b>28'</b>	Page 1 of 1
	Client: <b>SUNDANCE SERVICES INC.</b>		File No.: <b>530.01.01/03</b>

Water Level Data	Location COORDS's and Elevation (NAVD88)	Borehole Information		
21 Ft. While Drilling (below ground surface)	N: <b>529615.38</b>	Date Started: <b>04-19-09</b>	Drilling Co.: <b>RODGERS &amp; CO.</b>	GEL Rep.: <b>LMC</b>
27.48 Ft. at completion (below ground surface)	E: <b>924510.99</b>	Date Comp: <b>04-19-09</b>	Driller: <b>JOHN</b>	Drill Meth.: <b>HSA 0-28'</b>
water level data approximate	Elevation: <b>3433.58</b>	Location: <b>SUNDANCE SERVICES WEST SITE</b>	Helper: <b>JUAN</b>	Sampling Meth.: <b>SPLIT SPOON</b>

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
8'		Sand; v. fine to fine; med. rust/tan; dry to s. moist		Soft Slightly indurated @ 8' bgs
13'		Caliche; white to light tan		Slightly indurated @ 16' bgs
27'		Sand; v. fine to fine; lt. tan		Gravel (1/4" dia) from 16-17' bgs Moist @ 21' bgs Wet lt. grey fine sand in ss @ 26' bgs
28'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust

SURVEYED COORDINATES (5-2009)

BOREHOLE	NORTHING	EASTING	ELEVATION
MP-2P			
RIM	529615.38	924510.99	3436.51
CASING	529615.26	924510.78	3435.90
CONCRETE	529615.60	924511.41	3433.58

**KEY**

 WATER LEVEL AFTER COMPLETION     
  WATER ENCOUNTERED DURING DRILLING

HSA = HOLLOW STEM AUGER      SS = SPLIT SPOON      AR = AIR ROTARY



Log of Borehole No.: **MP-4P** Total Depth **60'** Page 1 of 1  
 File No.: 530.01.01/03  
 Client: **SUNDANCE SERVICES INC.**

Water Level Data		Location COORDS's and Elevation (NAVD88)		Borehole Information			
NA Ft. While Drilling (below ground surface)	N: <b>527183.88</b>	Date Started:	<b>04-24-09</b>	Drilling Co.:	<b>RODGERS &amp; CO.</b>	GEI Rep.:	<b>LMC</b>
NA Ft. at completion (below ground surface)	E: <b>919489.02</b>	Date Comp:	<b>04-24-09</b>	Driller:	<b>JOHN</b>	Drill Meth.:	<b>HSA 0-60'</b>
water level data approximate	Elevation: <b>3384.62</b>	Location:	<b>SUNDANCE SERVICES WEST SITE</b>	Helper:	<b>JUAN</b>	Sampling Meth.:	<b>SPLIT SPOON</b>
		SURVEYED COORDS.					

Depth (ft. BGS)	Graphic Lithology	Soil/Lithology Description	Relative Moisture Content	Notes:
0 - 45'		Sand; silty v. fine to fine; lt. buff to pinkish tan; dry		Variable caliche/caliche cementation from 0 - 15' bgs
45' - 52.63'		Claystone to siltstone; dry		Chinle redbeds; color varies from red to tan to grey to yellow/rust
52.63' - 60'				Moist v. fine to fine sand zones from 47-48' and 56-58' bgs

SURVEYED COORDINATES (5-2009)

BOREHOLE	NORTHING	EASTING	ELEVATION
MP-4P			
RIM	529615.38	924510.99	3387.56
CASING	529615.26	924510.78	3387.09
CONCRETE	529615.60	924511.41	3384.62

**KEY**  
 WATER LEVEL AFTER COMPLETION  
 WATER ENCOUNTERED DURING DRILLING  
 HSA = HOLLOW STEM AUGER    SS = SPLIT SPOON    AR = AIR ROTARY