CORRECTION(S) TO WATER WELL RECORD (Form WWC-5)

(to rectify lacking or incorrect information)

LOCATION OF WATER WELL: County: Johnson	Fraction ¼ NC ¼ NE ¼ NW ¼	Section 7	Township T 13 S	Range R 22 ☒E ☐W

Owner: USACE c/o Burns & McDonnell

Location was listed as:	**Location changed to:**
Sec. _____ **T** _____ **S** **R** _____ ☐E ☐W	**Sec.** _____ **T** _____ **S** **R** _____ ☐E ☐W
Fraction: _____ _____ _____ _____	**Fraction:** _____ _____ _____ _____

Other changes: Initial statements: HTW Drill Log Location: N 235221.6674 E 2850279.6531

Changed to: 38.94065 2209 -95.0104 25524

Comments: Converted State Plane 1501-Kansas North NAD 27 to Geographic Decimal Degrees NAD 83.

Verification method: Corpscon 6.0.1

initials: df date: 04/14/2014

Submitted by: Kansas Geological Survey, Data Resources Library, 1930 Constant Ave., Lawrence, KS 66047-3726

to: Kansas Dept of Health & Environment, Bureau of Water, 1000 SW Jackson, Suite 420, Topeka, KS 66612-1367.

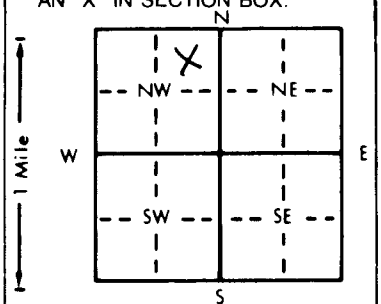
WATER WELL RECORD Form WWC-5 KSA 82a-1212

1 LOCATION OF WATER WELL: County: Johnson | Fraction: NE ¼ NE ¼ NW ¼ | Section Number: 7 | Township Number: T 13 S | Range Number: R 22 (E)W

Distance and direction from nearest town or city street address of well if located within city?
Well # 96-90 at Sunflower AAP near DeSoto KS

2 WATER WELL OWNER: USACE c/o Burns & McDonnell
RR#, St. Address, Box # : 9400 Ward Parkway
City, State, ZIP Code : Kansas City MO 64114
Board of Agriculture, Division of Water Resources
Application Number:

3 LOCATE WELL'S LOCATION WITH AN "X" IN SECTION BOX:



4 DEPTH OF COMPLETED WELL 29 ft. ELEVATION:
Depth(s) Groundwater Encountered 1. ft. 2. ft. 3. ft.
WELL'S STATIC WATER LEVEL 29 ft. below land surface measured on mo/day/yr
Pump test data: Well water was ft. after hours pumping gpm
Est. Yield gpm: Well water was ft. after hours pumping gpm
Bore Hole Diameter 10 in. to 16.2 ft., and 6 in. to 32 ft.
WELL WATER TO BE USED AS: 1 Domestic 2 Irrigation 3 Feedlot 4 Industrial 5 Public water supply 6 Oil field water supply 7 Lawn and garden only 8 Air conditioning 9 Dewatering (10) Monitoring well 11 Injection well 12 Other (Specify below)
Was a chemical/bacteriological sample submitted to Department? Yes (No); If yes, mo/day/yr sample was submitted
Water Well Disinfected? Yes (No)

5 TYPE OF BLANK CASING USED: 1 Steel (2) PVC 3 RMP (SR) 4 ABS 5 Wrought iron 6 Asbestos-Cement 7 Fiberglass 8 Concrete tile 9 Other (specify below)
CASING JOINTS: Glued Clamped Welded Threaded X
Blank casing diameter 6 in. to 16.2* ft., Dia 2 in. to +30" to 22 ft., Dia in. to ft.
Casing height above land surface 30 in., weight lbs./ft. Wall thickness or gauge No. Sch 40
TYPE OF SCREEN OR PERFORATION MATERIAL: (7) PVC 1 Steel 2 Brass 3 Stainless steel 4 Galvanized steel 5 Fiberglass 6 Concrete tile 8 RMP (SR) 9 ABS 10 Asbestos-cement 11 Other (specify) 12 None used (open hole)
SCREEN OR PERFORATION OPENINGS ARE: 1 Continuous slot (3) Mill slot 2 Louvered shutter 4 Key punched 5 Gauzed wrapped 6 Wire wrapped 7 Torch cut 8 Saw cut 9 Drilled holes 10 Other (specify) 11 None (open hole)
SCREEN-PERFORATED INTERVALS: From 22 ft. to 28.9 ft., From ft. to ft.
From ft. to ft., From ft. to ft.
GRAVEL PACK INTERVALS: From 18 ft. to 32 ft., From ft. to ft.
From ft. to ft., From ft. to ft.

6 GROUT MATERIAL: 1 Neat cement (2) Cement grout (3) Bentonite 4 Other
Grout Intervals: From 0 ft. to 16.2 ft., From 0 ft. to 18 ft., From ft. to ft.
What is the nearest source of possible contamination:
1 Septic tank 2 Sewer lines 3 Watertight sewer lines 4 Lateral lines 5 Cess pool 6 Seepage pit 7 Pit privy 8 Sewage lagoon 9 Feedyard 10 Livestock pens 11 Fuel storage 12 Fertilizer storage 13 Insecticide storage 14 Abandoned water well 15 Oil well/Gas well (16) Other (specify below) Ammunition plant
Direction from well? How many feet?

FROM	TO	LITHOLOGIC LOG	FROM	TO	PLUGGING INTERVALS

* Surface casing waiver approved by Dan Taylor at KDHE on 9/6/96 at 1300 hr.

7 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was (1) constructed, (2) reconstructed, or (3) plugged under my jurisdiction and was completed on (mo/day/year) 9/10/96 and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. 570 This Water Well Record was completed on (mo/day/yr) 11/27/96 under the business name of AQUADRILL, INC. by (signature) Jeff Jolyn

INSTRUCTIONS: Use typewriter or ball point pen. *PLEASE PRESS FIRMLY* and *PRINT* clearly. Please fill in blanks, underline or circle the correct answers. Send top three copies to Kansas Department of Health and Environment, Bureau of Water, Topeka, Kansas 66620-0001. Telephone: 913-296-5545. Send one to WATER WELL OWNER and retain one for your records.

OFFICE USE ONLY T R E/W SEC. ¼ ¼ ¼

HTW DRILLING LOG

HOLE NO. 96-9D

1. COMPANY NAME: BURNS & McDONNELL	2. DRILLING SUBCONTRACTOR: AQUADRILL
SHEET 1 OF 7 SHEETS	
3. PROJECT: 94-800-4-020-01 USSFRFI	4. LOCATION: SUNFLOWER ARMY AMMUNITION PLANT
5. NAME OF DRILLER: Jeff Joslyn (Rick Foreman / Danny Moore)	6. MANUFACTURER'S DESIGNATION OF DRILL: Gus Pech - Brat 22R
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 5" x 8¼" I.D Hollow Stem Augers; 6" TRICONE ROTARY WASH; NQ2 CORE BARREL	8. HOLE LOCATION: N - 235221.6674 E-2850279.6531
	9. SURFACE ELEVATION: 930.8
	10. DATE STARTED: 9-05-96 — 11. DATE COMPLETED: 9-10-96
12. OVERBURDEN THICKNESS: 15.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Not encountered (from 9S)
13. DEPTH DRILLED INTO ROCK: 17.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 9-10-96 WL = 7.30' Below TOP
14. TOTAL DEPTH OF HOLE: 32.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): 9-12-96 WL = 26.90 ft below TOP

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
See 9S and 96-9S	NA	NA	2

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
See 96-96	NA	NA	NA	NA	NA	93.5 %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
MONITORING WELL		96-9D / 96-19		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	0	SILT with clay, trace fine sand, reddish brown (2.5 YR 3/4) [TILL]	1005 BZ = 0ppm LEL = 0% C = 0ppm O2 = 20.8%	NA	NA	1005	1005 Begin drilling with 5" x 8¼" I.D. HSAs. logging from cuttings.
	1						
	2						
	3						
	4	SILT with clay, trace fine sand, brown (10 YR 5/3).	1008 BH = 0ppm			1008	
	5						

HTW DRILLING LOG

HOLE NO. 96-90

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR M Melissa Brice

SHEET 2 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	5	SILT, with clay, trace fine sand, brown (10 YR 5/3) [TILL] (ML)	1020 BZ=0ppm LEL=0% O_2=20.8%	NA	NA	1020 NA	
	6						
	7						
		SILT, some clay, trace fine sand, brown (10YR 4/3),					
	8	limonite nodules (ML) [TILL]					
		Becoming yellowish brown (10YR 5/6) (from 8.5 - 9.4ft)					
	9						
		CLAY, with Sand (fine-grained) yellowish brown (10 YR 5/6)					
	10	(CL) [TILL]					
	11						
	12						
	13						
	14						

HTW DRILLING LOG

HOLE NO. 96-9D

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR M Melissa Ince

SHEET 3 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	14	CLAY, with fine-grained sand, yellowish brown (10YR5/6) (CL) [TILL]	See Previous page	NA	NA	NA	
						1029	
	15	LIMESTONE	1035 Bkt. 0 ppm B2 = 0 ppm LEL = 0% C = 0 ppm O_2 = 20.8%	NA	NA	1040 NA 1045	1041 hit limestone at 15.0 ft BGS. Note: no cuttings avail.
	16						1345 Insert Casing: PVC schedule 40, Monoflex, 6" dia., flush-threaded, 19.5' total length. 3.7' stickup. Mixing grout- 3-94 lb bags of Lonestar Portland Cement, 14.5 lb Bensael bentonite (5%), 21 gal H_2O (7/bag) Tremie pipe in hole. 1430 Tremied 3 batches grout total in hole.

HTW DRILLING LOG

HOLE NO. 96--9D

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR Suzanne Bailey

SHEET 4 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	4						9-9-96 1628 Began coring at 4.5 ft. bgs Mobile B-57 wireline NQ2 core barrel
	5	GROUT				1628 Run 1	
	6				NOT Boxed	10.4 / 10.4	
	7						
	8						
	9						
	10						
	11						
	12						
	13						

HTW DRILLING LOG

HOLE NO. 96-9D

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR SUZANNE E. BAILEY

SHEET 5 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	13	GROUT			NOT BOXED	Run 1	
	14					1640 ~~1644~~ SD	
	15					1647	
	16				BOX 1 (14.9 - 24.9 ft)	Run 2	
		LIMESTONE, dark yellowish orange (10YR 6/6), becomes pale yellowish brown ~~at~~ (10YR 6/2) at 17.2 ft., moderately weathered, moderately strong, medium to thin bedded, bedding is wavy, fossiliferous, fusilinids throughout, fusilinids concentrated at or near shale partings at fractures, also crinoid pieces, small brachiopod and pelecepod shells, many clay-filled, sparry calcite in a microcrystalline matrix, many fossils filled with sparry calcite, argillaceous at fractures, dendrites on fractured and hammered fracture surfaces (STONER Limestone Mbr.)			Fractures	4.6 ~~5.0~~ SD / 5.0	Bottom of surface casing at 16.2 ft. bgs. Limonite-filled veins at 17-17.2
	17						
	18		1 SB	1 SB	/ SD	1656 Retrieved core ~~Boxes~~ SB / SB	1656 Retrieved core SB from 15 - 17.9 ft., partial run
	19				Healed fracture / FRACTURES		Healed fracture, calcite filled at 18.2 - 18.7 ft.
	20					10 1705 SD	end Run 2
					BOX 1	1715	
	21				FRACTURES	Run 3	Shale parting 20.5 - 20.6
						11.3 / 12.0	
	22						

HTW DRILLING LOG

HOLE NO. 96-9D

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR Suzanne Bailey

SHEET 6 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	22	LIMESTONE, dark yellowish orange (10YR6/6), becomes pale yellowish brown (10YR6/2) at 17.2 ft, moderately weathered, moderately strong, medium to thin bedded, wavy bedded, fissiliferous: fusilinids throughout, fusulinids concentrated at or near shale partings, also crinoid pieces, small brachiopod and pelecepod shells, many clay-filled, many fossils filled with spary calcite; Limestone is composed of spary calcite in a microcrystalline matrix, argillaceous at fractures, dendrite on natural and hammered fracture surfaces. (Stonex Limestone Mbr.)			N3 FRACTURES BOX 1	Run 3 3 11.0/11.0 12.0	Vertical fracture 22.2-22.4
	23						
	24						SHALE PARTING 23.8-24.0 ft
	25				BOX 2 24.9 to 32.0 ft.		1739 Retrieved core, partial Run at 24.9 ft 1744 Resumed coring
	26						
	27						
	28				FRACTURES		
	29	SHALE, dark gray (N3) to Black (N1), fresh, very weak, fissile, trace mica, (Endora Shale Mbr.)					
	30						
	31						

HTW DRILLING LOG

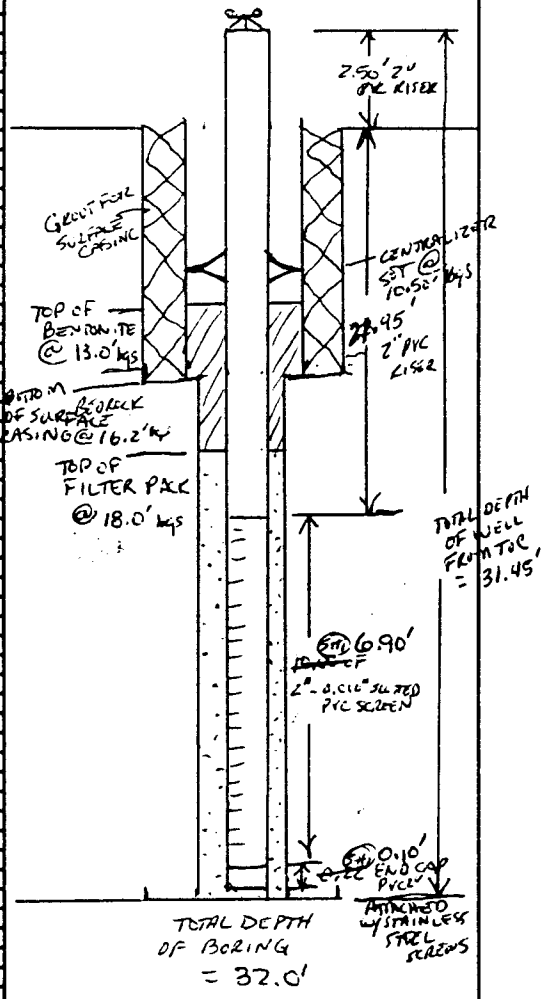
HOLE NO. 96-9D

PROJECT 94-800-4-020-01 USSFRFI

INSPECTOR Suzanne Bailey

SHEET 7 OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	31	SHALE, olive gray (N3) to black (N1), fresh, very weak, fissile, trace mica (Ellsworth Shale Mbr.)			Box 2 (24.9 to 32.0 ft)	Run 3 11.3/12.0 18/5	End Run 3 SB
	32				BOTTOM OF HOLE		@ 32.0 ft



NOT TO SCALE

9/10/96 1245 BEGIN REAMING BORING w/ 6" TRI-CONE ROLLER B.T.

1247 ADD DRILL STEM

1310 @ 32.0' INTO SHALE - SPEAK W/T COOLEY - DON'T WANT TO SET SCREEN IN THIS SHALE - WILL SET ONLY ~ 7.0' SCREEN

1400 SET CASING IN 96-9D

0.10' SUMP CAP ATTACHED W/ STAINLESS STEEL SCREWS

6.50' 2" PVC 0.010" SLOTTED SCREEN

25.00' 2" PVC RISER @ 10.50' STAINLESS STEEL CENTRAL.

1405 BEGIN ADDING FILTER PACK - NORTHERN GRAVEL CO.

1412 FILTER PACK @ 17.8' bgs

1414 BEGIN SURGING

1424 END SURGING TOP FILTER PACK @ 18.0' bgs = 100 lb BAGS

1425 ADD BENTONITE CHIPS

1428 END ADDING BENTONITE CHIPS 1 BAG 50 lb

TOP BENTONITE @ 13.0' bgs

1435 DRILLERS CUT OFF RISER TO 2.50' ABOVE GROUND SURFACE

1516 PLACE J PLUG & LOCK

9-17-96

1139 GROUTED WITH CEMENT/BENTONITE SLURRY TO 42.5 ft bgs. (MIXTURE 1.5 lb BAG BENTONITE WITH 14 gallons WATER)