

Division of Water Resources App. No.

MW17

KSA 82a-1212

Check: ☐ White Copy, ☒ Blue Copy, ☐ Pink Copy

Original Returned to Sender
for Correction Date: 9-26-11

Borehole No. MW-17

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Borehole Log

Project No.:	TXR0118	Location:	Dodge City, KS
Client:	Koch Nitrogen Company	Coordinates:	Not Yet Surveyed
Logged By:	Alex Rivera	Borehole Diameter:	6 inch
Drilling Company:	Major Drilling	Site Datum:	
Drilling Method:	Rotosonic	Ground Surface Elevation:	Not Yet Surveyed
Well Material:	Not Applicable	Top PVC Casing Elevation:	
		Completion Date:	20 June 2011

Depth (ft)	Water Level (ft)	Stratigraphy	Lithologic Description	Geologic Samples					Well Configuration	Comments
				Unified Soil Classification	Recovery (%)	Blowcount	PID (ppmv)	Soil Sample ID		
			Topsoil, brown, dry, loose							
5			Clay, trace caliche, dark brown, moist to dry, firm, low plasticity Clay, 10-20% trace caliche, brown, moist, firm, stiff, low plasticity	CL	100					← Grout (0-162 ft bgs)
10			Some silts Trace silts							
15			Few silts, soft							
20			Trace caliche		100					
25			Medium plasticity							
30			20% caliche Trace caliche 15-20% caliche							
35			Brown, moist, soft to firm, medium plasticity Medium plasticity		40					
40			Caliche clay, pale brown to white, moist to dry, soft, low plasticity							
45			10-15% caliche, moist to dry, low plasticity							
			Clay and silt, trace fine gravel caliche, medium brown, dry, very stiff, low plasticity	CL ML						

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Drilling Method: Rotosonic	Ground Surface Elevation: Not Yet Surveyed
Well Material: Not Applicable	Top PVC Casing Elevation:
	Completion Date: 20 June 2011

Depth (ft)	Water Level (ft)	Stratigraphy	Lithologic Description	Geologic Samples				Well Configuration	Comments
				Unified Soil Classification	Recovery (%)	Blowcount	PID (ppmv)		
55			Caliche, white, dry						
			Sandy clay, medium brown, dry, stiff, low plasticity Trace caliche Pockets of gray clay, medium plasticity						
60			Sandy caliche clay, pale brown to white, dry, low plasticity, firm Light brown Few sands	CL					
65			Clay with sand, pale to light brown, dry, stiff, low plasticity, some cementation Very hard		100				
			Sandy clay, some caliche, medium brown, dry, low plasticity	CL					
70			Caliche clay, pale brown to white, dry, firm, low plasticity						
			Sandy silt, brown, dry, soft Medium brown	CL					
75			Caliche clay, 50% caliche-50% clay, white, dry, stiff, low plasticity Some clays	CL ML					
			Sandy silt, some clays, medium brown, dry, stiff, cementitious Poorly graded sand with silt, trace fine gravel caliche, trace clays, brown, moist to dry, firm, fine to very fine sands						
80			Sandy caliche, white, dry, fine gravel Medium brown, soft, moist	SP SM ML					
			Sandy silt, medium brown, dry, stiff, cementitious	ML					
85			Sandy caliche, some silts, trace clays, white to pale brown, dry Few pockets of gray clay		100				
			Clay, trace caliche, gray to medium brown, moist to dry, stiff, medium plasticity						
90			Sandy silt, trace caliche, light brown, dry, stiff						
			Caliche clay, pale brown to white, dry, firm, low plasticity Trace caliche, gray to medium brown, moist to dry, stiff, medium plasticity Grayish brown, moist, firm	ML CL					
95			Sandy clay, pale brown, moist to dry, firm, medium plasticity						

- Moderate rig chatter due to hard drilling from 65-75 ft bgs

- Moderate rig chatter due to hard drilling from 85-95 ft bgs

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Borehole Log

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Drilling Company:	Major Drilling	Site Datum:	
Drilling Method:	Rotosonic	Ground Surface Elevation:	Not Yet Surveyed
Well Material:	Not Applicable	Top PVC Casing Elevation:	
		Completion Date:	20 June 2011

Depth (ft)	Water Level (ft)	Stratigraphy	Lithologic Description	Geologic Samples				Well Configuration	Comments
				Unified Soil Classification	Recovery (%)	Blowcount	PID (ppmv)		
105			Clay, some caliche, pale brown, moist, soft low plasticity	ML	100				
			Silt, few sands, brown, dry, firm						
			Trace caliche, firm	CL					
			Sandy silt, light brown, dry, hard, cementitious						
			Trace sands, pale brown to brown						
110			Poorly graded sand with clay, brown, moist to dry, fine to very fine sands	SP SC ML					
115			Clay and silt, trace caliche, medium brown, dry, low plasticity	CL ML					
120			Silt with clay, few sands, brown, dry, firm						
125			Poorly graded sand with clay, light brown to pale brown, dry, fine to very fine sands, low plasticity, moderately cementitious		100				
			Clay with silt, trace sands, trace fine gravel caliche, brown, moist to dry, firm, medium plasticity	SP SC					
			Clay, trace silts, trace fine gravel caliche, light brown, moist to dry, high plasticity	CL ML CH					
			Silt and sand, medium brown, moist to dry						
130			Trace caliche, pale brown, dry, cementitious	SP SM ML					
			Silt with clay, some sands, dark brown, moist to dry, firm						
			Silt, some clays, medium brown, moist to dry	ML CL ML					
135			Sandy silt, trace clays, brown, dry, firm						
			Clay and silt, gray, moist, soft, medium plasticity	CL ML ML					
140			Silt, some very fine sands, some pockets of clay, light brown, moist to dry						
			Silt, trace clays, dark brown, dry, firm						
			Clay and silt, trace caliche, light gray-brown, moist to dry, firm, low plasticity						
			Some fine gravel caliche, stiff						
145			Silt, trace caliche, few clays, light brown, dry, very firm	ML ML CL ML ML	100				
			Poorly graded sand, light yellow, dry, very fine to fine sands, cementitious						
			Trace clays	SP					
			Silt, some light gray weathered shale, trace sands, orange, dry, very stiff	ML ML					

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Drilling Method: Rotasonic	Ground Surface Elevation: Not Yet Surveyed
Well Material: Not Applicable	Top PVC Casing Elevation:
	Completion Date: 20 June 2011

Depth (ft)	Water Level (ft)	Stratigraphy	Lithologic Description	Geologic Samples					Well Configuration	Comments
				Unified Soil Classification	Recovery (%)	Blowcount	PID (ppmv)	Soil Sample ID		
155			Sandy silt, brown, moist to dry, firm Shale, light gray, dry, weathered Trace clays, some iron staining, orange and light gray, dry							
160			Moist to wet		100					
165			Moist, some clays	ML						
170			Moist to dry		100					
175			Trace fine gravel yellow shale, weathered							
180			Shale, some clays, dark reddish brown, dry, hard, weathered Light gray to yellow, very hard, consolidated Yellow Light gray		100					
185			Borehole depth 185.0 ft							
190										
195										

← Bentonite pellet seal

← 5-ft well screen from 165-170 ft bgs; silica sand filter pack

← Bentonite pellet backfill

- Hard drilling; significant rig chatter from 178-185 ft bgs