Sheet1

Recharge Test Data Record

Core Boring Number CB-RS-XX-5

Date Of Test 11-17-99

Test Performed by Nathan Bryan

Ground Water Level 4.0-ft

Casing Size 2.0-in

Casing Depth 125' of 2" PVC, 5' of 2" PVC Screen (0.10 Screen)

Hole Diameter at point of test 2 5/8" hole w/ sand (620 & 3065)

From Depth Elevation Feet (bgs)	To Depth Elevation Feet (bgs)	Time Start Min	Time Stop Min	A Total Time Min	B Depth to Ground Water before test Feet (bgs)	Depth to Ground Water after test Feet (bgs)	C Stickup above Ground Feet	D Total Head Feet B+C	E Total Water Injected Gal	F Gallons Per Minute GPM E/A
125.0	130.0	0	5.0	5.0	4.0	4.2	5.0	9.0	0.14	0.03

NOTES:
1. Record water take with the water maintained at the top of casing.
2. Water depth must be measured immediately before the recharge test.
3. Water depth shall be recorded after test, and noted if changed.
4. Typical test time is 5 minutes.

The confining layer was not reached. The recharge test was in silty, slightly clayey fine sand.

L 12 '99 14:25 9042321619 PAGE.02
** TOTAL PAGE.02 **
** TOTAL PAGE.23 **

Enj-4

DRILLING LOG — SAD

1. PROJECT: North Lake Belt Impoundment Area
2. LOCATION: C-9 Camp
3. DRILLING AGENCY: U.S. Drilling
4. HOLE NO. (FOR MULTIPLE HOLES): CBRS-XX-5
5. NAME OF DRILLER: J.C. Moffett
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 35-ft
8. DEPTH DRILLED INTO ROCK: 95-ft
9. TOTAL DEPTH OF HOLE: 130-ft

10. DISTRICT: Jacksonville District — SHEET 1 OF 5 SHEETS
11. SIZE AND TYPE OF BIT: 2-7/8" bit - 3" casing
12. MANUFACTURER'S DESIGNATION OF DRILL: CME-55 Truck Mounted
13. TOTAL NO. OF OVERBURDEN SAMPLES: 23 — UNDISTURBED: 1
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER: 4'9" 3.19 M
16. DATE HOLE: STARTED 11-15-99 — COMPLETED 11-17-99
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: 61 %
19. SIGNATURE OF INSPECTOR: Mike H. Bryan

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV.	TYPE OF SAMPLE	REMARKS (Drilling time, water loss, depth of weathering, voids, etc.)
	0		LIMESTONE, porous, incompetent, hard.			Casing 0-1 - 0.02" 1-2 - 0.02" 2-3 - 0.02" 3-4 - 0.02"
	15		REC = 9"/19			
	20		RQD = 0%			
	25		competent, porous, hard.			4-5 - 0.07" 5-6 - 0.35"
	30		REC = 24"/50			6-7 - 0.54"
	40		RQD = 6.5"/14			7-8 - 0.28"
	45		gray fine to medium sand, silty, clayey between 7'-8' ± 2"-3". (in voids).			4' of 3" ϕ casing installed.
	90		competent, porous, hard.			8-9 - 0.16" 9-10 - 1.35"
	95		REC = 24"/40			10-11 - 0.54" 11-12 - 0.45"
	120		RQD = 12"/20			12-13 - 7.30"
	125		Sandy silt fossil voids between 12'-14' ± 2"-4" medium sand.			8' of 3" ϕ casing installed.
	150		REC = 44"/73			13-14 - 8.54" 14-15 - 0.87"
	155		RQD = 26"/43			15-16 - 0.22" 16-17 - 0.23"
	160		fairly continuous, slightly porous, moderately hard.			17-18 - 2.20"
	180		competent, porous, mod. hard.			13' of 3" ϕ casing installed.
	185		REC = 24"/40			18-19 - 1.15" 19-20 - 0.20"
	200		RQD = 0%			20-21 - 0.13" 21-22 - 0.38"
	225		(continued)			22-23 - 0.07"
						18' of 3" ϕ casing installed.

0 — circulation lost
1.5 — casing installed for circulation return.
4.5
6.0
7.5
9.0
10.5
12.0 — hard layer from 12'-14' bgs.
13.5
15.0
16.5
18.0
19.5
21.0

CHG FORM 1836 PREVIOUS EDITION ARE OBSOLETE.

PROJECT: N. Lake Belt Impoundment Area — HOLE NO. CB-25-XX-5

DRILLING LOG (Cont Sheet)

Hole No. CB-RS-86-5

Lake Belt Impoundment Area — Jacksonville District

Elevation	Depth	Classification of Materials	% Core Recovery	RQD or Sample No.	Remarks
	21.0	LIMESTONE - see previous 18'-23', pg. 1.			
	22.5	REC = 51"/85 RQD = 34.5"/58 fairly continuous, moderately hard, slightly porous.			23-24 - 0.49" 24-25 - 1.15" 25-26 - 1.07" 26-27 - 0.25" 27-28 - 0.52" 23' of 3" ø casing installed.
	24.0				
	25.5				
	27.0				
	28.5	REC = 29"/48 RQD = 11.5"/19 competent, hard, porous.			28-29 - 0.40" 29-30 - 0.10" 30-31 - 0.20" 31-32 - 0.12" 32-33 - 0.08" 28' of 3" ø casing installed.
	30.0				
	31.5				
	33.0				
	34.5	REC = 58"/97 RQD = 48"/80 ~~fairly~~ continuous, moderately hard, slightly porous.			33-34 - 0.58" 34-35 - 0.58" 35-36 - 1.15" 36-37 - 0.46" 37-38 - 1.06" 38' of 3" ø casing installed.
	36.0				
	37.5				
	39.0	REC = 58.5"/98 RQD = 28.5"/48 ~~fairly~~ continuous, moderately hard, slightly porous.			38-39 - 0.56" 39-40 - 0.40" 40-41 - 0.47" 41-42 - 0.31" 42-43 - 0.30" 38' of 3" ø casing installed.
	40.5				
	42.0				
	43.5	REC = 51"/85 RQD = 42"/70 fairly continuous, moderately hard, slightly porous.			43-44 - 0.58" 44-45 - 0.57" 45-46 - 0.55" 46-47 - 0.43" 47-48 - 0.24" 43' of 3" ø casing installed
	45.0				
	46.5				
	48.0	REC = 13"/22 RQD = 0% Incompetent hard, porous. (continued)			48-49 - 3.15" 49-50 - 3.00
	49.5				

Blow counts

21.0 — still loosing water 11-15-99

22.5

24.0

25.5

27.0

28.5

30.0

31.5

33.0

34.5

36.0

37.5

39.0

40.5 — 1-ft drop of core barrel between 40'-42' for 1 sec.

42.0

43.5

45.0

46.5

48.0

49.5 — hard layer @ 48' bgs - 49' bgs, & @ 49'-50' bgs

ENG FORM 1836-A

Project: N. Lake Belt Impoundment Area — Hole No. CB-RS-86-5

DRILLING LOG (Cont Sheet)

Hole No. CB-RS-XX-5

Project: N. Lake Belt Impoundment Area

Jacksonville District

Sheet 3 of 5 sheets

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	RQD or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)
	49.5		LIMESTONE, same as previous 48'-50' bgs.			50-51 - 0.07"
	51.0					51-52 - 0.02"
						52-53 - 0.02"
	52.5					48' of 3" ø casing installed.
			competent, hard, porous.			
	54.0		REC = 29"/40			53-54 - 0.90"
			RQD = 4"/6			54-55 - 0.28"
	55.5		Sand filled solution holes between 57.5'-58' bgs. (Trace silty fine sand)			55-56 - 0.15"
						56-57 - 0.22"
						57-58 - 0.31"
	57.0					53' of 3" ø casing installed.
	58.5		REC = 9"/15			58'-59 - 0.05"
			RQD = 0%			59-60 - 0.02"
	60.0		very hard cemented sandy rounded fragments from 62.5-64.0 ft. bgs.			60-61 - 0.06"
						61-62 - 0.03"
	61.5		Incompetent, hard, porous.			62-63 - 0.27"
						58' of 3" ø casing installed.
	63.0		REC = 15"/25			63-64 - 0.19"
			RQD = 8"/13			64-65 - 0.03"
	64.5		Incompetent, hard, porous.			65-66 - 0.02"
						66-67 - 0.02"
	66.0					67-68 - 0.23"
						63' of 3" casing installed.
	67.5					68'-69 - 0.29"
	69.0		REC = 58"/97			69-70 - 0.34"
			RQD = 18"/30			70-71 - 0.21"
	70.5		~~fairly~~ NHD continuous, moderately hard, slightly porous.			71-72 - 0.30"
						72-73 - 0.12"
	72.0					68' of 3" ø casing installed.
	73.5		competent, hard to moderately hard, porous. Very hard from 75'-78' bgs.			73-74 - 0.02"
						74-75 - 0.21"
	75.0		REC = 29"/40			75-76 - 6.30"
			RQD = 0%			76-77 - 3.08"
						77-78 - 4.20"
	76.5		fine to coarse silty sand filled holes from 77'-78' bgs. (continued)			78' of 3" ø casing installed.
						~~78-79 - 0.30"~~ NHD
	78.0					~~79-80 - 0.32"~~ NHD
	79.5					

49.5 still loosing circulation

51.0

52.5

54.0

55.5

57.0

58.5

60.0

61.5

63.0

64.5

66.0

67.5

69.0

70.5

72.0

73.5

75.0 very zone hard layer @ 75'-78' bgs.

76.5

78.0

79.5

ENG FORM 1836-A

Hole No. CB-10-XX-5

N. Lake Belt Impoundment Area | Jacksonville District | Sheet 4 of 5

Elevation	Depth	Legend	Classification of materials (Description)	% Core recovery	Box or sample no.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)	Blow counts
	78.0		LIMESTONE, continuous, moderately hard, slightly porous.			Coring	78.0
	79.5		REC = 57"/95			78-79 - 0.30"	79.5
	81.0		RQD = 31"/52			79-80 - 0.52"	81.0
	82.5					80-81 - 0.33"	82.5
	84.0		Incompetent, hard, porous			81-82 - 0.15"	84.0
	85.5		REC = 20"/33			82-83 - 0.38"	85.5
	87.0		RQD = 17"/28			78' of 3" ø casing installed.	87.0
	88.5		LIMESTONE, gravel size recovery, trace fine to med. silty sand.	6"/33	1	Split spoon see note! →	88.5
	90.0			4"/22	2		90.0
	92.5	NO RECOVERY	Rollerbit overdrill - No Recovery				92.5
	93.0		REC = 10"/33			Coring	93.0
	94.5		RQD = 0%			93-94 - 0.21"	94.5
	96.0		Incompetent, porous, hard.			94-95 - 0.21"	96.0
	97.5		SAND, white, silty, large gravel size limestone fragments. fine to med. shell fragments & limestone fragments	4"/50	3	95-95.5 - 0.10"	97.5
	99.0		No large gravel size limestone fragments from 98.5'-104.5' bgs.	35"/19	4		99.0
	100.5			12"/66	5	98' of 3" ø casing installed.	100.5
	102.0			17"/94	6		102.0
	103.5			10"/56	7	NBD caved from 101.5'-103' bgs.	103.5
	105.0			0.5"/3	8	103' of 3" ø casing installed.	105.0
			SAND, silty, dark grey, fine sand.	18"/100	9		
			(continued)				

Initially thought to be sand. Probable large cavity or sand layer. No sand recovery.

11-16-99

Note: Spoon did not refuse, very poor recovery w/ spoon. Driller decided to core from 93' for better recovery based on experience.

Coring stopped @ 95.5'. Probable sand.

Probable SAND, white, silty.

END of RUN

ENG FORM 1836-A

N. Lake Belt Impoundment Area | CB-RS-XX-5

TOTAL PAGE 03

Project: N. Lake Belt Impoundment Area
Installation: Jacksonville District

Elevation	Depth	Legend	Classification of materials (Description)	% core recovery	Box or sample no.	Remarks (drilling time, water loss, depth of weathering, etc., if significant)	Blow counts
	106.0		SAND, grey-dark grey, silty, clayey. fine sand.	15"/83	10		6, 8, 10
	107.5			18"/100	11		9, 8, 10
	109.0			18"/100	12		5, 6, 10
	110.5			18"/100	13		8, 2, 4
	112.0			18"/100	14		4, 4, 6
	113.5			8"/44	15		2, 2, 2
	115.0			18"/100	16		3, 3, 5
	116.5			18"/100	17		1, 2, 2
	118.0			18"/100	18		1, 2, 4
	119.5			18"/100	19		1, 1, 1
	121.0			18"/100	20		2, 3, 2
	122.5			18"/100	21		2, 3, 3
	124.0			18/100	22	Recharge Test from 125'-130' bgs.	3, 8, 14
	125.5		Trace shell & shell fragments.	24"/100	23	2-ft spoon from 125.5'-127.5' bgs.	21, 2, 3, 8, 10
	127.0	HD TUBE	Tube bent ~ 2"-3" @ end. cut before sealing.				
	130.0		Boring Terminated @ 130' bgs.				

11-17-99 (water level at 122.5)

ENG FORM 1836-A

Project: N. Lake Belt Impoundment Area
Hole No. CB-RS-XY-5