mCf 29A

STATE OF NEVADA
DIVISION OF WATER RESOURCES
WELL DRILLER'S REPORT

OFFICE USE ONLY
Log No. 108604
Permit No.
Basin 212

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

NOTICE OF INTENT NO. 32184

1. OWNER Land wall company
MAILING ADDRESS 875 W warm Spring Rd Henderson NV 89011
ADDRESS AT WELL LOCATION Henderson 89015
Subdivision Name: County: Clark

2. LOCATION SW¼ NE ¼ Sec 06 T 22 N/S R 63 E
PERMIT/WAIVER No. H-000688 (Issued by Water Resources) 1790630100 4 Parcel No.
Latitude 36.05156 Longitude 114.58.898
UTM E N ☐ NAD 27 ☒ NAD 83/WGS 84

3. WORKED PERFORMED
☒ New Well ☐ Replace ☐ Recondition ☐ Deepen ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal/Industrial ☒ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC ☐ Air ☒ Other Sonic Drill

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
attached Log				

DCNR/DWR RECEIVED SEP 01 2009 LAS VEGAS OFFICE

Date started: 4-13, 20 09
Date completed: 4-23, 20

7. Water Level
Static water level: 4.2" feet below land surface
Artesian Flow: G.P.M. P.S.I.
Water Temperature: °F
Quality:

8. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

9. WELL CONSTRUCTION
Depth Drilled 380 Feet Depth Cased 379.5 Feet

HOLE DIAMETER (BIT SIZE)

		From		To	
8"	Inches	0	Feet	380	Feet
	Inches		Feet		Feet
	Inches		Feet		Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
4"	PVC	SCH40	0	379.5

Perforations:
Type of perforation Slotted Screen
Size of perforation 0.010
From 359.5 feet to 379.5 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Annular Seal: ☐ Yes ☐ No

☐ Neat Cement	to		☐ Pumped	☐ Poured
☐ Cement Grout	to		☐ Pumped	☐ Poured
☒ Concrete Grout	0 to	349.9	☒ Pumped	☐ Poured
☐ =30% Bentonite Grout	to		☐ Pumped	☐ Poured

Gravel Pack: ☒ Yes ☐ No 359.5 to 379.5 ☐ Pumped ☒ Poured
Type: Cemex Sand 2/16
Bentonite Chips: ☒ Yes ☐ No 349.9 to 354.8 ☐ Pumped ☒ Poured
Type: Time Release HOLEPLUG 3/8

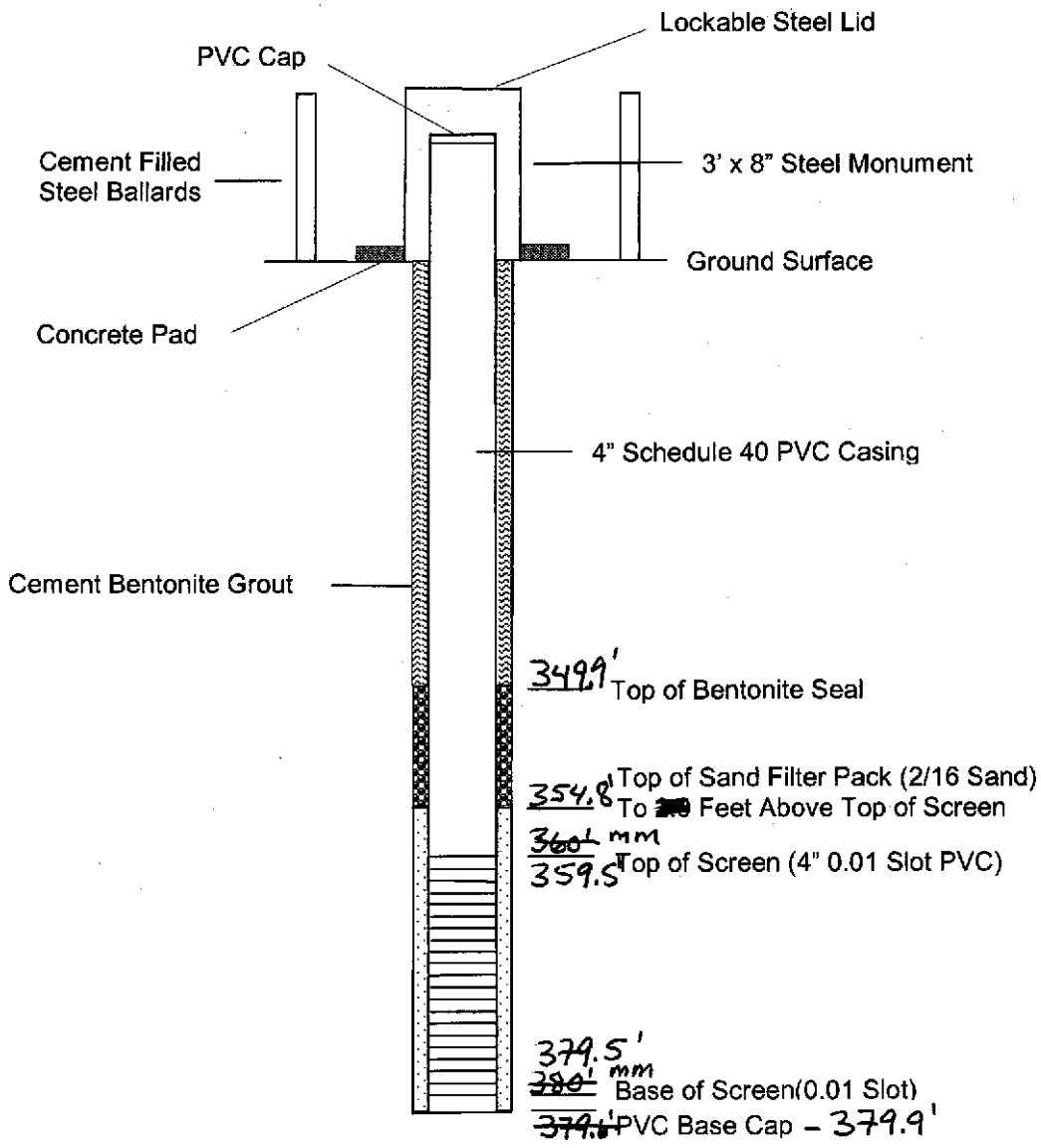
10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name EAGLE DRILLING (Contractor)
Address 7150 Placid Street (Contractor)
Las Vegas NV 89119
Nevada contractor's license number issued by the State Contractor's Board 51266
Nevada driller's license number issued by the Division of Water Resources, for on-site driller 2097
Signed (By driller performing actual drilling on site or contractor)
Date 7-6-09

(Rev. 06-05)

USE ADDITIONAL SHEETS IF NECESSARY

MCF-29A

MCF - SERIES MONITOR WELL CONSTRUCTION DIAGRAM



4.75" (End Cap) = 0.40'

380.40 - 0.5' = 379.9'

GES	Job Name: BRC MONITOR WELLS	Boring No. MCF-29A

Job No.	Start: 4-10-09	Location: See fig. 2
20092509V1	End:	
Total Depth: 380'	Groundwater Depth:	Comments:
Elevation:	Date:	
	Time:	
Equipment: Sonic Drill Rig	Type of Bit: 6.0" Core Barrel	
Hammer (lbs/inches): 140 #/30"	Driller: Tim Thomasen	Surface Dry Density (pcf):
Surface Condition: Leveled native	Logger: Monty Mehlhorn	Surface Moisture Content (%):

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
	Air Knife			GM	Very pale brown (10YR 6/3) silty GRAVEL w/sand (~20% silt, ~20% sand (subround, well-graded (~30% cs, 20% ms, 40% fs), ~60% gravel (subangular-subrounded, well-graded, ~20% cobbles, 30% cg, 50% fg)), moist, very dense, stratified (0.5" beds), strong reaction to HCl, sand: ~30% matics, 70% felsics; gravel: ~20% basalt, 30% dacite, ~50% andsite.		
1							1
2							2
3							3
4							4
5							5
6	Run #1						6
7							7
8							8
9		pH = 9.31 ...regular			...at 10.0': ...abrupt contact w/		9
10		Sample MCF-29A-10.		SM	Very pale brown (10YR 6/3) silty SAND w/gravel (~15% silt, ~65% sand (subrounded, poorly graded (~10% cs, 25% ms, 65% fs), ~20% gravel (sub-angular, well-graded, ~5%		10
11	Run #2	10.6eV = 0.0 ppmV, 11.7eV = 1.6 ppmV.					11
12							12

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 / End:	Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
13	Run #2			SM	cobbles, 45% cg, 50% fg), moist, v. dense, stratified (0.5' thick beds), strong reaction to HCl, same composition as above.		13
14							14
15							15
16	Run #3						16
17					...same as above; the 18'-20.0' interval was lost.		17
18							18
19							19
20							20
21	Run #4						21
22							22
23							23
24							24
25					...abrupt contact with:		25
26				SC	Layered (0.5" beds) light yellowish brown (10YR 6/4)		26
27		MCF-29A-27, wet, pH=9.40		GM	and light greenish gray (Gley 1 8/10Y) clayey SAND (~45% lean clay, ~55% sand (subrounded, poorly		27
28							28

GES	Job Name: BRC Monitor Wells	Boring No. McF-29A
Job No. 20092509V1	Start: 4-10-09 End:	Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
29				SM	graded, ~100% fs)), moist, very dense, no reaction to HCl, has 0.5" wide weakly cemented gysiferous nodules, stratified, contact abrupt with:		29
30							30
31	Run #5			SM	26'-28': Yellowish brown (10YR 5/4) silty GRAVEL w/sand (~20% silt, ~20% sand (sub-rounded, poorly graded, ~20% c.s., 10% ms, 70% fs), 60% gravel (subangular, poorly graded, ~10% cg, 90% fg)), wet, very dense, stratified (0.1mm 1.0" beds), wk reaction to HCl, same composition as to 0'-9' interval, abrupt contact with:		31
32							32
33							33
34							34
35							35
36	Run #6				28': SM: Pale yellow (2.5Y 7/3) silty SAND (~40% silt, 60% sand (subrounded, poorly graded, ~100% fs)), wet, v. dense, laminated (2mm thick beds, w/ ~6mm cs lenses), weak reaction to HCl, coarsens downward into:		36
37							37
38							38
39							39
40							40
41	Run #7				30': SM: Yellowish brown (10YR 5/4) silty SAND w/gravel (~20% silt, ~60% sand (sub-rounded, subangular, well graded, ~40% cs, 30% ms, 30% fs), ~20%		41
42							42
43							43
44				SM			44

GES

Job Name: BRC Deep Monitor Wells

Boring No. MCF-29A

Job No. 20092509V1

Start: 4-10-09

End:

Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
45	Run #7			SM	gravel (subangular, poorly graded, ~100% fg)), wet, very dense, homogenous, weak reaction to HCl, ~20% organic layer @ 35', becomes stratified past 35' (1.0' thick beds), moderately to strongly cemented @ 39'		45
46							46
47							47
48							48
49	Run #8			ML	43': SM: Yellowish brown (10YR 5/4) silty SAND (~15% silt, 85% sand (subrounded, poorly graded, ~100% fs)), wet, very dense, stratified with 0.5'-0.25' thick beds, has ~2" thick interbeds of silty SAND w/ gravel, weak reaction to HCl, contact marked by increasing laminae (2.0 mm thick beds) of silt w/:		49
50							50
51							51
52	Run #9	Regular sample #MCF-29A-52 pH=9.27					52
53							53
54					48': ML: Brown (7.5YR 5/4) sandy SILT (~70% silt, ~30% sand (subrounded, poorly graded, ~100% fs), trace gypsum), wet, v. stiff, laminated, ~~55~~ mm (5mm thick beds), weak reaction to HCl.		54
55							55
56							56
57							57
58	Run #10	pH=9.63		Sm	...at ~53': 4.0" thick bed of: very pale brown (10YR 6/3) lean CLAY, interbedded with silty SAND layers, strong reaction to HCl. 57: SM: Brown (7.5YR 5/3)		58
59							59
60							60

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 / End:	Location: See Fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
61	Run #11			SM	silty SAND w/ gravel (~15% silt, 65% sand (subrounded-subangular, well-graded, ~50% cs, 25% ms, 25% fs), ~20% gravel (subrounded-subangular, poorly graded, ~10% cg, 90% fg)), wet, very dense, stratified (0.5' thick beds), strong reaction to HCl, gravel: ~20% dacite, 60% basalt, 5% limestone, ~15% andesite; sand: same as gravel, abrupt contact with:		61
62				CL			62
63							63
64							64
65				CH			65 4-10-0 4-13-0
66	Run #12	pH = 8.71					66
67							67
68							68
69							69
70							70
71	Run #13						71
72		MCF-29A-72 (10' below MCF/Qal contact)					72
73							73
74		pH = 8.47					74
75							75
76							76

~~262'~~: Tertiary Muddy Creek Formation: CL: White (Gley 1, 8/N) lean CLAY (~90% lean CLAY, trace sand, ~10% gypsum as matrix cement), moist, weakly cemented (0.5' nodules and laminae), v. stiff, laminated, weak reaction to HCl, abrupt contact with:

64': CH: Dark bluish gray (4/5 B) fat CLAY (~80% fat clay, trace sand, 10% gypsum as nodules, 10% organic matter), moist, weakly cemented in layers, laminated, weak reaction to HCl, from 65'-68' ~15% organic mater as seed pods, leaves along bedding.

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V	Start: 4-13-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
77	Run #13			CH	...past 68': ~10% organic mater, strong organic decay odor.		77
78					...same as above, ~10% gypsum as crystals along bedding; organic mater back to ~15%, same as 65'-68'.		78
79							79
80							80
81	Run #14						81
82					...same as above		82
83							83
84							84
85					...0.5"-0.3 mm thick beds/laminae of organic mater (5/10Y, consists of seed pods, leaf materials),		85
86							86
87		MCF-29A-87 (25' below Qal/MCF contact).			...86': ~60% granulose gypsum grains along bedding, moist to wet along gysum crystal faces, weak reaction to HCl.		87
88							88
89		pH=6.56					89
90							90
91	Run #15				...bluish gray (Gley 2, 5/5B), gypsum crystals are clear, oriented along bedding, ~4" long, 2" wide, subhedral, traces of pyrite granules		91
92							92

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
93	Run #15			CH	along crystal faces; gypsum crystals are oriented parallel to beds.		93
94					...organic matter decreases to ~5% in matrix.		94
95					...past 92': greenish gray (Gley1, 5/10GY).		95
96							96
97					...becomes stratified, w/ bedding thicknesses ranging from 0.5"-2" thick.		97
98							98
99							99
100							100
101							101
102							102
103							103
104					...abrupt contact with:		104
105	Run #16	MCF-29A-105 (wet zone). pH=6.87		ML Wet	Greenish gray (Gley1, 5/10GY) sandy SILT (~70% silt, 25% sand (sub-rounded, poorly graded, ~10% ms, 90% fs), 5% gypsum as 0.5" thick weakly cemented nodules), wet, very stiff, homogeneous, strong		105
106							106
107				CH			107
108							108

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
109	Run #16			CH	reaction to HCl, strong organic odor, contact abrupt with:		109
110					106': CH: Greenish gray (GLEY 1, 5/10GY) fat CLAY (~75% fat clay, trace sand, trace organics, ~25% gypsum crystals as clear, fibrous gains, nodules, and subhedral crystals), moist, weakly cemented, very stiff, stratified (0.5' thick beds), weak reaction to HCl, strong organic odor, past 108', gypsum also occurs as clear, fibrous layers (0.5"-1.0") parallel to bedding. Abrupt contact w/:		110
111							111
112							112
113							113
114							114
115	Run #17	MCF-29A-115 (~50' below Qal/MCF Contact) pH=6.51					115
116							116
117				CL			117
118					117': CL: Light greenish gray (Gley 1, 8/5GY) lean CLAY (~50% lean clay, trace sand, ~50% gypsum as fs-cs sized grains, clear, 0.5" thick fibrous layers)), moist, weakly-moderately cemented, v. stiff, laminated (3mm-6mm thick beds), strong reaction to HCl,		118
119							119
120							120
121	Run #18						121
122				CH			122
123					122': CH: MOTTLED GREENISH GRAY (7/10 GY & 6/N) FAT CLAY (80%), TRACE SAND		123
124							124

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
				CH	LAYERS ⊥ TO BEDDING @ 120-122.5 & 126-127' GYPSUM (10%) AS FINE SIZED		
125					GRAINS IN CLEAR 3 mm THICK		125
					LAYERS, ORGANIC MATTER (10%)		
126					MOIST, WEAKLY CEMENTED,		126
					LAMANATED, HCl REACTION		
127					WEAK, STRONG ORGANIC ODER.		127
128	Run #18				...BLACK ORGANIC, CARBONACEOUS		128
					MATERIAL (10%)		
129							129
130							130
131							131
132					...gradational contact, marked		132
					by increasing percentage		
133					of ~~gypsum~~ silt mm content		133
				ML	Light greenish gray (Gley 1,		
134					7/10GY) SILT (~85% silt,		134
					trace sand, ~15% gypsum		
135					as fs-sized grains and		135
					matrix cement), moist,		
136					weakly cemented, very		136
					stiff, stratified (0.5"-2.0"		
137	Run #19				thick beds), no reaction to		137
					HCl. At ~138', 0.5" euhedral,		
138					doubly-terminated, clear		138
					gypsum crystals occur in		
139					~3" thick layers.		139
					...139': ~~reddish yellow (7.5YR~~		
140					~~6/6)~~ mm brown (7.5YR 5/4).		140

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509VI	Start: 4-10-09 End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
141	Run #20			CL	Brown (7.5YR 5/4) lean CLAY (~80% lean CLAY, trace sand, ~20% gypsum as 0.5"-2.0" long clouded, double terminated euhedral crystals), moist, v. stiff,		141
142							142
143							143
144				ML	stratified (2" thick beds), weak reaction w/HCl, gradational contact w/:		144
145		...ASTM	D2488		143': ML: Light brown (7.5 YR 6/4) SILT (~75% silt, trace sand, ~25% gypsum as ms-fs sized grains), moist, weakly cemented, very stiff, homogenous, weak reaction to HCl, abrupt contact with:		145
146		-00 X4.1	-"Jar				146
147		Method, clear					147
148		(mostly w/in					148
149		6 min).		CL	White (Gley 1, 8/N) lean CLAY (~70% lean clay, trace sand, ~30% gypsum as clear, randomly-oriented, doubly terminated euhedral crystals to ~2.0"), moist, v. stiff, stratified (0.5' thick beds), weak reaction		149
150							150
151	Run #21						151
152							152
153				ML	to HCl, @149': Brown (7.5YR 5/4).		153
154					152': ~~CL~~ ML ~~LIGHT~~ BROWN (7.5 YR 4/4) SILT (~70% SILT, TRACE SAND, ~30% GYPSUM CS-MS SIZED GRAINS), MOIST, WEAKLY CEMENTED, V. STIFF, HOMOGENOUS, HCl WEAK REACTION		154
155		pH=7.23					155
156							156

GES	Job Name: BRC MONITOR WELLS	Boring No. MCF-29A
Job No. 20092509 V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				ML	... @ 154'-155' CS GRAIN		
157					GYPSUMIFEROUS LAYER ⊥		157
					TO BEDDING		
158	Run #21						158
159							159
160					...same as above		160
161							161
					...abrupt contact with:		
162		MCF-29A-162 (100' below contact, wet). pH=7.30		ML Wet	Light greenish gray (GLEY 1, 7/5GY) sandy		162
163				ML	SILT (~60% silt, 40% sand (subrounded, poorly graded, ~100% fs), trace gypsum, wet, very stiff, laminated (0.1-3.0 mm layers), strong		163
164					reaction to HCl, abrupt		164
165					contact with:		165
166	Run #22				162.5': ML: Yellowish brown (10YR 5/4) SILT (~70% silt,		166
167					trace sand, ~30% gypsum as 1.0" long, randomly-oriented and clear gypsum crystals),		167
168					moist, very stiff, stratified		168
169					in 1.0"-2.0" thick beds,		169
170					weak reaction to HCl.		170
				CL	... 167': brown (7.5YR		
171	RUN #23				5/4).		171
					BROWN (7.5YR 5/3) CLAY		
172					(85%), TRACE SILT, ~15%		172

GES	Job Name: 3RC MONITORING WELLS	Boring No. MCF-29A
Job No. 20092509 V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	GYPSUM RANDOMLY ORIENTED		
173					CRYSTALS, MOIST, V. STIFF,		173
				ML	HCL (WEAK REACTION). 171'		
174					COLOR CHANGE TO LIGHT		174
					GREENISH GRAY (8/5GY)		
175					@ 174' CS-FS SIZED GYPSUM		175
					CRYSTALS ONLY. END @ 174'		
176	RUN #23				@ 174' 4" CL LAYER/BED		176
					... 173': ML: BROWN (7.5YR		
177					5/4) SILT (~75% SILT, TRACE		177
					SAND, ~25% GYPSUM FS		
178					SIZED GRAINS, MOIST, WEAKLY		178
					CEMENTED, V. STIFF,		
179					HOMOGENOUS, HCL WEAK REACTION		179
					... 179'-182' SAME AS ABOVE		
180	(M)				... 182'-184' COLOR CHANGE		180
					GREENISH GRAY (GLEY 6/5GY)		
181					... 184'-188' BACK TO COLOR		181
					BROWN (7.5YR 5/4)		
182							182
183							183
184							184
185	RUN #24						185
186							186
187							187
188							188

GES	Job Name: BRC Monitoring Wells	Boring No. MCF-29A
Job No. 20092509VI	Start: 4-13-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
189				ML Wet	Greenish gray (GLEY 1, 6/5GY) sandy SILT (~70% silt, ~25% sand (subrounded, poorly graded, ~100% fs), 5% gypsum as matrix cement), wet, weakly cemented in 0.5"-1.0" thick nodules and layers, stratified (6-12 mm thick beds), sequence coarsens downward, weak reaction to HCl, abrupt contact w/: 191.5': CL: Brown (7.5YR 5/3) lean CLAY (~90% lean CLAY, trace sand, ~10% gypsum as fs-sized grains) moist, v. stiff, laminated (2mm-6mm thick layers), weak reaction to HCl; ...past 195': ~30% gypsum as doubly-terminated, clear and randomly-oriented crystals.		189
190							190
191		MCF-29A-191 wet zone					191
192		pH = 7.86					192
193							193
194							194
195							195
196	Run #25						196
197							197
198							198
199							199
200							200
201					...same as above		201
202	Run #26						202
203							203
204					...abrupt contact w/:		204

GES	Job Name: BRC Monitoring Wells	Boring No. MCF-29A
Job No. 20092509VI	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)	
205	Run #26 — mm	MCF-29A-205, pH=7.93		~~SM~~ SP-SM Wet	Light brownish gray (10YR 6/2) poorly graded SAND w/ silt (~5% silt, ~90% sand (subrounded, poorly graded, ~20% ms, ~80% fs), 5% gypsum as matrix cement), wet, v. dense, weakly cemented along laminae/ layers, laminated (2mm-4mm thick), generally coarsens downward, strong reaction to HCl, sand: trace mafics, ~20% felsics, 80% quartz,		205	
206				CL			206	
207							207	
208							208	
209							209	
210							210	4-13-c 4-14-c
211	Run #27				abrupt contact w/: 206: CL: Brown (10YR 5/3) lean CLAY (~85% lean clay, trace sand, ~15% gypsum as 0.5" long euhedral crystals and matrix cement), moist weakly cemented, v. stiff, laminated (0.0mm - 2mm laminae, w/ silt beds), weak reaction to HCl, gradational contact with:		211	
212		pH=7.55, not sampled due to thin zone (0.5" thick).		ML			212	
213							213	
214							214	
215							215	
216							216	
217					212': ML: Light brown (7.5YR 6/3) SILT (~85% silt, trace sand, ~15% gypsum as clear, 0.5" long randomly-oriented, euhedral crystals to ~212.5'), wet (@ contact, 0.5" thick), then moist, weakly cemented, v. stiff, stratified (0.5"-2.0" thick beds)		217	
218							218	
219							219	
220							220	

GES	Job Name: BRC Monitoring Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
				ML	...at 215': 0.5" thick, clear		
221					crystalline gypsum layer.		221
				SM	...219': light reddish brown		
222				2+mm CL	(5YR 6/3), 0.5" thick inter-		222
					stratified lean Clay layers,		
223					abrupt contact w/:		223
					221': SM: Yellowish brown		
224					(10YR 5/4) silty SAND (~40%		224
					silt, 60% sand (subrounded,		
225					poorly graded, ~20% ms,		225
	Run #28				80% fs), trace gypsum),		
226					moist, v. dense, laminated		226
					(2.0-5.0 mm beds), weak		
227					reaction to HCl, sand is		227
					~5% mafics, 30% feldspar,		
228					65% quartz, abrupt		228
					contact w/:		
229					221.5': CL: Mottled/layered		229
					light brown (7.5YR 6/3) and		
230					white (10YR 8/1) lean CLAY		230
					(~75% lean clay, trace sand,		
231					~25% gypsum 1.0"+ clear,		231
					double-terminated euhedral,		
232					randomly oriented gypsum		232
					crystals), moist, v. stiff,		
233					stratified (0.5"-4.0" thick		233
					beds, with minor silt lenses),		
234	Run #29				weak reaction to HCl.		234
					...226': reddish brown (5YR		
235					5/4), gradational contact w/:		235
				ML	Mottled / laminated light		
236					yellowish brown (10YR 6/3)		236

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
237	Run #29			ML	with 0.25" thick layering light gray (10YR 7/1) SILT (~90% silt, trace sand, ~10 % gypsum as clear, cs-sized crystals), moist, weakly cemented, v. stiff, laminated to stratified (0.25"-2.0" beds); hosts		237
238							238
239							239
240							240
241	Run #30			CL	randomly-spaced lean clay lenses, no reaction to HCl, abrupt contact w/:		241
242				ML	240': CL: Mottled Brown (7.5YR 5/4), light yellowish brown (10YR 6/3), ~~and~~ lean CLAY (~75% lean clay, trace sand, ~25% gypsum as		242
243							243
244							244
245				CL	clear, euhedral, randomly-oriented crystals to fs-sized grains), moist, weakly cemented, v. stiff, laminated, weak rxn to HCl.		245
246							246
247					241.5': ML: Light greenish gray (Gley1, 7/5gy, upper 0.5'), then light brown (7.5YR 6/4) SILT (~85% silt, trace sand, ~15% gypsum as cs-sized grains), moist, v. stiff, laminated-stratified (0.25"/1.0") wk reaction to HCl, gypsum content increases to 30% near contact.		247
248							248
249							249
250					244': CL: Pale brown (10YR 6/3) sandy lean CLAY (~50% lean clay, 25% sand (subrounded, poorly graded, ~100% fs), 25% gypsum), moist, weakly cemented, v. stiff, stratified (0.5" beds).		250
251							251
252		Sample # MCF-29A-252		~~PAL~~ MM Wet SM			252

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. Z0092509V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
		pH=8.34		SM	251': ML: Stratified pale brown (10YR 6/3), gray (10YR 6/1), light gray (10YR 7/1) silty SAND (~60% sand (subrounded, poorly graded, 100% fs), ~30% silt, 10% gypsum as matrix cement), wet, weakly cemented, stratified (0.5"-0.5' thick beds), strong reaction to HCl, abrupt contact with:		
253				CL	253': CL: Yellowish brown (10YR 5/4) lean CLAY (~80% lean clay, trace sand, ~20% gypsum as cs-fs-sized crystals, 0.5' layer from 255'-256'), moist, weakly cemented, v. stiff, stratified (2"-0.5' thick beds),		253
254							254
255							255
256							256
257	Run #31						257
258							258
259							259
260							260
261					...at 261': red (2.5YR 5/6), ~25% gypsum as clear, randomly oriented, doubly terminated euhedral 1.0"-2.0" long crystals and 0.5" thick layers.		261
262		sample #MCF-29A-262 (200' below top of MCF)					262
263							263
264		pH=7.36					264
265							265
266	Run #32				...brown (7.5YR 5/4).		266
267					...laminated (~5mm thick beds) with interbedded silt stringers and layers.		267
268							268

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509W1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
	Run #32			CL	...same as above.		
269							269
270							270 4-14-0' 4-15-0'
271	Run #33				...~15% gypsum as 0.25" long clear crystals; minor Fe-oxide staining along ~~60~~ mm mudcracks.		271
272							272
273					...4mm thick laminae of light greenish gray (GLey 1, 8/5GY) sandy SILT, stratified (0.5"-0.75" thick ~~lamin~~ mm beds) yellowish red (7.5YR 5/6) and pinkish gray (7.5YR 7/2).		273
274							274
275							275
276					...at 275': light reddish brown (5YR 6/4), clear, randomly-oriented, euhedral gypsum crystals to 2.0" long.		276
277							277
278							278
279							279
280							280
281	Run #34						281
282					... 8 cm THICK LAMINAE OF GRAY (10YR 6/1) SANDY SILT.		282
283							283
284					... 18 cm THICK LAYER OF		284

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509U1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
285	Run #34			CL	GRANULOUS GYPSUM, REDDISH BROWN (5YR 5/4)		285
286							286
287							287
288					... 288' & 289' ~ 8cm THICK CLAY LIGHT BROWNISH GRAY (10YR 6/2).		288
289							289
290							290
291							291
292							292
293							293
294							294
295							295
296	Run #35			ML	SILT BROWN (7.5YR 5/3) (90% SILT, TRACE SAND, 10% GYPSUM AS MATRIX CEMENT IN ~ 0.5 cm LAYERS - COLUMNAR) & MOIST, weakly cemented, w. Stiff, LAMINATED, & WEAK HCl REACTION.		296
297		pH = 7.70					297
298		MCF-29A-299 (WET ZONE)		WET			298
299				Wet	@ ~297'-297.5' & 298.5-299.5' CONSISTS OF LIGHT REDDISH GRAY (10YR 6/2)		299
300							300

GES	Job Name: BRC MONITORING WELLS	Boring No. MCF-29A
Job No. 20092509 V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
301				ML	SANDY SILT (~60% SILT, 40% SAND), SUBROUNDED, POORLY GRADED 100% FS), WET, V. STIFF, LAMINATED, WEAK HCl REACTION.		301
302							302
303		Sample# MCF-29A-303 pH=8.28		WET			303
304	Run #36				... SILT BROWN (7.5YR 5/2) w/ GYPSUM AS MATRIX CEMENT PINKISH WHITE (7.5YR 8/2) 305': CLAY: BROWN (7.5YR 4/3)		304
305							305
306				CL	LEAN CLAY (~70% CLAY, TRACE SAND, ~30% GYPSUM AS CS-FS SIZED CRYSTALS, WEAKLY CEMENTED, V. STIFF, HOMOGENOUS, WEAK HCl REACTION.		306
307							307
308							308
309							309
310							310
311							311
312							312
313	Run #37				307'— ...313': ~~CLAY~~: PALE BROWN (10YR 6/3)		313
314					313': ... REDDISH BROWN (5YR 5/4)		314
315		ASTM "Jar method": FINES FELL OUT IN ~10 min					315
316							316

GES	Job Name: BRC MONITORING WELLS	Boring No. MCF-29A
Job No. 20092509V1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
				CL			
317					LIGHT GREENISH GRAY (GLEY 7/10Y)		317
				CL	LEAN CLAY @ 317' (70% CLAY (LEAN),		
318					10% SAND, 20% GYPSUM AS		318
					CS-FS SIZED CRYSTALS & AS		
319	RUN #37				MATRIX CEMENT) MOIST, WEAKLY		319
					CEMENTED, V. STIFF, LAMINATED,		
320					WEAK HCl REACTION. CONTAINS		320
					MINOR SILT LAMINAE.		
321					... SAME AS ABOVE		321
322					... REDDISH BROWN (2.5YR 5/6)		322
					MINOR SILT LAMINAE		
323							323
324							324
325							325
326	RUN #38						326
327					...Same as above.		327
328							328
329							329
330					...abrupt contact with:		330 4-15-09 4-16-09
				~~ML~~ SM	Light greenish gray (Gley 1,		
331	Run #39			CL	8/5Gy) silty SAND (~30%		331
					~~sand~~ silt, min ~70% sand (subrounded),		
332					poorly graded, ~100% fs),		332

GES

Job Name: BRC Monitoring Wells

Boring No. MCF-29A

Job No. 20092509V1

Start: 4-10-09

End:

Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	trace gypsum), moist, v. dense,		
333					laminated, weak reaction to		333
					HCl; exact thickness/moisture		
334					content uncertain due to		334
					location at top of run; abupt		
335					contact w/		335
					330.5': CL: Yellowish red (5YR		
336					5/6) lean CLAY (~95% lean		336
					clay, trace sand; ~5% gypsum		
337					as fs-sized grains), moist,		337
	Run #39				v. stiff, homogenous, weak		
338					reaction to HCl, becomes		338
					stratified (2cm thick beds)		
339					past 332', @337': gypsum		339
					content increases to ~30%.		
340							340
341							341
					...contact gradational with:		
342				CL	Yellowish red (5YR 5/6) lean		342
					CLAY w/sand (~70% lean		
343					clay, 20% sand (subrounded,		343
					poorly graded, 100% fs), 10%		
344					gypsum as fs-sized grains		344
					and matrix cement), moist,		
345					weakly cemented, v. stiff,		345
	Run #40				stratified (2cm - 12cm thick		
346			wet	ML	beds), weak reaction w/HCl		346
				CL	at ~346', 347', and 349.5':		
347			wet	ML	1cm - 2.5cm thick beds of:		347
				CL	Light gray (10YR 7/2) sandy		
348					SILT (~60% silt, 40% sand		348

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509U1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
349	Run #46	pH=7.83	wet	CL	(subrounded, poorly graded, ~100% fs), trace gypsum as matrix cement), wet, v. stiff,		349
350				ML-CL	laminated (1-4mm thick lenses, weak reaction to HCl, volume is insufficient for sample, contact abrupt with:		350
351	Run #41 - 1.0' short/lost core						351
352							352
353							353
354							354
355							355
356		MCF-29A-355, pH=7.53		ML wet	Pinkish gray (7.5YR 7/2) SILT w/sand (~80% silt, ~15% sand (subrounded,		356
357		MCF-29A-357, pH=7.84		wet CL	poorly graded, ~10% fs), 5% gypsum as matrix cement), wet from 355'-356', and		357
358					at 357' (2.0" mud layer), moist,		358
359					weakly cemented, v. stiff,		359
360					laminated (1mm-3mm thick beds), weak reaction to HCl.		360
361					357.2': CL: Yellowish brown		361
362	Run #42	pH=7.63 MCF-29A-363 (wet, ~300 below MCF contact)		ML wet	(10YR 5/4) lean CLAY (~95% lean CLAY, trace sand, 5% gypsum as fs-sized grains),		362
363					moist, v. stiff, laminated (0.5-3mm thick beds), weak		363
364					reaction to HCl.		364

GES	Job Name: BRC Monitor Wells	Boring No. MCF-29A
Job No. 20092509U1	Start: 4-10-09 / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
	Run #42 - Last past 365'			ML	361': ML: Light brown (7.5 YR 6/3) sandy SILT (~60% silt, ~30% sand (subrounded, poorly graded, ~100% fs), ~10% gypsum as matrix cement), wet, stratified (1.0cm-3cm beds), very stiff, weakly cemented in layers and nodules, weak reaction to HCl; abrupt contact w/:		
365							365
366							366
367							367
368							368
369							369
370					364': ML: Stratified/layered brown (7.5YR 5/3) to reddish brown (5YR 5/3) SILT (~80% silt, trace sand, ~20% gypsum as a columnar, ~1cm thick layer below wet zone), moist, weakly cemented, very stiff, strong reaction to HCl; becomes intrastratified with similar material as that encountered at 361', with 2-15cm thick wet zones extending to 379'-380'.		370
371							371
372							372
373				wet			373
374							374
375		Samples #MCF-29A-375,		wet			375
376		MCF-29A-375-FD					376
377	Run #43	pH=7.65					377
378		T.D. Sample #MCF-29A-378, pH=7.67		wet			378
379							379
380							380

End of Boring @ 380'