

Datum: WGS 84 Lat: 38.9426712 6-135-24E SESESESE
 Long: -94.78059

HNTB

LOG OF BORING

BORING NO.

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PROJECT Gateway

STATION / NORTHING / 238200.81

LOCATION Johnson County, Kansas

OFFSET / EASTING / 2227830.173

DATE STARTED 03/22/2012 DATE COMPLETED 03/23/2012

SURFACE ELEVATION 1000.4 ft

EXPLORATION CONTRACTOR Terracon

DATUM NAVD 88

DRILLER K. Kempton

DRILL RIG CME-55 ATV

GROUND WATER LEVELS:

HAMMER TYPE Auto

HAMMER EFFICIENCY 79%

▽ AT TIME OF DRILLING NATD

LOGGED BY L. Wagner

REVIEWED BY J. Martens

▽ AFTER N/A

DRILLING METHOD	DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	CORE REC % (RQD %)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION Unified (Visual) Classification System	GEOLOGIC NAME	ELEVATION (ft)
	0									1000.4
HSA 3.25" ID								Topsoil		0.2
								Brown, Stiff, FAT CLAY, Moist (CH)		1000
	5	SPT S1	15		2-4-8 (12)	4.5+				4.0
								Brown to Orange, Very Stiff to Hard, LEAN CLAY with Fine Sand and Sandstone Fragments, Moist (CL) (Residual Shale)		995
	10	SPT S2	16		3-14-50/4"	4.5+				9.5
								SHALE, Sandy, Brown to Gray, Laminated, Highly Weathered, Soft		990.9
	13									11.5
								LIMESTONE, Gray, Medium to Thick Bedded, Weathered, Moderately Hard, Fossiliferous		988.9
CORE BARREL NQ	15	NQ C1		88% (67%)				Becoming Slightly Weathered at 13.5'		
								Becoming Brown to Gray, Thin Bedded, Weathered at 15'		985
	20	NQ C2		97% (78%)				1" Brown, Sandy, CLAY Seam at 16.7'		
								Becoming Medium to Thick Bedded, Slightly Weathered at 16.8'		
	22									
								4" SHALE Seam, Gray, Laminated, Weathered, Soft at 22.0'		
								LIMESTONE, Gray, Thick Bedded, Slightly Weathered, Moderately Hard, Fossiliferous at 22.3'		
	25	NQ C3		100% (100%)				Quartz-Filled Vugs at 24.2'		980

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BORING LOG 2 W/O LAB DATA - GATEWAY_TEMPLATE.GDT - 4/8/12 11:01 - 0155921GEO TECHINTGEOLOGY BORINGS.GPJ



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DRILLING METHOD	DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	CORE REC % (RQD %)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION Unified (Visual) Classification System	GEOLOGIC NAME	ELEVATION (ft)
	25									
	25.6							SHALE, Gray, Laminated, Slightly Weathered, Moderately Hard		975
	26.2							LIMESTONE, Gray, Medium Bedded, Slightly Weathered, Moderately Hard, Fossiliferous		
	28.3	NQ C4		98% (75%)						
	30							SHALE, Gray, Laminated, Weathered, Soft to Moderately Hard		
	30.3							Becoming Slightly Weathered, Moderately Hard	Bonner Springs SH	970
	35									
	35.3	NQ C5		100% (85%)						
	35.6									965
	40							Becoming Thin Bedded, Sandy, with Hard Sandstone Lenses at 37.6' ~50% Water loss in sandy seams		
	40.3	NQ C6		100% (78%)						
	45									
	45.3	NQ C7		100% (100%)				Limey, Hard between 41.1' and 41.3' Laminated, Slightly Weathered, Moderately Hard, without Sand at 41.3'		960
	45.6									
	50									
	50.3	NQ C8		100% (97%)						955
	51.7									
	53.3	NQ C9		97% (85%)				LIMESTONE with Shale Seams, Medium Bedded, Moderately Hard, Fossiliferous	Farley LS	950

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BORING LOG 2 W/O LAB DATA - GATEWAY_TEMPLATE.GDT - 4/6/12 11:01 - C:\55921\GEO\TECH\GINT\GEOLOGY BORINGS.GPJ

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DRILLING METHOD	DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	CORE REC % (RQD %)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	GRAPHIC LOG	MATERIAL DESCRIPTION Unified (Visual) Classification System	GEOLOGIC NAME	ELEVATION (ft)
	55.55	NQ C10		100% (90%)				SHALE, Laminated, Moderately to Slightly Weathered, Moderately Hard (continued)		945
	60.00	NQ C11		100% (90%)				Becoming Limey at 58.1' LIMESTONE with Occasional Shale Lenses, Medium Bedded, Slightly Weathered, Moderately Hard, Fossils		940
	65.00							Becoming Thick Bedded at 61.8'		65.0

Boring backfilled with Holeplug upon completion.
Auger Refusal at 13.0 feet.
Bottom of borehole at 65.0 feet.