NM1-62

Permit Application

Volume 4
Part 10 of 11

COMPLETION REPORT SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO

ATTACHMENT B

OFFICE OF THE STATE ENGINEER WELL RECORDS AND LOGS

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



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Trn Nbr: 441896 File Nbr: CP 01028

OCT 0 2 2009

Oct. 01, 2009

JOE CARILLO SUNDANCE SERVICES, INC. 1001 6TH STREET EUNICE, NM 88231

Greetings:

Enclosed is your copy of the Monitoring Well Permits which have been approved. In accordance with the conditions of approval, the wells can only be tested for 10 cumulative days, and the wells are to be plugged on or before 10/31/2010, unless a permit to use the water is acquired from this office.

Sincerely,

Margaret Wolf (505)622-6521

Enclosure

explore

NEW MEXICO STATE ENGINEER OFFICE 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.
- Oriller'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.
- LOG The Point of Diversion CP 01028 POD1 must be completed and the Well Log filed on or before 10/31/2010.
- LOG The Point of Diversion CP 01028 POD2 must be completed and the Well Log filed on or before 10/31/2010.
- LOG The Point of Diversion CP 01028 POD3 must be completed and the Well Log filed on or before 10/31/2010.
- LOG The Point of Diversion CP 01028 POD4 must be completed and the Well Log filed on or before 10/31/2010.
- LOG The Point of Diversion CP 01028 POD5 must be completed and the Well Log filed on or before 10/31/2010.
- LOG The Point of Diversion CP 01028 POD6 must be completed and the Well Log filed on or before 10/31/2010.

No water shall be diverted from these wells except for testing purposes which shall not exceed ten (ten) cumulative days unless a permit to use water from these wells 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 wells shall be drilled at least 660 feet from all wells of other ownership.

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

Trn Desc: <u>CP 01028</u> File Number: <u>CP 01028</u> Trn Number: <u>441896</u>

NEW MEXICO STATE ENGINEER OFFICE PERMIT TO MONITOR

ACTION OF STATE ENGINEER

Formal Appliantion David 00/20/2000	Date Rova, Coffected:
Formal Application Rcvd: 09/28/2009	
Date Returned - Correction:	Affidavit of Pub. Filed:
This application is approved provided i	it is not exercised to the detriment of
any others having existing rights, and	
water in New Mexico nor detrimental to	the public welfare of the state; and
further subject to the specific conditi	ions listed previously.
Witness my hand and seal this <u>01</u> day	of <u>Oct</u> A.D., <u>2009</u>
John R. D Antonio, Jr., P.E. , State B	Ingineer
m. Mary	
Sy: _Myw_ for Kenneth M. Fresquez	
yar kenneth M. Fresquez	

Trn Desc: <u>CP 01028</u> File Number: <u>CP 01028</u> Trn Number: <u>441896</u>

page: 2

File	Number	:			
		/For	OSE	IIse	Only



1. APPLICANT:	
Name: <u>Sundance Services Inc.</u> Contact: <u>Mr. Joe Carillo, Plant Manager</u>	Work Phone: <u>575-394-2511</u>
Address: 1001 6th Street	nome Fnone:
City: Eunice	State: <u>NM</u> Zip: <u>88231</u>
2. LOCATION OF WELL (A, B, C, or D required, E or F if known): CC	ore Hole CH-1
A. SW 1/4 NE 1/4 SW 1/4 Section: 30 Townshi in Lea	
B. X = feet, Y = f Zone in the U.S.G.S. Quad Map	
C. Latitude: <u>32</u> d <u>26 m 52.89</u> s Longitude	e: 103_d 6_m <u>,10,21</u> s
D. East 920923 F (m), North 528910 F (m), UTM	I Zone 13, NAD <u>83</u> (27 or 83)
E. Tract No, Map No of the	Hydrographic Survey
F. Lot No, Block No of Unit/Tract _ Subdivision recorded in _	of the County.
G. Other:	
H. Give State Engineer File Number of existing we	bll:
I. On land owned by (required):	
3. WELL INFORMATION:	
Approximate depth <u>150</u> feet; Outside diameter of Name of well driller and driller license number _	casing inches. Rodgers - NMWD 225
4. ADDITIONAL STATEMENT OR EXPLANATIONS:	t was engage
Geotechnical continuous core	2 RST
	Signal Si
	2 5
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	Ern Number: 441896
Form: wr-07 page 1 of 2	////W

File	Number:				
	(For	OSE	Use	Only)

1. APPLICANT:	00
Name: Sundance Services Inc.	Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager	Home Phone:
Address: 1001 6th Street	
City: Eunice	State: <u>NM</u> Zip: <u>88231</u>
2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Co	re Hole CH-2
alw	re nore cu-z
A. <u>SW</u> 1/4 <u>SE</u> 1/4 <u>SW</u> 1/4 Section: <u>30</u> Township	p: 21S Range: 38E N.M.P.M. County.
B. X = feet, Y = fe	eet, N.M. Coordinate System Grant.
U.S.G.S. Quad Map	
C. Latitude: 32 d 24 m 40.77 s Longitude	
D. East 920923 F (m), North 527685 F (m), UTM	Zone 13, NAD 83 (27 or 83)
E. Tract No, Map No of the	Hydrographic Survey
F. Lot No, Block No of Unit/Tract Subdivision recorded in	of the County.
G. Other:	
H. Give State Engineer File Number of existing we	11:
I. On land owned by (required):	
3. WELL INFORMATION:	
Approximate depth $\underline{150}$ feet; Outside diameter of Name of well driller and driller license number $\underline{}$	
4. ADDITIONAL STATEMENT OR EXPLANATIONS:	2000
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Geotechnical continuous core	
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File Number: <u>CP-1028 POD2</u>	rn Number: 441896
Form: wr-07 page 1 of 2	

File	Number	:			
		(For	OSE	Use	Only)

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APPLICANT:	
Name: Sundance Services Inc. Contact: Mr. Joe Carillo, Plant Manager	Work Phone: <u>575-394-25</u>
Address: 1001 6th Street	Home Fnone:
City: Eunice	State: <u>NM</u> Zip: <u>88231</u>
LOCATION OF WELL (A, B, C, or D required, E or F if known): CC	ore Hole CH-3
A. SW 1/4 SE 1/4 SW 1/4 Section: 30 Townshi	p: <u>21S</u> Range: <u>38E</u> N.M.P.M. County.
B. X = feet, Y = f	eet, N.M. Coordinate System
U.S.G.S. Quad Map	
D. East <u>921229 F</u> (m), North <u>527304 F</u> (m), UTM	1 Zone 13, NAD <u>83</u> (27 or 83)
E. Tract No, Map No of the	
F. Lot No, Block No of Unit/Tract Subdivision recorded in	
G. Other:	
H. Give State Engineer File Number of existing we	
I. On land owned by (required):	
WELL INFORMATION:	
Approximate depth <u>80</u> feet; Outside diameter of Name of well driller and driller license number _	casing inches. Rodgers - NMWD 225
ADDITIONAL STATEMENT OR EXPLANATIONS:	2 25
Geotechnical continuous core	
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le Number: <u>CF-1028 POD</u> 3	Frn Number: 441896

page 1 of 2

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I. APPLICANT:	01
Name: Sundance Services Inc.	
Contact: Mr. Joe Carillo, Plant Manager	Home Phone:
Address: 1001 6th Street	_
City: Eunice	State: <u>NM</u> Zip: <u>88231</u>
. LOCATION OF WELL (A, B, C, or D required, E or F if known): Co:	re Hole CH-4
SE D. CHT 1/4 CIVI 1/	- 010 D 10E N N D N
A. <u>&W</u> 1/4 <u>SW</u> 1/4 <u>SE</u> 1/4 Section: <u>30</u> Township in <u>Lea</u>	County.
B. X = feet, Y = fe	eet, N.M. Coordinate System
Zone in the	Grant.
U.S.G.S. Quad Map	
C. Latitude: 32 d 26 m $37./9$ s Longitude:	: <u>103</u> d <u>5</u> m <u>50,21</u> s
D. East $\underline{922655}$ F (m), North $\underline{527343}$ F (m), UTM	Zone 13, NAD <u>83</u> (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 we	
I. On land owned by (required):	
. WELL INFORMATION:	
Approximate depth 80 feet; Outside diameter of	casing inches.
Name of well driller and driller license number	
. ADDITIONAL STATEMENT OR EXPLANATIONS:	ROS
Geotechnical continuous core	AND
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Tile Number: <i>CP-1028 POD4</i>	rn Number: 44/896

page 1 of 2

Form: wr-07

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File	Number	•			

(For OSE Use Only)

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

027420

1. APPLICANT:	\mathcal{O}^{ν}
Name: Sundance Services Inc.	Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager	Home Phone:
Address: 1001 6th Street	
City: Eunice	State: <u>NM</u> Zip: <u>88231</u>
2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Ge	otech GB-1
A. SE 1/4 NE 1/4 SW 1/4 Section: 30 Townshi	
B. X = feet, Y = f	eet, N.M. Coordinate System Grant.
U.S.G.S. Quad Map	
C. Latitude: <u>32</u> d <u>26</u> m <u>50,7</u> s Longitude	: 103 d 6 m 1,44 s
D. East $\underline{921677}$ F (m), North $\underline{528697}$ F (m), UTM	
E. Tract No, Map No of the	Hydrographic Survey
F. Lot No, Block No of Unit/Tract Subdivision recorded in	of the County.
G. Other:	
H. Give State Engineer File Number of existing we	11:
I. On land owned by (required):	
3. WELL INFORMATION:	
Approximate depth 60 feet; Outside diameter of Name of well driller and driller license number	
4. ADDITIONAL STATEMENT OR EXPLANATIONS:	
Geotechnical hollow stem	\(\frac{1}{2}\)
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	rn Number: <u>44/896</u>
Form: wr-07 page 1 of 2	

File	Number:				
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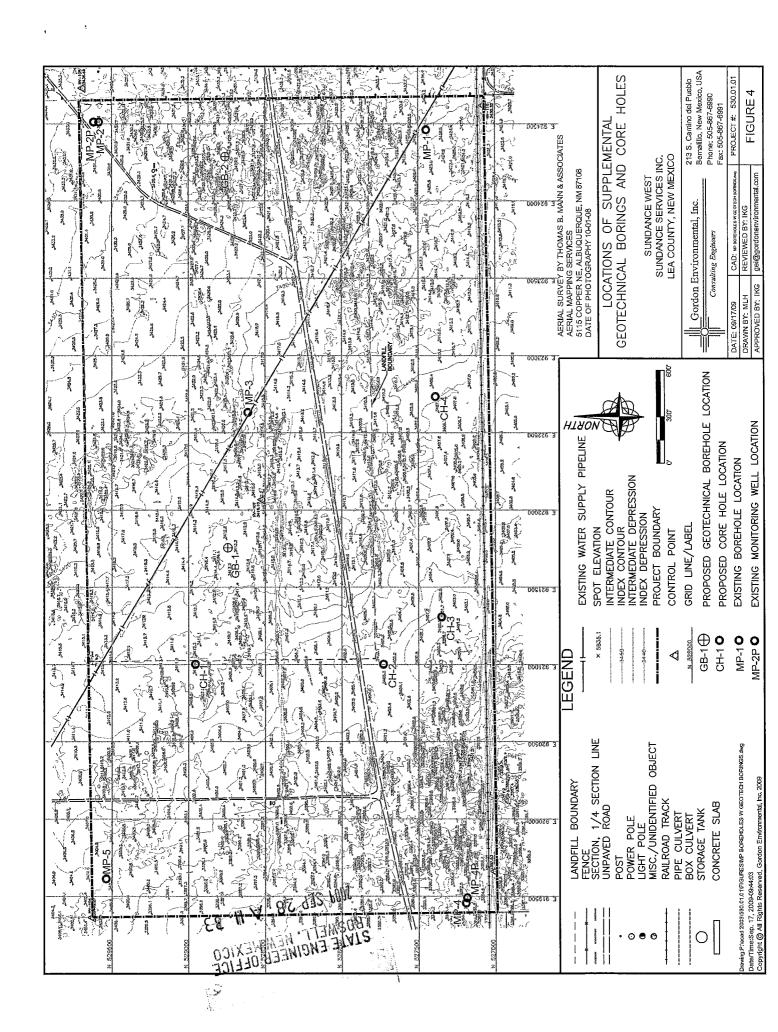
APPLICANT:		•
Name: <u>Sundance Services Inc.</u> Contact: Mr. Joe Carillo, Plant Manager	Work Phone: 575-3 Home Phone:	94-251
Address: 1001 6th Street	_	
City: Eunice	State: <u>NM</u> Zip: <u>882</u>	31
LOCATION OF WELL (A, B, C, or D required, E or F if known): Ge	otech GB-2	
A. SE 1/4 NE 1/4 SE 1/4 Section: 30 Townshi	p: <u>21S</u> Range: <u>38E</u> N.	M.P.M. ounty.
B. X = feet, Y = f Zone in the function =	eet, N.M. Coordinate	System Grant.
C. Latitude: 32 d 26 m 50.58 s Longitude	: <u>103</u> d <u>5</u> m <u>31.</u>	9_s
D. East $924209 \ F$ (m), North $528714 \ F$ (m), UTM	Zone 13, NAD <u>83</u> (27	or 83)
E. Tract No, Map No of the	Hydrographic	Survey
F. Lot No, Block No of Unit/Tract _ Subdivision recorded in _	C	of the ounty.
G. Other:		
H. Give State Engineer File Number of existing we	11:	
I. On land owned by (required):		
WELL INFORMATION:		
Approximate depth 35 feet; Outside diameter of Name of well driller and driller license number _ ADDITIONAL STATEMENT OR EXPLANATIONS:	casing inches. Rodgers - NMWD 22	5
Geotechnical hollow stem		
	Process Control Control Control	31
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ile Number: <u>CP-1028</u> POD6	rn Number: <u>441890</u>	6
Form: wr-07 page 1 of 2	<u> </u>	

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		(For	OSE	Use	Only)

ACKNOWLEDGEMENT

(I, We) <u>Joe Carillo for Sundance Se</u>	ervices, 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 B	ENGINEER
This application is approved/xxxixxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	having existing rights, and is no New Mexico nor detrimental to the
see attached conditions o	f approval
Witness my hand and seal this	day of <u>October</u> , 20 <u>09</u>
John R. D'Antonio, Jr., P.E., State Engine	er
By: Myw	
Kenneth M. Fresquez, District II Manager	TE ENGNEER OFFICE SWELL NEW NEXTCO
Do Not Write Belove Number: $P-1028$	ow This Line Trn Number: 44/896

OCT 0 2 2009



OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION - ROSWELL OFFICE

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Noer 20,2009	By lin	1315 Ca		
DATE: JAPA	rty engl	Appress: 2		
OFFICIAL RECEIPT NUMBER:02-27462	RECEIVED: THI	ironmental	RECEIVED BY: WOMITO	-
IPT NUMBER:0	30.00	alon Gavi	RECET	
OFFICIAL RECE	TOTAL:	PAYOR: (2 m	ZIP: \$100	

RUCTIONS: Indicate the number of actions r Rights, Santa Fe Office, and goldenrod co	to the left of the appro	INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. Original to payor, pink copy to Program Support, Water Rights, Santa Fe Office, and goldenrod copy for district file. If you make a mistake, void original and all copies and submit to Program Support/ASD along with valid receipts.	rmation. Original Ind submit to Progr	INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. Original to payor; pink copy to Program Support/ASD; yellow copy to Water Rights, Santa Fe Office, and goldenrod copy for district file. If you make a mistake, void original and all copies and submit to Program Support/ASD along with valid receipts.	low copy to
A. Ground Water Rights Filing Fees		B. Surface Water Rights Filing Fees		C. Miscellaneous Fees	
Declaration of Water Right Application to Appropriate:	\$ 1.00	Declaration of Water Right Amended Declaration Declaration of Livestock Water	\$ 10.00 \$ 25.00	Application for Well Driller's License Application for Renewal of Well Driller's Transa	\$50.00
Application for Stock Well Application to Repair or Deepen	\$ 5.00			3. Application to Amend Well Driller's License	\$50.00
(72-12-1.1) Application for Replacement	\$ /5.00	Impoundment 5. Application to Appropriate	\$ 10.00 \$ 25.00		
72-12-1.1 Well	\$ 75.00	6. Notice of Intent to Appropriate 7. Application to Change Brint of	\$ 25.00	D. Reproduction of Documents	
Application for Supplientel Itali 72-12-1 Well	* 125.00		\$ 100.00	@ 0.20¢/copy	\$
Application to change ruipose of use of 72-12-1 Well	\$ 75.00		\$ 100.00	Map(s)	*
Application to Appropriate Irrig., Mun., Ind., or Comm. Use	\$ 25.00	 9. Application to Change Point of Diversion and Place and/or Purpose 			
Application for Supplemental Well	\$ 25.00		\$ 200,00	E. Certification	
Application to Change Location of Non 72-12-1 Well	\$ 25.00	10. Application to Change Point of Diversion and Place and/or Purpose of			
Application to Change Place		Use from Ground Water to Surface		E. Other	\$
or Purpose of Use Application to Change Location of	\$ 25.00 	Water	\$ 200.00 \$ 50.00		
Well and Place and/or Purpose of Use	\$ 50.00	_12. Supplemental Well to a Surface Right	\$ 100.00	G. Comments:	
Application to Combine Wells and/or Use	\$ 25.00	13. Return Flow Credit14. Proof of Completion of Works	\$ 100.00 \$ 25.00		
Application for Extension of Time	\$ 25.00	15. Proof of Application of Water to	÷ 7F 00		
Proof of Completion of Well Proof of Application to Beneficial Use	\$ 25.00 \$ 25.00	_	\$ 23.00 \$100.00		
Application for Plan of Replacement Application to Change Point of Diversion		_17. Change of Ownership	\$ 5.00		
and Place and/or Purpose of Use from Surface Water to Ground Water	\$ 50.00				
Application for test, Exploratory, or Observation Well Change of Ownership	\$ 5.00 \$ 2.00				

FOR OSE INTERNAL USE

FILE NUMBER

LOCATION

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Ĭ				es Inc.; Coi	ntact	ivir. Joe Ca	arillo), Plant Ma	anage	er ————	575-394-2	(511 	000 1 000		ZID.
GENERAL AND WELL LOCATION	WELL OWN 1001 6th			ADDRESS							Eunice,		state NM	88	ZIP 231
W C	. 144				DFC	GREES	М	NUTES	SECON	DS				· · · · · · · · · · · · · · · · · · ·	
Z	WELL		I AT	ITUDE	DL	32	1411	26		.89 _N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SEC	COND	
ERAI	(FROM G	PS)		GITUDE		103		6	10		* DATUM REC	QUIRED: WGS 84			
EN	DESCRIPT	10.0000		G WELL LOCATI	ION TO		ESS Al	Carrier of Landerspee	+ + 000000	44	<u> </u>				rack Tweeters.
-															
	(2.5 ACR	(E)		(10 ACRE)		(40 ACRE)	· · · · · · · · · · · · · · · · · · ·	(160 ACRE)		SECTION	7 ** v · · · · · · · · ·	TOWNSHIP		RANGE	· · · · · · · · · · · · · · · · · · ·
T	SW 1	1			· ·	,					30	21	□ NORTH SOUTH	38	✓ EAST WEST
OPTIONAL	SUBDIVISI			7 =		/ 7	1			LOT NUM		BLOCK NUMBER	SOUTH	UNIT/TRA	
РТ	in L	_ea Co	oun	ty											
2. C	HYDROGR.	APHIC SU	JRVE	Y								MAP NUMBER		TRACT NU	MBER
	- your transfer					on way it i							7 - 17 to 142 to		
	LICENSE N					DRILLER						NAME OF WELL DR		MPANY	
						DEDTH OF COA	(DI ET	ED WELL (ET)	- 1	DODE HO	LE DEPTH (FT)	Rodgers & Co		TERED (ET)	
7		3/09	,		- 1	` '			154	DEFIN WATER FIR	n/a				
110								STATIC WATER LE	VEL IN COM	PLETED WEI	LL (FT)				
₹MA	COMPLETE	ED WELL	IS:	ARTESIA	Ŋ	dry hole Shallow (unconfined)				n/a					
(F)	DRILLING	FLUID:		AIR		MUD ADDITIVES – SPECIFY:									
3. DRILLING INFORMATION	DRILLING	METHOD):	ROTARY		HAMMER		CABLE TO	OL	✓ OTHE	other-specify: Hollow stem auger				
	DEPT	H (FT)		BORE HOI	Æ						NECTION	INSIDE DIA.	1	G WALL	SLOT
DRI	FROM	ТО		DIA. (IN))	N.	IATE	RIAL		TYPE	(CASING)	CASING (IN)	THICKN	VESS (IN)	SIZE (IN)
ကံ															
	DEPT	H (FT)		THICKNES	ss		ORM	IATION DES	CRIPT	ION OF F	RINCIPAL W	ATER-BEARING S	TRATA		YIELD
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R BE															
WATER BEARING	METHOD U	JSED TO	ESTIN	MATE YIELD OF	WATER	R-BEARING STR	ATA				". + 1 <u>) </u>	TOTAL ESTIMATE	O WELL YIEI	LD (GPM)	· · · · · · · · · · · · · · · · · · ·
4. W.													n/a		
		NE 1/4 SW 1/4 1/4 ON NAME Lea County APHIC SURVEY DUMBER NAME OF LICENSED DRILLER 225 John Aguirre STARTED DRILLING ENDED DEPTH OF COMPLETED WELL (FT) 3/09 10/9/09 D WELL IS: ARTESIAN DRY HOLE SHALLOW (COMPLETED WELL (FT)) FLUID: AIR MUD ADDITIVES METHOD: ROTARY HAMMER CABLE TOOL H (FT) BORE HOLE CASING MATERIAL H (FT) THICKNESS FORMATION DESCRIPTION													

POD NUMBER

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

PAGE 1 OF 2

TRN NUMBER

TYPE OF	F PUMP:	☐ SUBMEI☐ TURBIN		☐ JET ☐ CYLINDER	☑ NO PUMP – WELL NOT EQUIPPED ☐ OTHER – SPECIFY:				
		DEPTH FROM	H (FT)	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METH PLACE		
annu seal	AND	FROM	10			(COBICTT)	T Di Noz		
GRAVE:	L PACK								
V 1.5.5.1									
DEPTI	TO	THICK (F)			COLOR AND TYPE OF MATERIAL ENCOUN JDE WATER-BEARING CAVITIES OR FRAC		WA' BEAR		
					See attached		☐ YES	□N	
							☐ YES	□N	
							☐ YES	□N	
							☐ YES	ПИ	
							☐ YES	□N	
							☐ YES	□N	
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							☐ YES		
		ATTACH	LADDITION	JAL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGI	C I OG OF THE WELL	☐ YES	N	
······································		METHOD:	BAILE	· · · · · · · · · · · · · · · · · · ·	☐ AIR LIFT ☐ OTHER — SPECIFY:	C LOG OF THE WELL	<u> </u>		
WELL	TEST	TEST RESU	ILTS - ATTA	ACH A COPY OF D	ATA COLLECTED DURING WELL TESTING		IME, END T	IME,	
ven ven				NG DISCHARGE A	AND DRAWDOWN OVER THE TESTING PER	IOD.	<u> </u>		
addition Well Ch		MENTS OR EXPL	ANATIONS:						
		r was enco	untered s	so bore hole wa	as grouted by filling with 5% bentoni	te/Portland cement			
THE UN	DERSIGN	ED HEREBY (CERTIFIES	ТНАТ, ТО ТНЕ ВЕ	ST OF HIS OR HER KNOWLEDGE AND BEL	IEF, THE FOREGOING	IS A TRUE A	ND	
CORREC	T RECOR	d of the ae	OVE DESC	RIBED HOLE AND	O THAT HE OR SHE WILL FILE THIS WELL I ON OF WELL DRILLING:	RECORD WITH THE ST	ATE ENGIN	EER AN	
					11/17/09				

FOR OSE INTERNAL USE			(Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2



	POD NUME	BER (WEI	LL NU	IMBER)	1. 1887 1. 18. 18. 18. 18. 18. 18. 18. 18. 18.			OSE FILE NUM	ABER(S)				
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Ĕ	WELL OW	NER NAM	ΛΕ(S)					PHONE (OPTIC	ONAL)				
OC	Sundan	ce Se	rvice	es Inc.; Cor	ntact Mr. Joe Ca	arillo, Plant Mai	nager	575-394-2	2511				
T	WELL OW	VER MAI	LING	ADDRESS				CITY		STATE ZIP		ZIP	
WEI	1001 6tl	h Stre	et					Eunice,		NM	88	231	
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ERA	(FROM C	PS)	LON	GITUDE	103	6	10.37 W	* DATUM REG	QUIRED: WGS 84				
GENERAL AND WELL LOCATION	DESCRIPT	ION REL	5 1 1	The service of the Page	ON TO STREET ADDRE		- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	<u> </u>		Bartan Lawy	<u> </u>		
1. (
					90 900 5 900 y yyyyy 5 1		1 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5				See a see s	ere ur kilai kilaa	
	(2.5 ACF			(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	00	TOWNSHIP	NORTH	RANGE	✓ EAST	
ΛΑΙ	NW 1,		SE	= 1/4	SW 1/4	1/4	1.07.17	30	21	✓ SOUTH	38	☐ WEST	
OPTIONAL		on nam Lea C		tv			LOT NUM	1BER	BLOCK NUMBER		UNIT/TRA	CT	
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2.													
	LICENSE N	UMBER	· ·	NAME OF LICE	ENSED DRILLER	2000 PR 100 PR 100 PR	<u> </u>	No. 20 10 100	NAME OF WELL DR	ILLING CON	/PANY	, ,	
		225		John Agui					Rodgers & Co				
	DRILLING	STARTE	D	DRILLING ENI		MPLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR		TERED (FT)		
Z	10/	4/09		10/8/09)	149			n/a				
Œ						DLE SHALLOW (UNCONFINED)			STATIC WATER LEVEL IN COMPLETED WELL (FT)				
₹¥.	COMPLETI	ED WELL	L IS:	ARTESIAN	√ DRY HOLE	SHALLOW (U	UNCONFINED)		n/a				
(FO	DRILLING	FLUID:		AIR	MUD	ADDITIVES -	- SPECIFY:	PECIFY:					
3. DRILLING INFORMATION	DRILLING	МЕТНОІ	D:	ROTARY	HAMMER	CABLE TOO	L OTHE	✓ _{OTHER - SPECIFY:} Hollow stem auger					
	DEPT	H (FT)		BORE HOL	LE	CASING	CONI	CONNECTION INSIDE DIA. CASING WAL			G WALL	SLOT	
DRI	FROM	ТО		DIA. (IN)	M	IATERIAL	TYPE	(CASING)	CASING (IN)	THICKN	IESS (IN)	SIZE (IN)	
<u>ن</u>													
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₹		H (FT)		THICKNES (FT)	SS F				ATER-BEARING S			YIELD (GPM)	
κT	FROM	TC)	(11)		(INCLUDE WA	TER-BEARING	CAVITIES	R FRACTURE ZON	ES)		(GFM)	
BEARING STRATA												<u> </u>	
ING													
EAR						,							
WATER	METHOD (JSED TO	ESTIN	MATE YIELD OF	WATER-BEARING STR	ATA	382		TOTAL ESTIMATED	WELL YIEI	LD (GPM)		
4. W.										n/a			
7	****		2012 2012		128	· · · · · · · · · · · · · · · · · · ·		<u></u>	<u> </u>			z	

FOR OSE INTERNAL USE		WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE I OF 2

TYPE OF	PUMP:	☐ SUBMEI☐ TURBIN		☐ JET ☐ CYLINDER						
ANNU SEAL		DEPTH (FT) FROM TO		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT			
GRAVEI	L PACK									
DEPTH FROM	H (FT) TO	THICK (F			COLOR AND TYPE OF MATERIAL ENCOUN' UDE WATER-BEARING CAVITIES OR FRACT		WA' BEAR			
					See attached		☐ YES	□ NO		
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		ATTACE	ADDITION	IAL PAGES AS NE	EEDED TO FULLY DESCRIBE THE GEOLOGIC	C LOG OF THE WELL				
		METHOD:	BAILE	ER PUMP	☐ AIR LIFT ☐ OTHER – SPECIFY:					
WELL	TEST				DATA COLLECTED DURING WELL TESTING, AND DRAWDOWN OVER THE TESTING PER		IME, END T	IME,		
ADDITION	AL STATEM	MENTS OR EXPL	ANATIONS:			10. W. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10		gerjang, r		
Well Ch										
No grou	ndwate	r was enco	untered s	so bore hole wa	as grouted by filling with 5% bentonit	e/Portland cement				
CORREC	T RECOR	D OF THE AE	OVE DESC	RIBED HOLE ANI	EST OF HIS OR HER KNOWLEDGE AND BELI D THAT HE OR SHE WILL FILE THIS WELL R ON OF WELL DRILLING:	EF, THE FOREGOING I	S A TRUE A ATE ENGIN	ND EER ANI		
					11/17/09					
		SIGNATUR	RE OF DRIL	LER	DATE					
SIGNATURE OF DRII					~					

FOR OSE INTERNAL USE		WELL RECORD & LOG (Version 6/9/08)			
FILE NUMBER	POD NUMBER	TRN NUMBER			
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FILE NUMBER

LOCATION

-	POD NUME	BER (WE	LL NU	MBER)				OSE FILE NUM	MBER(S)			-
Ö	3							CP 1028				
CAI	WELL OW			(0	ata at Mar Ja C			PHONE (OPTI				-
Ŏ					ntact Mr. Joe Ca	arillo, Plant Ma	nager	575-394-2	2511 			
ILL	WELL OW:			ADDRESS				CITY		STATE	00	ZIP
M	וטטו סנ	ıı ətre	el .	<u></u>		S		Eunice,		NM	88	231
3	WELI	L			DEGREES		SECONDS					
۸L./	LOCATI	L	LAT	ITUDE	32	26	36.97 _N		REQUIRED: ONE TEN	TH OF A SEC	COND	
1. GENERAL AND WELL LOCATION	(FROM C	3PS)	LON	GITUDE	103	6	6.86 W	* DATUM REG	QUIRED: WGS 84			
GEN	DESCRIPT	TON REL	ATIN	G WELL LOCATI	ON TO STREET ADDRE	SS AND COMMON L	ANDMARKS	*		70/0/00/1971 1/10		er er er er
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				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		T	T					··.
	(2.5 ACI	1		(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	20	TOWNSHIP	NORTH	RANGE	✓ EAST
MAL	SW 1		SE	= 1/4	SW 1/4		30	21	✓ south	38	WEST	
OPTIONAL	SUBDIVISI	ion nam Lea C		hv		LOT NUM	MBER .	BLOCK NUMBER		UNIT/TRA	CΓ	
	HYDROGR			<u> </u>					MAP NUMBER		TRACT NU	IMDED
7.	HUNNUIR	Arnic 3	OKVE	1					MAT NUMBER		IRACINU	INIDEK
					er vezetetetete	<u> </u>						5 A
	LICENSE N				ENSED DRILLER				NAME OF WELL DE		//PANY	
		0225		John Agui					Rodgers & Co			
	DRILLING 10/	starte 6/09	ט	10/10/0!		IPLETED WELL (FT)	BORE HO	TE DEPTH (FT)	DEPTH WATER FIR			
No.	10/	0/09		10/10/0	ق			1 3	CTATIO WATER TO	n/a		T (EE)
DRILLING INFORMATION	COMPLETI	ED WELI	JIS:	ARTESIAN	N	SHALLOW	(UNCONFINED)		STATIC WATER LE	vel in com n/a		다 (٢1)
FOI	DRILLING	FLUID:		AIR	MUD	ADDITIVES	- SPECIFY:					
KG IN	DRILLING	METHO	D:	ROTARY	HAMMER	CABLE TOO	ог Отн	ER – SPECIFY:	Hollow stem au	iger		
CLD	DEPT	H (FT)		BORE HOL	LE	CASING	CON	NECTION	INSIDE DIA.	CASIN	G WALL	SLOT
DRU	FROM	TC)	DIA. (IN)	M	ATERIAL	TYPE	(CASING)	CASING (IN)		IESS (IN)	SIZE (IN)
ن												
										ļ		
										<u> </u>	<u> </u>	
	DEPT	H (FT)		THICKNES	SS F	ORMATION DES	CRIPTION OF I	PRINCIPAL W	ATER-BEARING S	TRATA		YIELD
¥T.	FROM	TC)	(FT)		(INCLUDE WA	TER-BEARING	CAVITIES O	R FRACTURE ZON	JES)		(GPM)
STRATA												
RIN												
BEA												
ER	****					<u> </u>			<u> </u>			
4. WATER BEARING	METHOD I	USED TO	ESTIN	MATE YIELD OF	WATER-BEARING STR	ATA			TOTAL ESTIMATED			
4.										n/a		
. 40-01							e e de la companya de				e Service	
	FOR OS	E INTEI	RNAI	USE					WELL RECO	RD & LOC	(Version 6	/9/08)

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TRN NUMBER

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		DEPTI	I (FT)	DODE HOLE	OTHER – SPECIFY:	AMOUNT		OD 01
ANNI	JLAR	FROM	TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	(CUBIC FT)	METH PLACE	
SEAL	AND L PACK							
GIGITE	BITTOR							
DEPT	H (FT)	THICK	NESS		COLOR AND TYPE OF MATERIAL ENCOUN	TERED	WA	TER
FROM	TO	(F	Γ)	(INCL	UDE WATER-BEARING CAVITIES OR FRAC	TURE ZONES)	BEAR	
					See attached		☐ YES	
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		ATTACH	ADDITION	AL PAGES AS NI	EEDED TO FULLY DESCRIBE THE GEOLOGI	C LOG OF THE WELL		
	·····	METHOD:	□BAILE	R PUMP	☐ AIR LIFT ☐ OTHER – SPECIFY:			
WELL	TEST				DATA COLLECTED DURING WELL TESTING AND DRAWDOWN OVER THE TESTING PER		IME, END T	IME,
ADDITION	NAL STATEN	I MENTS OR EXPL	ANATIONS:					-
Vell Cl				, , ,				
vo grot	inawate	r was enco	iunterea s	o pore noie W	as grouted by filling with 5% bentoni	ie/Portiand cement		
THE TEST	DEDGLOS	DD HED EDA	OEDWIETES	PLIATE TO THE ST	FOT OF THE OR HER WAYN FROM ANY	TER WIE BORROSS	IC A MPN .	NE
CORREC	CT RECOR	D OF THE A	BOVE DESC	RIBED HOLE AN	EST OF HIS OR HER KNOWLEDGE AND BEL D THAT HE OR SHE WILL FILE THIS WELL I ION OF WELL DRILLING:			
					11/17/09			
		SIGNATUI			DATE			

FOR OSE INTERNAL USE		WELL RECORD & LO	G (Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2

-	POD NUME	BER (WELL	NUMBER)				OSE FILE NUM	MBER(S)			_
<u>o</u>	4						CP 1028				
1. GENERAL AND WELL LOCATION	WELL OWN		• /	ntact Mr. Joe Ca	arillo, Plant Mar	nager	PHONE (OPTION 575-394-2	•			
TT	WELL OW	VER MAILI	NG ADDRESS				CITY		STATE		ZIP
WEI	1001 6tl	h Street	t	na mananana usas u			Eunice, NM 8			88	3231
AND.	WELI LOCATI			DEGREES 32	minutes s	econds 37.19 N	* ACCURACY	REQUIRED: ONE TEN	ITH OF A SEC	COND	
RAI	(FROM C	PS)	LATITUDE					QUIRED: WGS 84	-		
NE			LONGITUDE	103	5	00.21					
D	DESCRIPT	TON RELAT	TING WELL LOCAT	TION TO STREET ADDRE	SS AND COMMON LA	NDMARKS					
	(2.5 ACI	RE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION		TOWNSHIP		RANGE	
ᢖᅦ	SE ;	/4	SW 1/4	SE 1/4	1/4		30	21	□ NORTH ✓ SOUTH	38	✓ EAST WEST
ON	SUBDIVISI	ON NAME			LOT NUM	IBER	BLOCK NUMBER		UNIT/TRA		
OPTIONAL	in I	Lea Co	unty								
2. C	HYDROGR	APHIC SUF	RVEY			MAP NUMBER TRACT NUMBE				JMBER	
	LICENSE N	IUMBER	NAME OF LIC	CENSED DRILLER		es	- 1 July 1 July 1	NAME OF WELL DE	RILLING COM	MPANY	
	WE)225	John Agu	irre				Rodgers & Co	o., Inc.		
	DRILLING	STARTED	DRILLING EN	DEPTH OF COM	IPLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR	RST ENCOUN	TERED (FT)	
z	10/	8/09	10/10/0	9			79		n/a		
ПС								STATIC WATER LE	VEL IN COM	PLETED WEI	LL (FT)
RMA	COMPLETI	ED WELL IS	S: ARTESIA	N ORY HOLE	SHALLOW (U	JNCONFINED)			n/a		
NFC	DRILLING	FLUID:	AIR	☐ MUD	ADDITIVES -	- SPECIFY:					
VG I	DRILLING	METHOD:	ROTARY	HAMMER	CABLE TOOL	∠ ✓ OTHE	R - SPECIFY:	Hollow stem au	ıger		· · · · · · · · · · · · · · · · · · ·
DRILLING INFORMATION	DEPT FROM	H (FT)	BORE HO		CASING IATERIAL		NECTION (CASING)	INSIDE DIA. CASING (IN)		G WALL VESS (IN)	SLOT SIZE (IN)
3. D											
					,						
	DEPT	H (FT)	THICKNE	SS F	ORMATION DESC	RIPTION OF P	RINCIPAL W	ATER-BEARING S	STRATA	7 7 7 N	YIELD
TA	FROM	TO	(FT)		(INCLUDE WAT	ER-BEARING	CAVITIES O	R FRACTURE ZON	VES)		(GPM)
STRATA											
Z Z											
BEA											
ER	<u> </u>							<u> </u>			
4. WATER BEARING	METHOD (JSED TO ES	STIMATE YIELD O	F WATER-BEARING STR	ATA			TOTAL ESTIMATE	o well yiei n/a	, ,	
								<u> </u>			F

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TRN NUMBER

LOCATION

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TYPE OI	PUMP:	☐ SUBME		☐ JET ☐ CYLINDER	✓ NO PUMP – WELL NOT EQUIPPED ☐ OTHER – SPECIFY:			
A N IN IY	II AD	DEPT) FROM	H (FT)	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METH PLACE	
ANNU SEAL GRAVE	AND							
DEPTI FROM	H (FT)	THICK (F		COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)				TER RING?
TROIVI	10	`			See attached		☐ YES	
							☐ YES	
							☐ YES	
100							☐ YES	
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						· · · · · · · · · · · · · · · · · · ·	☐ YES	
			1-21-2-1-20-1-2-2-2-1-1-1-1-1-1-1-1-1-1-				☐ YES	
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							☐ YES	
			3 21 2				☐ YES	
							☐ YES	
							☐ YES	
							☐ YES	
		ATTACI	H ADDITION	IAL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOG	IC LOG OF THE WELL		
<u> </u>		METHOD:	BAILE	ER	☐ AIR LIFT ☐ OTHER — SPECIFY:			
WELL	TEST				OATA COLLECTED DURING WELL TESTING AND DRAWDOWN OVER THE TESTING PER		IME, END T	IME,
ADDITION	IAL STATEN	MENTS OR EXPI	LANATIONS:	and the second		<u> </u>		
Vell Ch								
No grou	ındwate	r was enco	ountered s	so bore hole wa	as grouted by filling with 5% bentoni	te/Portland cement		
CORREC	CT RECOR	D OF THE A	BOVE DESC	RIBED HOLE ANI	ST OF HIS OR HER KNOWLEDGE AND BEL O THAT HE OR SHE WILL FILE THIS WELL ON OF WELL DRILLING:			
					11/17/09			

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TRN NUMBER

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FILE NUMBER

LOCATION

POD NUM 5 WELL OW	,	LL NUMBER)				OSE FILE NUM CP 1028	. ,						
			ntact Mr. Joe Ca	arillo, Plant Mana	ager	575-394-2	*						
		LING ADDRESS				CITY STATE				ZIP			
1001 6t	th Stre	et				Eunice,		NM	88	231			
WEL	т Т		DEGREES	MINUTES SEC	CONDS								
LOCAT		LATITUDE	32	26	50.70 N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND							
(FROM	GPS)	LONGITUDE	103	6	1.44 W	* DATUM REC	QUIRED: WGS 84						
DESCRIP	TION REL		na a la saverá e	ESS AND COMMON LANI	engage e e e e		e ee <u>ee lingto</u>		ille de la companie	Transaction (Co.)			
					Lanaman		1		Lauren				
(2.5 AC	· 1	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	20	TOWNSHIP	NORTH	RANGE	✓ EAST			
SE	1/4	NE 1/4	SW 1/4	LOTATA	30	21	SOUTH	38	west				
	Lea C			LOT NUM	IDEK	BLOCK NUMBER		UNIT/TRAG	∪ 1				
HYDROGE							MAP NUMBER		TRACT NU	MBER			
LICENSE 1	NUMBER	NAME OF LIC	ENSED DRILLER				NAME OF WELL DE	RILLING CON	/PANY	<u></u>			
WI	D225	John Agui	rre			Rodgers & Co	o., Inc.						
DRILLING				MPLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIF	RST ENCOUN	TERED (FT)				
10	/9/09	10/10/0	9			46		n/a					
COMPLET	TED WELL	. IS: ARTESIA	N ✓ DRY HOLE	E SHALLOW (UN	(CONFINED)		STATIC WATER LE		n COMPLETED WELL (FT) n/a				
DRILLING	FLUID:	AIR	☐ MUD	ADDITIVES – S	PECIFY:								
DRILLING	3 метноі	o: Rotary	HAMMER	CABLE TOOL	✓ OTHE	ER - SPECIFY:	Hollow stem au	iger					
DEP	ГН (FT)	BORE HOI	Æ	CASING	CONT	NECTION	INSIDE DIA.	CASIN	G WALL	SLOT			
FROM	ТО	DIA. (IN) M	IATERIAL		(CASING)	CASING (IN)		IESS (IN)	SIZE (IN)			
	-												
	 												
	<u> </u>						1 -4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2						
	TH (FT)	THICKNE	SS F	FORMATION DESCR						YIELD			
FROM	TO	(FT)		(INCLUDE WATE	K-BEAKING	CAVITIES O	R FRACTURE ZON	NES)		(GPM)			
	-												
	-												
-/	-												
METHOD	USED TO	ESTIMATE VIELD OF	WATER-BEARING STR	RATA			TOTAL ESTIMATE	D WELL YIFI	.D (GPM)				
	2022 10			•				n/a					

POD NUMBER

TRN NUMBER

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TYPE O	F PUMP:	□ SUBMEF		☐ JET ☐ CYLINDER	✓ NO PUMP – WELL NOT EQUIPPED ☐ OTHER – SPECIFY:		·	
ANNI SEAL		DEPTH FROM	TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METH PLACE	
GRAVE								
DEPTI FROM	H (FT)	THICK (F		1	COLOR AND TYPE OF MATERIAL ENCOUN DE WATER-BEARING CAVITIES OR FRAC		WA' BEAR	
			· · · · ·		See attached		☐ YES	□ N
			•				☐ YES	□ N
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							☐ YES	□ N
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			·			<u> </u>	☐ YES	ПИ
		ATTACH	ADDITION	IAL PAGES AS NEE	EDED TO FULLY DESCRIBE THE GEOLOGI	C LOG OF THE WELL		
		METHOD:	BAILE	ER PUMP	☐ AIR LIFT ☐ OTHER — SPECIFY:			
WELL	TEST				ATA COLLECTED DURING WELL TESTING ND DRAWDOWN OVER THE TESTING PER		IME, END T	IME,
ADDITION	IAL STATEN	IENTS OR EXPL	ANATIONS:					
Nell GE No grou		r was enco	untered s	so bore hole was	s grouted by filling with 5% bentoni	te/Portland cement		
J					, <u>, , , , , , , , , , , , , , , , , , </u>		-	
CORREC	CT RECOR	D OF THE AB	OVE DESC	RIBED HOLE AND	T OF HIS OR HER KNOWLEDGE AND BEL THAT HE OR SHE WILL FILE THIS WELL I IN OF WELL DRILLING:			
					11/17/09			

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LOCATION

GENERAL AND WELL LOCATION	Sundan WELLOWN 1001 6th	ce Se	rvice	•	tact Mr. Joe Ca	nrillo, Plant Mar	nager	575-394-2511 CITY STATE Eunice, NM 8			88	ZIP 231
NERAL A	LOCATI (FROM G	L	LATIT	TUDE	32 103	26 5	50.58 _N 31.90 W		REQUIRED: ONE TEN	ITH OF A SEC	COND	
1. GE	DESCRIPT	ION REL	ATING	WELL LOCATIO	N TO STREET ADDRE	SS AND COMMON LAI	NDMARKS					
₹	(2.5 ACF	/4	NE	0 ACRE)	(40 ACRE) SE 1/4	(160 ACRE)	SECTION	30	TOWNSHIP 21	□ NORTH ✓ SOUTH	range 38	Z EAST
OPTIONAL	SUBDIVISI in l	Lea C	ounty				LOT NUM	BER	BLOCK NUMBER		UNIT/TRA	
2.								, with a second	MAP NUMBER		TRACT NU	JMBER
)225		NAME OF LICEN John Aguirr	е			Rodgers & Co	o., Inc.			
NOI	DRILLING 10/	9/09	D	DRILLING ENDI	1	PLETED WELL (FT)		LE DEPTH (FT) 46	DEPTH WATER FIF	n/a		T (Ed.)
DRILLING INFORMATION	COMPLETE	ED WELL	IS:	ARTESIAN	DRY HOLE	SHALLOW (U	NCONFINED)		STATIC WATER LE	n/a	WEI	
Ĭ	DRILLING			AIR	MUD	ADDITIVES -			Hollow stem au	igor		
ING	DRILLING	метног `Н (FT)	D:	ROTARY	HAMMER	CABLE TOOL			The state of the s	 		
3. DRILLI	FROM	TO		BORE HOLE DIA. (IN)	I	CASING ATERIAL		NECTION (CASING)	INSIDE DIA. CASING (IN)		G WALL IESS (IN)	SLOT SIZE (IN)
										· · · ·		
	DEPT	H (FT)		THICKNESS	S F	ORMATION DESC	RIPTION OF P	RINCIPAL W	ATER-BEARING S	STRATA		YIELD
STRATA	FROM	ТО		(FT)		(INCLUDE WAT	ER-BEARING	CAVITIES O	R FRACTURE ZOI	VES)		(GPM)
			-									
ING												
3EA.F												
ER 1							· · · · · · · · · · · · · · · · · · ·					
4. WATER BEARING	METHOD U	JSED TO	ESTIM	ATE YIELD OF V	VATER-BEARING STR	ATA			TOTAL ESTIMATE	D WELL YIEI n/a		

POD NUMBER

TRN NUMBER

PAGE 1 OF 2

TYPE OF		TURBIN		CYLINDER	OTHER - SPECIFY:	<u> </u>	· · · · · · · · · · · · · · · · · · ·	····
ANNU	LAR	DEPTH FROM	TO TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METH PLACE	
SEAL A	AND							
DEPTH	(ET)							
FROM	TO	THICK (F			COLOR AND TYPE OF MATERIAL ENCOUN JDE WATER-BEARING CAVITIES OR FRAC		WA' BEAR	
					See attached		☐ YES	
							☐ YES	
							☐ YES	
							☐ YES	
							YES	
-							☐ YES	
							☐ YES	
							YES	
-							☐ YES	
						☐ YES		
							☐ YES	
							☐ YES	
							☐ YES	
							☐ YES	
							☐ YES	
				-			☐ YES	
		ATTACH	I ADDITION	IAL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGI	C LOG OF THE WELL		
		METHOD:	BAILE	R PUMP	☐ AIR LIFT ☐ OTHER SPECIFY:			
WELL '	TEST				ATA COLLECTED DURING WELL TESTING ND DRAWDOWN OVER THE TESTING PER		IME, END T	IME,
ADDITION	AL STATEN	I MENTS OR EXPL					<u>, , , , , , , , , , , , , , , , , , , </u>	
Vell GB	- 2.							
lo groui	ndwate	r was enco	untered s	o bore hole wa	as grouted by filling with 5% bentoni	te/Portland cement		
			<u> </u>					
CORRECT	T RECOR	D OF THE AE	BOVE DESC	RIBED HOLE AND	ST OF HIS OR HER KNOWLEDGE AND BEL THAT HE OR SHE WILL FILE THIS WELL I DN OF WELL DRILLING:	IEF, THE FOREGOING ERECORD WITH THE ST	S A TRUE A ATE ENGINI	ND EER 2
					11/17/09			

FOR OSE INTERNAL USE		WELL RECORD & LOG (Version 6/9/08)		
FILE NUMBER	POD NUMBER	TRN NUMBER		
LOCATION		PAGE 2 OF 2		

COMPLETION REPORT SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO

ATTACHMENT C OCD APPROVAL OF SUPPLEMENTAL DRILLING PLAN

Pamela Gonzales

From: Keith Gordon

Sent: Thursday, November 19, 2009 3:37 PM

To: Pamela Gonzales

Subject: FW: SSI West Corehole Locations

From: Jones, Brad A., EMNRD [mailto:brad.a.jones@state.nm.us]

Sent: Thursday, September 17, 2009 10:31 AM

To: lawearth@earthlink.net

Cc: Michael Hermann; Keith Gordon Subject: RE: SSI West Corehole Locations

Larry,

The Oil Conservation Division (OCD) has reviewed the drilling plan, dated September 8, 2009, and the revision, submitted today via email, and determined that the proposal is adequate to proceed with the site investigation. It should be understood that any area that is proposed for activities (landfarming, evaporation ponds, treatment facilities, waste stabilization, etc...) permitted under 19.15.36 NMAC must be properly assessed for siting prior to the submittal of the application. Please provide directions and maps to the proposed site and a confirmed start time and date for the drilling activities. If you have any questions regarding this matter, please do not hesitate to contact me.

Brad

Brad A. Jones

Environmental Engineer Environmental Bureau NM Oil Conservation Division 1220 S. St. Francis Drive Santa Fe, New Mexico 87505 E-mail: brad.a.jones@state.nm.us

Office: (505) 476-3487 *Fax:* (505) 476-3462

From: lawearth [mailto:lawearth@earthlink.net] Sent: Thursday, September 17, 2009 9:30 AM

To: Jones, Brad A., EMNRD

Cc: 'Michael Hermann'; 'Keith Gordon' **Subject:** SSI West Corehole Locations

Hi Brad – attached is a map of the supplemental borings showing the proposed locations of core holes CH-3 and CH-4.

Keith has a meeting regarding this site at 10am today. If there is any chance that you could complete your approval email before then, it would be greatly appreciated.

Thank you very much for your assistance. Please let me know if you have any questions.

Larry M. Coons, P.E., P.Hg., D.E.E. Project Director Gordon Environmental Inc.

Phone: 505-294-7227 Fax: 505-294-7712 Mobile: 505-379-9539

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COMPLETION REPORT SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO

ATTACHMENT D

LOGS FOR COREHOLES CH-1 THROUGH CH-4 AND GEOTECHNICAL BORINGS GB-1 AND GB-2

GORDON ENVIRONMENTAL INC. Soil/Rock Coring Log Page 1 of 2

												
			Drill 7	ime				<i>9</i>	nc nc			
Depth (ft)	Boring Operation	% Core Recovery		r (nin		ow s	5.5	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log		
epti	orin	% Cc	Clock Time	e pe et (n	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	M de ¿Dry	ab Ul Jil Tassi	raph	Comments	Visual Field Classification
	ФО	0.2	OË	Elapsed Time per 5 feet (min)	Sa Int	X08	200	76	C S F	97		
0	A/C	- 25	10/3/09								HSA continuous core w/ 6.5" OD HSA and	SAND; fine; reddish tan; slightly
		\downarrow	0957								3.5" OD (2.5" ID) 5'	moist to 4'
		100									continous sampler	SAND; silty v. fine to fine; reddish brown; slightly moist; thin brown clay
10			1005									lenses @ 4'; caliche @ 5'
10			1005									
											Variable caliche/	
											caliche cementation	
20			····1024···		ļ							
											Gravel to ½" @ 27'	
30			1035									
30			1000									
											Caliche stringers/	
											lenses	
40			1047								Gravel to 1" @ 43' to	SAND; v. fine to fine; pinkish tan; dry
											44'	to slightly moist
												CLAYSTONE [CHINLE FM]; variable silt; reddish brown; dry to slightly
F0			4404									moist
50			1104									
											Grey clay lenses/	
											inclusions; dry	
60			1315									CLAYSTONE; red to purple; dry
70			1359									
70			1309									
							ļ					
80	ļ ļ	 	1450		ļ					ļ		
									<u> </u>		Grey clay lenses/	
									-		inclusions; dry	
00					ļ				ł			
90			1536									
			10/3/09						ļ			
			0750									
100		↓	0818		ļ							
l									ļ			
							<u> </u>		Ī			
ļ					ļ	ļ			 			
		1	1		1		1	1		1	I	

SAMPLE TYPE

A - Auger cuttings: NR = No recovery

R - Rotary cuttings

C - Continuous core (as specified)

CORING LOG

CH-1
(1 of 2)
F:\GE\Templates\Soil-Rock Coring Log

GROUNDWATER

0110	OIIDIII	
DEPTH	HOUR	DATE
NONE		

LOGGED BY L Coons
DRILLER Rodgers - John Aguirre
DATE COMPLETED 10/9/09
RIG/BORING TYPE CME 75 HSA/Core
SURFACE ELEVATION 3410.89
PROJECT SSI - West
PROJECT NUMBER 530.01.01/02
LOCATION N528975.8 E921004.5 (NAD83)

GORDON ENVIRONMENTAL INC. Soil/Rock Coring Log Page 2 of 2

			D :# 7									
_	_	>	Drill 7					ure (d ion			
Depth (ft)	Boring Operation	% Core Recovery	Clock Time	Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (Ib/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
100	A/C····		··10/4/09··								very dense; slow drilling	CLAYSTONE; reddish brown; dry
		75	0857								g	
110		-50	0944									
		50	1019								Grey clay lenses/ inclusions; dry	
120		100	1103								motasions, any	
120		100	1215 1248	33								
120			1259	60								
130			1359 1413 1458	45								
			1510	45							Tripped out augers on	
140		Ψ	1555 10/9/09 1409								10/5/09 @ 0850 Driller added ~ 1.5 gal	
		75	1534 1544	85							each of Quick Foam and Con Det to facilitate drilling on 10/9/09	
150		100	1553···· 1605	9							Thin (6") layers of moderately indurated	
	₩	100	1628	23				13	CL		siltsone; reddish brown; dry @ 148'	TD = 154'@ 1628 on 10/9/09
											u., c	Plugged boring
160												to surface on
												10/9/09 w/ 5% bentonite grout mixture
170												xtare
170												
400												
180												
190												
200												
								1				

SAMPLE TYPE

A - Auger cuttings: NR = No recovery

R - Rotary cuttings

C - Continuous core (as specified)

CORING LOG

CH-1
(2 of 2)
F:\GE\Templates\Soil-Rock Coring Log

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

LOGGED BY L Coons

DRILLER Rodgers - John Aguirre

DATE COMPLETED 10/9/09

RIG/BORING TYPE CME 75 HSA/Core

SURFACE ELEVATION 3410.89

PROJECT SSI - West

PROJECT NUMBER 530.01.01/02

LOCATION N528975.8 E921004.5 (NAD83)

GORDON ENVIRONMENTAL INC. Soil/Rock Coring Log Page 1 of 2

												<u> </u>
	,	>	Drill T					ure)	d ion			
Depth (ft)	Boring Operation	% Core Recovery	Clock Time	Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C	0	··10/5/09 ·· 1328								HSA continuous core w/ 6.5" OD HSA and	SAND; v. fine to fine; rust tan; slightly moist to moist; soft
			1330	2							3.5" OD (2.5" ID) 5' continous sampler	,
			1456 1502	_							Soft to medium hardness	SAND; silty v. fine to fine; rust tan; dry to slightly moist; minor caliche
10		- 25	1508 1515	6						ļ	, indianos	and the state of t
		0.5	1519	7							Moderately indurated;	
		25	1522	,							grey-rust to tan	
20		-50	···1528···· 1532	3							Soft	CALICHE; silty v. fine to fine; pinkish white to white; dry to slightly moist
			1537 1539	4								
30			1546	2							Minor gravel to 1" dia;	
			1548								It tan	
			1555	2								
40			1600	2							Friable	SILT/SILTSTONE; gravelly; reddish brown; dry
			1606								Gravel to 1"; minor black mafic(?) inclusions	CLAYSTONE [CHINLE FM]; silty w/ gravel; reddish brown w/ grey clay
			0745	6							Black mano(:) molaciono	inclusions; dry
50		∨ 75	0752 0757	7								
			0804									
			0757 0804	7							Moderatley dense; plastic	CLAYSTONE; reddish brown; dry
60			0810 0826	16								
			0833 0844	11								
70			0849 0902	13							Grey clay inclusions w/ mafic dentrites	
			0910 0920	10								
80		ļ ļ	0927 0938	11						ļ	[change to combination bit]	
			10/7/09 1240	10							[S. ange to combination bit]	
			1250	10								
90			1257 1321	24								
			1332 1350	18							Grey clay lenses/	
100	↓	.	1404 1422	18			1				inclusions; dry	
			1744									

SAMPLE TYPE

- A Auger cuttings: NR = No recovery
- R Rotary cuttings
- C Continuous core (as specified)

CORING LOG

(1 of 2)

(1 of 2)

F:\GEI\Templates\Soil-Rock Coring Log

GROUNDWATER

	• • • • • • • • • • • • • • • • • • • •	
DEPTH	HOUR	DATE
NONE		

LOGGED BY L Coons

DRILLER Rodgers - John Aguirre

DATE COMPLETED 10/8/09

RIG/BORING TYPE CME 75 HSA/Core

SURFACE ELEVATION 3403.4

PROJECT SSI - West

PROJECT NUMBER 530.01.01/02

LOCATION N527727.1 E921002.4 (NAD83)

GORDON ENVIRONMENTAL INC. Soil/Rock Coring Log Page 2 of 2

												======================================
			Drill 7					<u>8</u>	uo.			
Depth (ft)	Boring Operation	% Core Recovery	Clock Time	Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
100	A/C		1431 1452								Very dense; slow drilling	CLAYSTONE; reddish brown; dry
		100	1502 1528	19								
110		-100	1539 1558	26								
		100	10/8/09 0756	19								
120		75	0839 0854 0933	42							Very dense; plastic`	
		75	0947 1030	39								
130		50	1047 1100	43								
		75 	1228 1306	13							Driller added ~ 1.5 gal	
140			1353 1405	22							of Quick Foam to facilitate drilling on 10/8/09	
			1419 1425	12							Thin (6") layers of moderately indurated siltsone; reddish brown;	
150	v	x		6 (4')				8	CL		dry @ 145'	TD = 149'@ 1425 on 10/8/09
												Plugged boring to surface on
160												10/8/09 w/ 5% bentonite grout mixture
170												
180												
190												
200												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery

R - Rotary cuttings

C - Continuous core (as specified)

CH-2 (2 of 2)

(U	K	IN	G	L	U	G

GROUNDWATER												
DEPTH	HOUR	DATE										
NONE												

LOGGED BY L Coons **Rodgers - John Aguirre** DRILLER . 10/8/09 DATE COMPLETED CME 75 HSA/Core RIG/BORING TYPE . SURFACE ELEVATION 3403.40 SSI - West PROJECT_ 530.01.01/02 PROJECT NUMBER LOCATION N527727.1 E921002.4 (NAD83)

GORDON ENVIRONMENTAL INC. Soil/Rock Coring Log Page 1 of 1

						1				_	1	
			Drill T	ime				ō				
Depth (ft)	Boring Operation	% Core Recovery	Clock Time	Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C I		0837 0838								HSA continuous core w/ 6.5" OD HSA and 3.5" OD (2.5" ID) 5' continous sampler	SAND; v. fine to fine; yellow tan to rust tan; slightly moist; soft
		30	0843 0845	1							Lighlty indurated @ 4'	SAND; silty v. fine to fine; red to pinkish tan; slightly moist
10		100	0848 0850	2							Root fibers	CALICHE; silty v. fine to fine; pinkish white to light tan; dry to slightly moist
		100	0853 0855	2								
20		100	0858 0859	2							Variable induration	
		60	0903 0904	1								
30		50	··· 0908··· 0909	1								
		30	0913 0914	1							Minor gravel to 1/4" to 1/2" dia @ 35'; soft	
40		-30	···0917··· 0918	1							Gravel 1/4" to 1/2"	SAND; gravelly fine to v. coarse; minor silt; reddish brown; slightly moist
		100	0923 0924	1							Gravel to 1"; minor black mafic(?) inclusions	SILT/SILTSTONE [CHINLE FM]; gravelly; reddish brown; dry to
50			0928 0930 0936	1							Fine to medium sandy; s. moist Clay and gravel @ 54'; dry	slightly moist
			0936 0938 0943	2							Mod. dense; plastic	CLAYSTONE; reddish brown; dry
60			0949	2							Mod. soft; fissle; micaceous	SILTSTONE; v. fine sandy; reddish brown; dry to slightly moist
			0953 1002	9							Dense; plastic	CLAYSTONE; silty w/ gravel; reddish brown w/ grey clay inclusions; dry
70			1009 1014	6								
			1019 1030	9								
80				5 (4')				20	ML			TD = 79'@ 1030 on 10/10/09 Plugged boring
												to surface on 10/10/09 w/ 5%
90												bentonite grout mixture
100												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery

R - Rotary cuttings

C - Continuous core (as specified)

CORING LOG

CH-3

GROUNDWATER

0		
DEPTH	HOUR	DATE
NONE		

LOGGED BY L Coons

DRILLER Rodgers - John Aguirre

DATE COMPLETED 10/10/09

RIG/BORING TYPE CME 75 HSA/Core

SURFACE ELEVATION 3401.30

PROJECT SSI - West

PROJECT NUMBER 530.01.01/02

LOCATION N527335.9 E921307.5 (NAD83)

GORDON ENVIRONMENTAL INC. Soil/Rock Coring Log Page 1 of 1

												<u> </u>
			Drill 7	ime				ē	uc			
Depth (ft)	Boring Operation	% Core Recovery	Clock Time	Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C I		10/10/09 1218 1219								HSA continuous core w/ 6.5" OD HSA and 3.5" OD (2.5" ID) 5' continous sampler	SAND; v. fine to fine; yellow tan to rust tan; slightly moist; soft
		20	1221 1223	1							Lighlty indurated @ 4'	SAND; silty v. fine to fine; red to pinkish tan; slightly moist
10		100	1226 1228	2								CALICHE; silty v. fine to fine; white to
		100	1232 1234	2								light tan to buff; dry to slightly moist
20		100	1237···· 1238	2							Variable induration	
		50	1241 1242	1								SAND/SANDSTONE; gravelly fine to coarse; silt; red-brown; dn
30		100	1246 1248	1							Gravel 1/4" to ½"	SILT/SILTSTONE [CHINLE FM]; v. fine sandy w/ gravel; reddish brown;
			1251 1252	2								slightly moist
40			1255 1257	11							Conglomerate @ 39' Mod. dense; plastic	CLAYSTONE; reddish to purple
			1300 1306	2							Wod. dense, plastic	brown; grey clay inclusions; dry
50			1311 1315	6								
			1331 1336	4							Clay and gravel @ 54'; dry	SANDSTONE; SILTY v. fine sandy; micaceous greenish grey to greyish
60			1340 1356	5				5	SM		Fissle; hard drilling	tan; dry
			1400 1409	16				3	Olvi		Mafic dendrites along	
70			1414 1431	9							fissle surfaces @ ~15 deg from horizontal; rust-colored lenses	
			1435 1448	17								
80	Ψ	Ψ		13 (4')								TD = 79'@ 1448 on 10/10/09
												Plugged boring to surface on
90												10/10/09 w/ 5% bentonite grout mixture
100												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery

R - Rotary cuttings

C - Continuous core (as specified)

CORING LOG

CH-4

GROUNDWATER

	• • • • • • • • • • • • • • • • • • • •	
DEPTH	HOUR	DATE
NONE		

LOGGED BY L Coons
DRILLER Rodgers - John Aguirre
DATE COMPLETED 10/10/09
RIG/BORING TYPE CME 75 HSA/Core
SURFACE ELEVATION 3408.44
PROJECT SSI - West
PROJECT NUMBER 530.01.01/02
LOCATION N527368.1 E922734.7 (NAD83)

GORDON ENVIRONMENTAL INC. Page _1_ of _1_ Soil Boring Log

Depth (ft)	Lab Permeability (cm/sec)	Graphical Log	Interval	Sample	Rig Blow Counts (per 6 inches)	Lab Dry Density (Ib/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Comments	Visual Field Classification
0				<i>A</i>						SAND; v. fine to fine; rust-tan; s. moist
10									Lightly indurated	SAND; silty v. fine to fine; brown; s. moist
15										CALICHE; silty v. fine to fine sandy; pinkish white to buff
20			X	\ r A	21,47 50+	80.2	12	SC	Lab Permeability = 9.36E-05 cm/s	
25										
30										
35										SILT/SILTSTONE [CHINLE FM];
-40									Plastic; dense	v. fine sandy; reddish brown; s. moist CLAYSTONE; reddish brown; dry
45			V	>	28,50+	104.7	12	CL	Lab Permeability =	
50			X		50+				2.32E-06 cm/s TD @ 46' Plugged boring to surface on 10/10/09 w/ 5% bentonite grout mixture	
									mixture	

SAMPLE TYPE

A - Auger cuttings: NR = No recovery

s - 2" OD 1.38" ID tube sample u - 3" OD 2.42" ID tube sample r - 3" OD 2.42" ID ring sample

BORING LOG

GB-1

GROUNDWATER

DEPTH	HOUR	DATE
None		

KEY

X = Sample Interval

L Coons LOGGED BY __ Rodgers - J Aguirre DRILLER _ 10/10/09 DATE COMPLETED . RIG/BORING TYPE CME 75 HSA SURFACE ELEVATION 3412.93 PROJECT_ SSI-West PROJECT NUMBER _ 530.01.01/02 LOCATION N528728.0 E921756.6 (NAD83)

GORDON ENVIRONMENTAL INC. Soil Boring Log Page _1_ of _1 Rig Blow Counts (per 6 inches) Lab Unified Soil Classification Lab Moisture (% Dry Wt) Lab Permeability (cm/sec) (£) Lab Dry Density (lb/cf) Depth Comments Visual Field Classification 0 SAND; v. fine to fine; medium tan; s. moist Minor gravel to 1-1/2" 6, 9 10,11 5 SM 5 CALICHE; silty v. fine to fine sandy; light buff; dry to s. moist 11,14 10 6, 8 18,50+ 94.8 Lab Permeability = SM 15 2.90E-04 cm/s 20 40,50+ 25,50+ 25 S 50+.50+ 30 SAND/SANDSTONE; light Caliche cementation pinkish tan; dry 50+,50+ 35 SILT/SILTSTONE [CHINLE FM]; 50+,50+ v. fine sandy w/ gravel; reddish 40 brown; dry to s. moist 50+/3 45 TD @ 46'

SAMPLE TYPE

50

A - Auger cuttings: NR = No recovery

s - 2" OD 1.38" ID tube sample u - 3" OD 2.42" ID tube sample r - 3" OD 2.42" ID ring sample

BORING LOG

GB-2

GROUNDWATER

DEPTH	HOUR	DATE
None		

KEY

 $|\overline{\chi}|$ = Sample Interval

L Coons LOGGED BY __ Rodgers - J Aguirre DRILLER ___ 10/10/09 DATE COMPLETED _ RIG/BORING TYPE CME 75 HSA SURFACE ELEVATION 3427.14 PROJECT___ SSI-West 530.01.01/02 PROJECT NUMBER _ LOCATION N528754.4 E924295.0 (NAD83)

Plugged boring to surface on 10/10/09 w/ 5%

bentonite grout mixture

COMPLETION REPORT SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO

ATTACHMENT E

BOREHOLE PLUGGING CERTIFICATION BY RODGERS ENVIRONMENTAL SERVICES, INC.



RODGERS ENVIRONMENTAL SERVICES, INC.

BOREHOLE PLUGGING REPORT

Project:	Sundance S	Services Inc			-	page 1 o	<u>f 1</u>
Client:	Gordon Env	/iron.	Borings:	CH-1, CH	I-2, CH-3, CH	I-4, GB-1, and	d GB-2
Job No.:	598	Meas. F		leas. Pt.: ground surface		Date: Oct 6	<u>- 10, 2009</u>
Bore No.	Date	Dia. in.	Depth, ft	Depth to Water, ft	Soil Samples	Theoretical Bore Volume ft ³	Approx. Grout Volume ft ³
CH-1	10/9/09	7-1/4	150	n/a	cont. core	43	42
CH -2	10/6/09	7-1/4	150	n/a	cont. core	43	45
CH -3	10/7/09	7-1/4	80	n/a	spt @ 5'	23	20
CH -4	10/8/09	7-1/4	80	n/a	spt @ 5'	23	12
GB-1	10/10/09	7-1/4	40	n/a	spt @ 5'	11.5	15
GB-2	10/10/08	7-1/4	40	n/a	spt @ td	11.5	21
Notes: Bore	es drilled by h	nollow stem	auger.				
Boreholes g	grouted throug	gh auger fro	m bottom to	ground surfac	ce.		

All boreholes grouted with 5% bentonite/cement grout

Rig: CME 75

Crew: John Aguirre, Juan Barraza

Report Prepared by: Jeff Watson

COMPLETION REPORT SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC. LEA COUNTY, NEW MEXICO

ATTACHMENT F AMEC SOILS LABORATORY REPORT



Report Date: October 23, 2009

Gordon Environmental, Inc.

Client:

Bernalillo, NM 87004-213 Camino del Pueblo

Larry Coons

Attention:

SSI West

Project Name:

Eunice, NM

Project #: 8-519-005168

Work Order #: 2

Sampled By: Client Date Sampled: Sieve Analaysis (ASTM C117-04/C136-06)

Plasticity Index (ASTM D4318-05)

Soil Classification (ASTM D2487-06) SOILS / AGGREGATES Project Manager: Herman Garcia

Lab 12" Number	9-1213-01	9-1213-02	9-1213-03	9-1213-04	9-1213-05	9-1213-06	9-1213-07	9-1213-08	9-1213-09	9-1213-10	9-1213-11
9											
÷											
2 1/2"											
5;											
1/4" 3/8" 1/2" 3/4' 1" 11/4"11/2" 2" 21/2" 3"		100									
<u>-</u> 4											
3/		93									
. 1/2	(80	0		\circ	0					0
. 3/8,	100	87	100		100	100	100				100
				0							
#	66	83	66	100	66	26	66				66
**	66	80	96	66	66	94	66				97
#10	66	79	95	<u>თ</u>	66	93	66				96
#16	98	78	92	9	9	9	8		100	100	94
#30	86	76	86	98	98	88	97	100	9	<u>თ</u>	8
#40	96	74	82	98	97	85	9	66	26	86	73
#20	80	70	79	26	85	80	88	96	9	95	29
#100	55	47	29	92	54	46	47	22	78	83	53
#200 #100	33	29	56	80	24	27	23	65	73	75	30
L.L. P.I.	52	8	4	28	7	Š	D	16		5	₍₂₎
L.	24	42	30	46	20	Ž	29	38	30	44	24
Soil Class.	SC-SM	SC	CL	CL	SM	SM	SM	CL	C	ğ	SM
Soil Sample Location Class.	GB-1 @ 15 - 20'	GB-1 @ 20'	GB-1 @ 40 - 45'	GB-1 @ 45'	GB-2 @ 5'	GB-2 @ 10 - 20'	GB-2 @ 15'	CH-1 @ 154'	CH-2 @ 149	CH-3 @ 79'	CH-4 @ 64'

Reviewed By

Distribution: Client: < File: < Supplier: < Email:

Other: Addressee (2)

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ммм атес сот



Gordon Environmental, Inc. 213 Camino del Pueblo

Bernalillo, NM 87004-

Attn:

Larry Coons

Project Name:

SSI West

Eunice, NM

Report Date: November 04, 2009

Project #: 8-519-005168

Report #: 1003

Work Order #: 2

Sampled By: Client

Date Sampled:

SOILS / AGGREGATES Project Manager: Herman Garcia

MOISTURE CONTENT OF SOIL (ASTM D2216-05) AND IN-SITU DENSITY			Test	Oven Temp.	Mass less than Min	Material Type *	Moisture (%)	Dry Density (pcf)
Lab #	Color & Type of Material	Sample Source	Method	(C)	Req.	• •	, ,	
9-1213-01		GB-1 @ 15 - 20'	А	110			10	
9-1213-02		GB-1 @ 20'	Α	110			12	80.2
9-1213-03		GB-1 @ 40 - 45'	Α	110			9	
9-1213-04		GB-1 @ 45'	А	110			12	114.6
9-1213-05		GB-2 @ 5'	Α	110			5	
9-1213-06		GB-2 @ 10 - 20'	Α	110			3	
9-1213-07		GB-2 @ 15'	Α	110			8	80.3
9-1213-08		CH-1 @ 154'	Α	110			13	
9-1213-09		CH-2 @ 149'	А	110			8	
9-1213-10		CH-3 @ 79'	А	110			20	
9-1213-11		CH-4 @ 64'	Α	110			5	

*Sample contains more than one type of material.

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Distribution: Client ✓

File: ✓

Supplier: 🗸

Other: Addressee (2)

Email:



Gordon Environmental, Inc.

213 Camino del Pueblo Bernalillo, NM 87004-

Attn:

Larry Coons

Project Name:

SSI West

Eunice, NM

Report Date: October 23, 2009

Project #: 8-519-005168

Work Order #: 2

Lab #: 9-1213-01

Sampled By: Client

Date Sampled:

Visual Description of

Material:

Sample Source: GB-1 @ 15 - 20'

Project Manager:

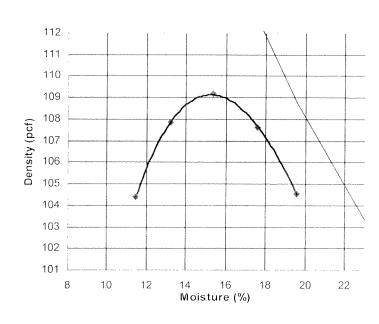
Herman Garcia

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	99%
#8	99%
#10	99%
#16	98%
#30	98%
#40	96%
#50	90%
#100	55%
#200	33%



Moisture Density Relationship: (ASTM D698-07) Method: A
Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed Maximum Density: 109.1 Optimum Moisture: 15.2 Plasticity Index (ASTM D4318-05)

Liquid Limit: Plastic Limit:

Plasticity Index:

Preperation Method: Dry Liquid Limit Method: A

Pl Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

24

19

5

Reviewed By

Jan

Distribution: c

Client 🗸

Email:

File: 🗸

Supplier: 🗸

✓ O:

Other: Addressee (2)

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Bernalillo, NM 87004-

Attn:

Larry Coons

Project Name:

SSI West

Eunice, NM

Report Date: November 10, 2009

Project #: 8-519-005168

Work Order #: 2

Lab #: 9-1213-02

Sampled By: Client

Date Sampled: Unknown

Material: Silty Clayey Sand

Sample Source: GB-1 at 20 ft

Project Manager:

Herman Garcia

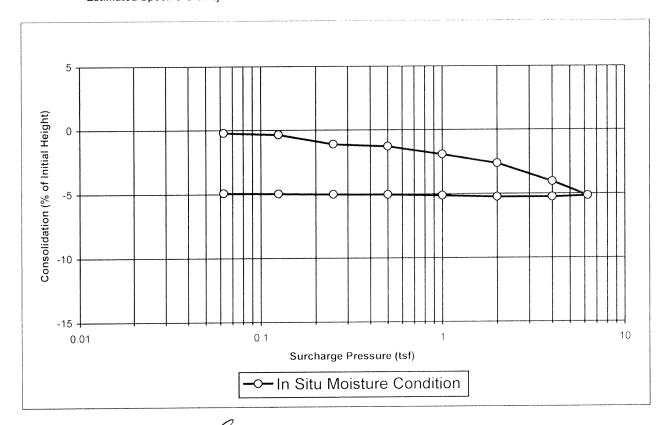
SOILS/AGGREGATES

Measurement of Collapse Potential of Soils (ASTM D5333)

Sample Preparation: In Situ

Final Volume (in³): 4.39 Initial Volume (in³): 4.60 Final Moisture (%) 15.5% 17.7% Initial Moisture (%): Final Dry Density (lb/ft³): 83.9 Initial Dry Density (lb/ft3): 80.3 Initial Degree of Saturation: 45% Final Degree of Saturation: 42% 0.9 Initial Void Ratio: 1.0 Final Void Ratio:

2.600 Saturated At: Not Saturated Estimated Specific Gravity:



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Client ☑ Email: File ☑

Supplier: ☑

Other: Addressee (2)



Client: Gordon Environmental, Inc.

> 213 Camino del Pueblo Bernalillo, NM 87004-

Attn:

Larry Coons

Project Name:

SSI West

Eunice, NM

Report Date: October 26, 2009

Project #: 8-519-005168

Work Order #: 2

Lab #: 9-1213-03

Sampled By: Client

Date Sampled:

Visual Description of

Material:

Sample Source: GB-1 @ 40 - 45'

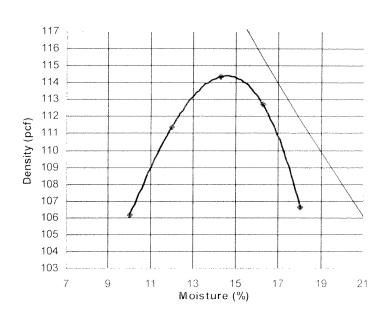
Herman Garcia Project Manager:

SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	99%
#8	96%
#10	95%
#16	92%
#30	86%
#40	82%
#50	79%
#100	67%
#200	56%



Moisture Density Relationship: (ASTM D698-07) Method: B Mechanical Preparation Method: Dry Rammer Type:

Specific Gravity: 2.651 Assumed Maximum Density: 114 4 Optimum Moisture: 14 6

Plasticity Index (ASTM D4318-05)

Liquid Limit: Plastic Limit: 16 Plasticity Index:

Preperation Method: Dry Liquid Limit Method: A

PI Air Dried.

Soil Classification (ASTM D2487-06) CL

Reviewed By

Jan

Distribution: Client ✓ File: Supplier: Other: Addressee (2)

Email:

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Fax 5058217371 www amec com



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213 Camino del Pueblo

Bernalillo, NM 87004-

Attn:

Larry Coons

Project Name:

SSI West

Eunice, NM

Report Date: November 05, 2009

Project #: 8-519-005168

Work Order #: 2

Lab #: 9-1213-04

Sampled By: Client

Date Sampled:

Visual Description of

. Material:

Sample Source: GB-1 @ 45'

Project Manager:

Herman Garcia

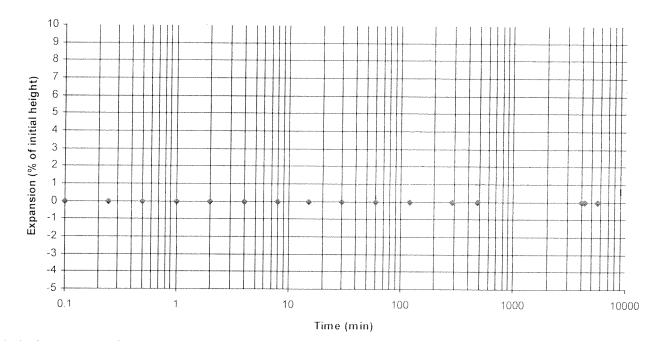
SOILS / AGGREGATES

(ASTM D4546-08)

One-Dimensional Swell or Settlement Potential of Cohesive Soils

Initial Volume (cu.in.):	4.58	Final Volume (cu.in.):	4 58
Initial Moisture (%):	9.6%	Final Moisture (%):	17 3%
Initial Dry Density (pcf):	104 7	Final Dry Density (pcf):	104.7
Final Degree Saturation:	79%	Initial Degree of Saturation:	44%
Initial Void Ratio:	0.6	Final Void Ratio:	0.6
Moisture pick-up (% Dry weight.):	7 7%	Moisture pick-up (% in volume):	12.9%
Estimated Specific Gravity:	2.651	Load:	1 tsf
Type of Water Used:	Distilled Water	Swell (% of Initial Height):	0.0%

Expansion - Log Time Curve



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Client: Gordon Environmental, Inc.

213 Camino del Pueblo

Bernalillo. NM 87004-

Attn: Larry Coons SSI West Project Name:

Eunice. NM

Report Date: October 26, 2009

Project #: 8-519-005168

Work Order #: 2

Lab #: 9-1213-06

Sampled By: Client

Date Sampled:

Visual Description of

Material:

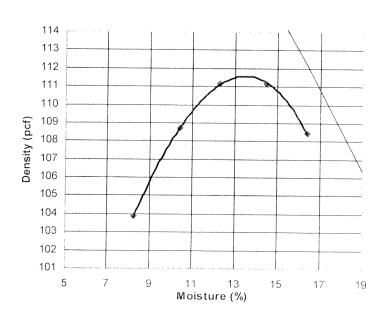
Sample Source: GB-2 @ 10 - 20'

Project Manager: Herman Garcia SOILS / AGGREGATES

Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	97%
#8	94%
#10	93%
#16	91%
#30	88%
#40	85%
#50	80%
#100	46%
#200	27%



Moisture Density Relationship: (ASTM D698-07) Method: B Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.551 Assumed Maximum Density: 111.6 Optimum Moisture: 13.5

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV Plastic Limit: NV Plasticity Index: NP

Preperation Method: Dry Liquid Limit Method: A

PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By

Distribution: Client 🗸 File: Supplier: ✓ Other: Addressee (2)

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Fax 5058217371

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Gordon Environmental, Inc.

213 Camino Del Pueblo Bernalillo, NM 87004-

Attn:

Larry Coons

Project Name:

SSI West

Eunice, NM

Report Date: November 10, 2009

Project #: 8-519-005168

Work Order #: 2

Lab #: 9-1213-07

Sampled By: Client Date Sampled: Unknown

Material: Silty Clayey Sand

Sample Source: GB-2 at 15 ft

Project Manager:

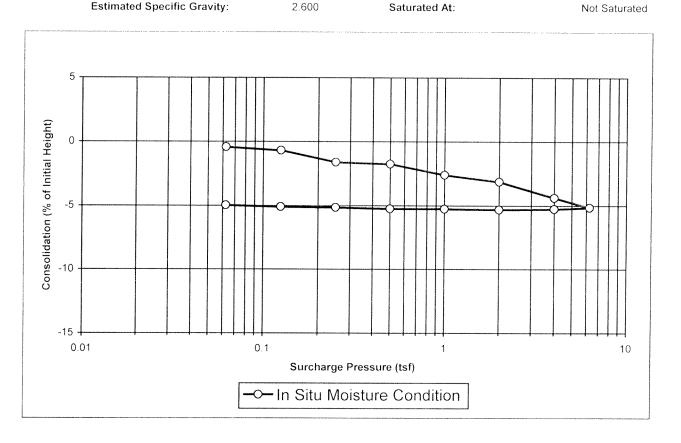
Herman Garcia

SOILS/AGGREGATES

Measurement of Collapse Potential of Soils (ASTM D5333)

Sample Preparation: In Situ

Initial Volume (in³):	4.60	Final Volume (in ³):	4.40
Initial Moisture (%):	17.7%	Final Moisture (%)	15.5%
Initial Dry Density (lb/ft³):	80.3	Final Dry Density (lb/ft ³):	83.7
Initial Degree of Saturation:	45%	Final Degree of Saturation:	42%
Initial Void Ratio:	1.0	Final Void Ratio:	0.9
Entimental Committee Committee	0.000	0 1 1 1 1 1	



Reviewed By:

Jan

Distribution:

Client ☑ Email: □ File ☑

Supplier: ☑

Other: Addressee (2)

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Gordon Environmental, Inc.

213 Camino Del Pueblo Bernalillo. NM 87004-

Attn:

Larry Coons SSI West

Project Name:

Eunice, NM

Project Manager:

Herman Garcia

Calculated Porosities

Lab #	Test Sample	0/6
9-1213-02	K_{sat}	50.6
9-1213-02	Settlement	50.5
9-1213-04	K_{sat}	29.4
9-1213-04	Swell	39.9
9-1213-07	K_{sat}	41.6
9-1213-07	Settlement	29.9

Based on a specific gravity of 2.6 g/cm³. Note that the Ksat and settlement for lab number 9-1213-04 were taken from different ring samples