

201810022A 19b1c0		10/2/2018
NYSDEC		OHMS

~~NYSDEC OHMS Document No. 201409232-00043~~

MATERIALS INVENTORY

[illegible]

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY MW12-15

Job No. 853-3051

Made by LEL

Date 8-15-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

ADDED CEMENT GROUT TO GROUND SURFACE; PUT ON 8" ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED TO COMPLETE DEVELOPMENT. AND FOR SUBSEQUENT SAMPLING.

JOB NO. 853-3051 GA. INSP. LEL PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-1LD
 DEPTH HOLE 56.5 DEPTH WL. 11.1 FT DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 70° F TIME WL. 9-23-86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.4 FT
 WEATHER SUNNY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL
 COORDINATES N 106° 54' 32" E 2535.11 WT. SAMPLER HAMMER 140 LBS DROP 30 IN. STARTED 2:00 / 18-19-86
 LOCATION 4.5 FT NORTH OF MW12-1S WT. CASING HAMMER 300 LBS DROP 30 IN. COMPLETED 2:45 / 18-20-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 5 IN.	REC./ATT.	
278.4 16.0	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-1S							AUGERED TO 16.0 FT., NO SAMPLING. SAMPLED TO 20.0 FT. INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 10 FT. CONTINUED AUGERING AND SAMPLING
286.4 28.0	VERY SOFT, BROWN GRAY TO GRAY SILTY CLAY TO CLAY, SOME TO LITTLE C-F SAND AS GRAY SUBANGULAR DROPSTONES, VERY PLASTIC, STICKY	CH TO CL	26 20 2 6 1 5	1 2 4 5 6 7	DO DO DO DO DO DO	7-12-14-14 6-8-12-12 1-1-1-2 1-3-3-3 WH-WH-1-1 2-3-2-3	18/24 20/24 15/24 24/24 17/24 16/24	UPPER GLACIOLACUSTRINE CLAY 4" COMPACT BROWN F SAND AND SILT LENSES AT 19.6 FT.
279.9 34.5 279.7 34.7	COMPACT TO DENSE, BROWN GRAY TO BROWN, SILT AND F-C SAND, LITTLE TO TRACE F GRAVEL, CLASTS OF GRAY LIMESTONE AND RED BROWN SHALE	ML	40 70 78	8 9 10 11 12	DO DO DO	12-18-22-24 17-34-36-44 28-38-40-40	6/24 13/24 12/24	MIDDLE SILT TILL
279.7 34.7	SOFT GRAY CLAY TO SILTY CLAY, SOME FINE SAND	CH TO CL	99	13 14	DO	35-39-60-50	18/24	GLACIOLACUSTRINE CLAY
260.0 54.4	VERY DENSE, GRAY BROWN TO BROWN GRAY, SILT AND F SAND, TO FINE SAND AND SILT, DILATANT, CLASTS AS M-C SAND OR F GRAVEL SIZE GRAY LIMESTONE OR RED BROWN SHALE FRAGMENTS	ML TO SM	28 45 26 63 94 145 152 97 166	15 16 17 18 19 20 21 22 23 24 25	DO DO DO DO DO DO DO DO DO	27-14-14-16* 17-21-24-21* 10-10-16-22* 14-16-47-75* 41-44-50-85* 45-100* 47-67-85* 28-42-55-60* 50-60-100*	20/24 17/24 21/24 17/24 17/24 21/12 16/18 11/24 22/18	GLACIOLACUSTRINE SILT/SAND AUGERED TO 48.0 FT., NO SAMPLING AUGERED TO 50.0 FT., NO SAMPLING AUGERED TO 54.0 FT., NO SAMPLING
257.9 56.5	VERY DENSE RED BROWN SILT SOME C-F SAND TO C-F SAND AND SILT CLASTS AS GREEN GRAY SHALEY LIMESTONE AND RED BROWN WEATHERED SHALE	ML	130 26 27 28 29	DO DO DO DO	50-50-80-65* 125/.5 *	22/24 6/6		BASAL RED TILL END OF BORING * NOTE: 300 LBS. HAMMER WAS USED.

NYSDEC OHMS Document No. 201469232-00043

JOB NO 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO MW12-1LD SHEET 1 OF 2
 GA INSP LEL / SHB DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV 314.4 WATER DEPTH _____
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV 316.3 DATE/TIME _____
 TEMP 68°F / 67°F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 8:00 8/21/86 COMPLETED 4:40 8/21/86
 LOCATION/COORDINATES 45 FT. NORTH OF MW12-13 AND 45 FT. SOUTH OF MW12-1UD TIME 10:59:22 DATE 8/21/86 DAY DA

MATERIALS INVENTORY

WELL CASING <u>2.0</u> in dia <u>45.0</u> ft	WELL SCREEN <u>2.0</u> in dia <u>12.8</u> ft	BENTONITE SEAL <u>PELLETS 4.9 DEEP</u>
CASING TYPE <u>304 STAINLESS STEEL</u>	SCREEN TYPE <u>304 STAINLESS STEEL</u>	INSTALLATION METHOD <u>TREMIE TUBE + WASH</u>
JOINT TYPE <u>FLUSH TEFLOⁿ VITONⁿ</u> <u>THREADED TAPE O-RINGS</u>	SLOT SIZE <u>0.006 INCH</u>	FILTER PACK QTY <u>15.1 L.F. 275 LBS</u>
GROUT QUANTITY <u>90 GAL</u>	CENTRALIZERS <u>NONE</u>	FILTER PACK TYPE <u>#1-Q SAND</u>
GROUT TYPE <u>BENTONITE GROUT</u>	DRILLING MUD TYPE <u>NONE</u>	INSTALLATION METHOD <u>TREMIE TUBE + WASH</u>

ELEV./DEPTH	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
(FT.)			
314.4	GROUND SURFACE		AUGERED TO 20.0 FT.
0.0	GRAVEL AND SAND SOME COBBLES (FILL)		WITH 12 INCH (O.D.) AUGERS
312.4			GROUTED 10 INCH PVC
2.0	UPPER CLAY TILL VERY STIFF TO STIFF BROWN CLAYEY SILT, SOME F-C SAND, LITTLE TO TRAIL F-C GRAVEL, COMPACT, BROWN GRAY SILT AND F SAND LAYERS AT BOTTOM OF SAMPLE		CASING TO 20.0 FT. (TOOK GROUT SAMPLE); AUGERED TO 57.0 FT. WITH 4 1/4 (I.D.) AUGERS; PULLED AUGERS, INSTALLED 6 INCH CASING TO 35 FT. WITH NO DIFFICULTY HAD TO HAMMER THE REMAINING STEEL CASING INTO THE HOLE 50 FT.; DRILLER HAS TO WASH DOWN THE REMAINING 7 FT. OF 6 INCH STEEL CASING; THE DRILLER WAS REQUEST TO PULL HIS RIG OFF THE HOLE BEFORE WASHING THE CASING, DOWN BECAUSE OF A SMALL HYDRAULIC LEAK. ALTHOUGH THE LEAK WAS SMALL, THERE WAS
301.4	SILT AND F SAND LAYER 11.9 - 12.0 FT. AND 12.7-13.0 FT.		(CONTINUED ON NEXT PAGE)
13.0	UPPER GLACIOLACUSTRINE CLAY SOFT TO VERY SOFT SILTY CLAY TO CLAY, SOME TO LITTLE F-C SAND AS GRAN SUBANGULAR DROPSTONES, INTERLAYERED WITH LOOSE, GRAN F-M SAND, AND COMPACT, GRAN BROWN, DILATANT SILT LENSES, VERY PLASTIC, STICKY. SILT OR SAND LAYERS FROM 13.7-14.0 FT., 14.3-14.5 FT. AND 15.6-16.0 FT. 4 INCH COMPACT, BROWN F SAND AND SILT LENSES AT 19.6 FT.		WELL DEVELOPMENT NOTES
286.4			DATE DEVELOPED: 9-8-86 TO 9-16-86
28.0	MIDDLE SILT TILL COMPACT TO DENSE, BROWN GRAY TO BROWN SILT AND F-C SAND, LITTLE TO TRAIL F GRAVEL, CLASTS OF GRAN LIMESTONE AND RED BROWN SHALE		DEVELOPMENT METHOD: AIR LIFT
279.9	GLACIOLACUSTRINE CLAY SOFT GRAN CLAY TO SILTY CLAY, SOME F SAND		VOLUME PURGED: 46.0 GAL.
34.5			FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.
279.7	GLACIOLACUSTRINE SILT/SAND VERY DENSE, GRAN BROWN TO BROWN GRAY SILT AND F SAND, TO F SAND AND SILT, DILATANT CLASTS AS M-C SAND OR F GRAVEL SIZE LIMESTONE OR RED BROWN SHALE FRAGMENTS		
34.7			
260.0			
54.4	BASAL RED TILL VERY DENSE, RED BROWN SILT, SOME F TO C SAND, TO F-C SAND AND SILT, CLASTS AS GREEN GRAY SHALE LIMESTONE AND RED BROWN WEATHERED SHALE		
257.9			
56.5	END OF SAMPLING AUGERED TO 57.0 FT.		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY MW 12-1LD	
Job No. 853-3051	Made by LEL/SHB
Ref.	Checked DJM
	Reviewed JFC
Date 8-26-86	Sheet 2 of 2

ALSO A LEAK IN THE SWIVEL HEAD ON THE WATER HOSE. THE SPRAYING WATER WOULD WASH THE HYDRAULIC OIL DOWN THE HOLE. 8-25-86 THE RIG WAS NOW CLEANED AND FIXED. SET BACK UP ON HOLE. PLACED RODS DOWN HOLE TO WASH DOWN CASING. THE RODS STOPPED AT 35 FT. THE HOLE WAS WASHED OUT AND 6 INCH STEEL CASING WAS INSTALLED TO 54 FT. HAD TO WAIT 5 MINUTES WHILE THE LAST 5 FT. SECTION OF 6 INCH STEEL CASING WAS WELDED AND FIXED. FINISHED INSTALLING 57 FT. OF STEEL CASING. WASHED OUT CASING. 8-26-86 WASHED OUT CASING AGAIN. REMOVED RODS. HAD TROUBLE PULLING UP CASING FOR THE FIRST 6 INCHES SO INSTALLATION COULD BEGIN. THEREFORE THE DRILLER HAD TO HAMMER THE CASING OUT ~6" TO START INSTALLATION. PLACED 50 LBS. OF #4-Q SAND TO 56.0 FT. (SAMPLE TAKEN). INSTALLED WELL PIPE (1-2' SCREEN, 1-10' SCREEN, 1-5' RISER, 4-10' RISERS). ADDED 275 LBS. OF #1-Q SAND TO 41.9 FT. BELOW GROUND SURFACE. STARTED ADDING 3/8" ϕ PELLETS. HAD TROUBLE WITH #1-Q SAND BLOWING UP IN WELL. SHB TOOK OVER THE INSTALLATION OF THIS WELL. FINISHED PUTTING IN PELLETS TO 37.0 FT. 6 INCHES OF #4-Q SAND PLACED IN HOLE. #1-Q SAND, #4-Q SAND AND BENTONITE PELLETS INSTALLED THROUGH TREMIE TUBE AND WASH. MIXED GROUT 150 LBS. BENTONITE / 90 GAL. H₂O. FILLED WELL TO 2.0 FT. BELOW GROUND SURFACE. MIXED CEMENT GROUT FILLED TO GROUND SURFACE. PUT ON 8 INCH ϕ ALUMINUM PROTECTIVE CASING. FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE. PROTECTIVE POSTS WERE PLACED AROUND WELL. A CONCRETE PAD WAS LATER PLACED BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING. A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

JOB NO. 853-3051 GA. INSP. DJM PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-1UD
 DEPTH HOLE 45.0 FT. DEPTH WL. 11.4 FT DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 62°/58° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.1 FT
 WEATHER CLOUDY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL
 COORDINATES N 106°59.91' E 8595.43 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:30 / 8-27-86
 LOCATION 2.45 FT NORTH OF MW12-1UD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 10:00 / 8-28-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ ATT	
281.1	FOR DESCRIPTION OF SOILS AT THIS LOCATION, ALSO SEE BORING LOGS MW12-1S AND MW12-1LD							INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 34.0 FT. NO SAMPLING
33.0	COMPACT BROWN GRAY TO GRAY SILT TO CLAYEY SILT, LITTLE C-F SAND AS SUBROUNDED GRAY CLASTS	ML	35	1	DO	9-16-19-25	1.7/2.0	MIDDLE SILT TILL
280.4				2	DO			GLACIOLACUSTRINE CLAY
34.7	SOFT TO FIRM, GRAY CLAY TO SILTY CLAY, LITTLE C-F SAND, SEVERAL THIN (LESS THAN 1/4") THICK BROWN SILT LENSES	CL	102	3	DO	22-42-60-52	1.8/2.0	GLACIOLACUSTRINE SILT/SAND
278.6				4	DO			
35.5	VERY DENSE, GRAY TO BROWN GRAY, F SAND AND SILT, TRACE M-C SAND AS GRAY SUBROUNDED CLASTS WET DILATANT	SM ML						END OF SAMPLING, CONTINUED BORING TO 45.0 FT. FOR INSTALLATION OF MW12-1UD
277.1								
37.0	END OF SAMPLING, CONTINUED BOREHOLE TO 45.0 FT. FOR INSTALLATION OF MW12-1UD							

JOB NO. 853-3051

Golder Associates

CHECKED _____

DATE DRAWN _____

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW12-1UD SHEET 1 OF 2
 GA INSP. DJM DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 314.1 WATER DEPTH _____
 WEATHER PARTLY CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 316.0 DATE/TIME _____
 TEMP 59° F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 10:30 8-28-86 COMPLETED 4:20 8-28-86
 LOCATION/COORDINATES 4.9 FT. NORTH OF MW12-1UD N 10659.91 E 8595.45 DATE _____ TIME / DATE _____

MATERIALS INVENTORY

WELL CASING 2.0 in dia 38.0 in WELL SCREEN 2.0 in dia 7.8 in BENTONITE SEAL PELLETS 4.1' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIE TUBE & WASH
 JOINT TYPE FLUSH TEFLOW VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 96 L.F.
 GROUT QUANTITY 115 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIE TUBE & WASH

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
314.1	GROUND SURFACE		AUGERED TO 19.0 FT. WITH 12 INCH (O.D.) AUGERS; GROUTED 10 INCH PVC CASING TO 19.0 FT. PUSHED TO 19.7 FT. BELOW GROUND SURFACE (TOOK GROUT SAMPLE); AUGERED TO 45.0 FT. WITH 4 1/4 (I.D.) AUGERS; PULLED AUGERS; INSTALLED 6 INCH TEMPORARY STEEL CASING; WASHED OUT, OPEN TO 44.9' SAND TO 43.9' (#4-Q SAND SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN, 1-5' SCREEN, 1-3' RISER, 1-5' RISER, 3-10' RISERS); STICKUP 1.9 FT.; TREMIED (WITH WATER) #1-Q SAND TO 35.3 FT.; STARTED TO LIGHTLY RAIN DURING THE INSTALLATION OF PELLETS AT 3:00, DECIDED TO FINISH THE HOLE. RAIN STOPPED
0.0	GRAVEL AND SAND, SOME COBBLES (FILL)		
312.1			
2.0	UPPER CLAY TILL VERY STIFF TO STIFF, BROWN CLAYEN SILT, SOME F-C SAND, LITTLE TO TRACE M-C GRAVEL, COMPACT, BROWN GRAY SILT AND F SAND LAYERS AT BOTTOM OF SAMPLE		
	SILT AND F SAND LAYER 11.9-14.0 FT. AND 12.7-13.0 FT.		
301.1			
13.0	GLACIOLACUSTRINE CLAY SOFT TO VERY SOFT, SILTY, CLAY TO CLAY, SOME TO LITTLE F-C SAND AS GRAY SUBANGULAR PROPORTIONS, INTERLAYERED WITH LOOSE, GRAY F-M SAND AND COMPACT, GRAY BROWN, DILATANT, SILT LENSES, VERY PLASTIC, STICKY, SILT OR SAND LAYERS FROM 13.7-14.0 FT., 14.3-14.5 FT. AND 15.6-16.0 FT. 4 INCH COMPACT, BROWN F SAND AND SILT LENSES AT 19.6 FT.		
286.1			(CONTINUED ON NEXT PAGE)
28.0	MIDDLE SILT TILL COMPACT, BROWN GRAY, TO GRAY SILT TO CLAYEN SILT, LITTLE C-F SAND, TRACE TO NONE F GRAVEL, CLASTS AS GRAY LIMESTONE AND/OR RED BROWN SHALE FRAGMENTS		WELL DEVELOPMENT NOTES
280.4			DATE DEVELOPED: 9-8-86 TO 9-25-86
33.7	GLACIOLACUSTRINE CLAY SOFT TO FIRM, GRAY CLAY TO SILTY CLAY, LITTLE C-F SAND, SEVERAL THIN (LESS THAN 1/8") THICK BROWN SILT LENSES		DEVELOPMENT METHOD: AIR LIFT
278.6			VOLUME PURGED: 28.8 GAL.
35.5	GLACIOLACUSTRINE SILT/SAND VERY DENSE, GRAY TO BROWN GRAY SILT AND FRAND, TO F SAND AND SILT, DILATANT, CLASTS AS M-C SAND OR F GRAVEL OR GRAY LIMESTONE AND/OR RED BROWN SHALE FRAGMENTS.		FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE
269.1			
45.0	END OF BORING		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY		MW12-1UD
Job No. 853-3051	Made by DJM	Date 8-28-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

AT 3:20 AS WE FINISHED PUTTING PELLETS TO 31.2 FT. BELOW GROUND SURFACE; #4-Q SAND TO 30.7 FT. MIXED GROUT 65 LBS BENTONITE / 55 GAL. H₂O (TOOK SAMPLE); GROUT FILLED 6" CASING; MIXED GROUT 65 LBS. BENTONITE / 40 GAL. H₂O (TOO THICK SO ADDED WATER); FILLED 10" PVC CASING; PULLED UP 6" CASING, GROUT DOWN ~5 FT.; MIXED GROUT 30 LBS. BENTONITE / 20 GAL. H₂O; FILLED TO 1.5 FT. BELOW GROUND SURFACE; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

JOB NO. 853-3051 GA. INSP. SHB PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-25
 DEPTH HOLE 17.0 FT DEPTH WL. 5.3 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 76° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.5 FT.
 WEATHER PARTLY CLOUDY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N 10794.68 E 9592.08 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 1:37 / 18-15-86
 LOCATION 4 FT. NORTH OF MW12-2LD, 8 FT. NORTH OF MW12-2UD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 2:20 / 18-15-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
314.5	GROUND SURFACE							GROUND SURFACE
0.0	GRAVEL AND COBBLES, SOME SAND (FILL)	GP	-	-	AS	-	-	NO SAMPLE TAKEN FROM 0-3 FT. AS FILL WAS ADDED FOR BOREHOLE ACCESS
311.5	STIFF-HARD, BROWN CLAYEY SILT, SOME F-C SAND, SOME F-C GRAVEL, CLASTS AS RED BROWN SHALE AND GREEN GRAY LIMESTONE FRAGMENTS	CL	20	1	DO	4-9-11-13	18/24	UPPER CLAY TILL, RED BROWN SILT LENSES FROM 5.0-7.0 FT. BROWN MOTTLED TO 9.0 FT. COLOR BANDING AS GRAY AND BLACK WEATHERING ALONG VERTICAL FRACTURES AND JOINTS TO 11.0 FT. TURNING FIRM AT 11.0 FT.
3.0			24	2	DO	7-10-14-17	7/24	
			50	3	DO	21-25-25-32	4/24	
			18	4	DO	6-9-9-13	18/24	
			32	5	DO	12-17-15-13	21/24	
301.1	SOFT TO VERY SOFT BROWN GRAY CLAY TO SILTY CLAY, SOME F-C SAND, LITTLE F-C GRAVEL AS GRAY SUBROUNDED DROPSTONES PLASTIC STICKY	CH TO CL	7	7	DO	2-3-4-4	24/24	GLACIOLACUSTRINE CLAY
13.4			5	9	DO	WH-2-3-3	25/24	
297.5	END OF BORING							END OF BORING
17.0								

JOB NO. 853-3051

Golder Associates

CHECKED _____

SCALE 1 INCH = 5 FEET

DATE DRAWN _____

MONITORING WELL INSTALLATION LOG

NYSDPFC OHMS Document No. 201469232-00043

JOB NO. B53-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW12-2S SHEET 1 OF 2
 GA INSP. SHB DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 314.5 WATER DEPTH _____
 WEATHER PARTLY CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 316.0 DATE/TIME _____
 TEMP. 76° F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 1:37 8-15-86 COMPLETED 3:10 8-15
 LOCATION/COORDINATES 4.0 FT. NORTH OF MW12-2LD / N 10794.68 E 8592.08 TIME / DATE _____

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 3.0 in dia. WELL SCREEN 2.0 in dia. 7.8 in dia. BENTONITE SEAL PELLETS 3.5' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE TEFLON VITON SLOT SIZE 0.006 INCH FILTER PACK QTY 10.0 L.F. ; 180 lbs.
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
314.5	GROUND SURFACE		AUGERED TO 15.5 FT.; ADDED 1.2 FT. OF #4-Q SAND TO 14.3 FT. BELOW GROUND SURFACE
0.0	GRAVEL AND COBBLES, SOME SAND (FILL)		THROUGH 4 1/4 INCH (I.D.) AUGERS; INSTALLED WELL PIPE (1-2' SCREEN 1-5' SCREEN, 1-3' RISER, 1-5' RISER); STICKUP IS 1.5 FT.; ADDED 180 LBS #1-Q SAND TO 5.5 FT. BELOW GROUND SURFACE - PLACED THROUGH AUGERS DRY AS AUGERS ARE PULLED UP IN 4.0 FT. INCREMENTS; ADDED
311.5	UPPER CLAY TILL STIFF TO HARD, BROWN CLAYEN SILT, SOME F-C SAND, SOME F-C GRAVEL, CLAY AS RED BROWN SHALE AND GREEN GRAY LIMESTONE FRAGMENTS, RED BROWN SILT LENSES FROM 9.0-7.0 FT. BECOMING FIRM AT 11.0 FT.		70 LBS. OF BENTONITE PELLETS (3/8" Φ) TO 2.0 FT. BELOW GROUND SURFACE; MIXED CEMENT GROUT; REMOVED AUGERS AND ADDED CEMENT GROUT TO GROUND SURFACE; PUT ON 8" Φ
301.1	GLACIOLACUSTRINE CLAY SOFT TO VERY SOFT, BROWN GRAY CLAY TO SILTY CLAY, SOME F-C SAND, LITTLE F GRAVEL AS GRAY SUBROUNDED PROPPONES, PLASTIC, STICKY.		(CONTINUED ON NEXT PAGE)
13.4	END OF SAMPLING AUGERED TO 15.5 FT.		WELL DEVELOPMENT NOTES
297.5			DATE DEVELOPED: 9-4-86 TO 9-24-86
17.0			DEVELOPMENT METHOD: BAILER VOLUME PURGED: 13.3 GAL.
			FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE

**Golder
Associates**

NYSDEC

OHMS Document No. 201469232-00043

SUBJECT CWM/WELLS/MODEL CITY

MW12-25

Job No. 853-3051

Made by SHB

Date 8-15-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF
PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE
PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE
POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS
LATER PLACED BY THE SITE AND NEW WEEP HOLES WERE
PUT IN CASING; DEDICATED STAINLESS STEEL BAILER WAS
INSTALLED TO COMPLETE DEVELOPMENT AND FOR SUBSEQUENT
SAMPLING.

JOB NO. 853-3051 GA. INSP. SHB PROJECT CWM/WEELS/MODEL CIT. BORING NO. MW12-2LD
 DEPTH HOLE 63.3 FT DEPTH WL. 11.4 FT DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 80° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.7
 WEATHER SUNNY DRILL RIG CME 55 DRILLER M GAUDY DATUM MSL
 COORDINATES N10790.15 E8592.61 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 2:28 / 8-18-
 LOCATION 4 FT SOUTH OF MW12-25, 4 FT. NORTH OF MW12-2UD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 8:40 / 8-20-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ ATT	
297.7	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-25							AUGERED TO 17.0 FT., NO SAMPLING. SAMPLED 17.0 TO 21.0 FT. INSTALLED 10 INCH DIAM PVC SURFACE CASING TO FT. CONTINUED AUGERING AND SAMPLING
17.0	SOFT TO FIRM GRAY BROWN SILTY CLAY SOME F-C SAND, LITTLE F-C GRAVEL CLASTS AS GRAY SUBROUNDED TO SUBANGULAR DROPSTONES	CL	7	1	DO	2-3-4-7	25/24	GLACIOLACUSTRINE CLAY
293.9			30	2	DO	6-7-23-30	24/24	STIFF FROM 19.6 TO 20.2 FT
20.8	DENSE TO VERY DENSE GRAY BROWN CLAYEY SILT SOME F-C SAND, SOME F-C GRAVEL, CLASTS AS GRAY AND RED BROWN SUBROUNDED TO SUBANGULAR LIMESTONE AND SHALE FRAGMENTS, LAYERS OF BROWN SILT AND F-M SAND THROUGHOUT	ML	73	5	DO	19-44-29-14	25/24	UPPER SILT TILL
288.1			59	7	DO	13-24-35-22	9/24	AUGERED 21.0 TO 22.0 FT, NO SAMPLING
26.6	VERY SOFT TO FIRM GRAY BROWN SILTY CLAY SOME F-C SAND LITTLE F GRAVEL CLASTS AS GRAY TO DARK GRAY SUBROUNDED DROPSTONES	CL	17	9	DO	11-9-9-8	14/24	GLACIOLACUSTRINE CLAY
284.9			5	11	DO	WH-2-3-5	22/24	
29.8	STIFF GRAY BROWN CLAYEY SILT, TO COMPACT TO DENSE BROWN GRAY SILT, SOME F-C SAND AS GRAY SUBROUNDED CLASTS, DILATANT TO SLIGHTLY DILATANT	ML	22	14	DO	7-11-11-11	16/24	MIDDLE SILT TILL
279.5			18	16	DO	9-9-9-11	18/24	WET RUNNING SAND LENSES AT 30.1 FT. AND FROM 32.0 TO 32.8 FT.
35.2	SOFT TO FIRM GRAY SILTY CLAY SOME F-C SAND INTERLAYERED WITH THIN (LESS THAN 1/2 INCH) BROWN DILATANT SILT AND SAND LENSES	CL	34	18	DO	15-15-19-14	18/24	GLACIOLACUSTRINE CLAY
277.7			98	21	DO	22-34-64-77	21/24	
37.0	COMPACT TO DENSE GRAY BROWN FINE SAND AND SILT, SOME TO LITTLE M-C SAND, LITTLE F GRAVEL AS MULTICOLORED CLASTS INTERLAYERED WITH DENSE TO VERY DENSE, MULTICOLORED C-F SAND, LITTLE F-C GRAVEL	SW SM	25	23	DO	13-11-14-24	19/24	GLACIOLACUSTRINE SILT / SAND
			46	25	DO	9-14-32-34	25/24	
			100	27	DO	22-48-52-63	16/24	
			49	29	DO	27-22-27-25	26/24	
			28	31	DO	11-11-17-21	24/24	
			16	32	DO	2-7-9-16	25/24	
			32	33	DO	5-15-17-18	26/24	
			28	34	DO	12-15-13-15	25/24	
			21	35	DO	10-11-10-10	24/24	
			20	37	DO	7-10-10-13	24/24	
			33	39	DO	2-11-22-24	26/24	
254.8			*	41	DO	12-20-27-24	24/24	BASAL RED TILL
59.9	VERY DENSE RED BROWN SILT TO CLAYEY SILT AND TO SOME F-C SAND SOME GRAVEL, CLASTS AS GRAY SHALEY LIMESTONE AND RED BROWN WEATHERED SHALE	ML	47	42	DO	46-41-100-13	24/16	VERY DENSE BROWN F-C SAND LAYER FROM 62.0-62.4 (POSSIBLE CAVED MATERIAL)
251.4			>100	43	DO			
63.3	END OF BORING							END OF BORING

*NOTE: 300 LB. HAMMER WAS USED.

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO. <u>853-3051</u>	PROJECT <u>CWM / WELLS / MODEL CITY</u>	WELL NO. <u>MW12-2LD</u>	SHEET <u>1</u> OF <u>2</u>
GA INSP. <u>SHB</u>	DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" ID</u>	GROUND ELEV. <u>314.7</u>	WATER DEPTH _____
WEATHER <u>SUNNY</u>	DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS INC</u>	COLLAR ELEV. <u>316.1</u>	DATE/TIME _____
TEMP <u>72° F</u>	DRILL RIG <u>CME 55</u>	DRILLER <u>M. GAUDY</u>	STARTED <u>9:20</u> <u>8-21-86</u> COMPLETED <u>2:45</u> <u>8-21-86</u>
LOCATION/COORDINATES <u>4.0 FT. SOUTH OF MW12-2S AND 4.0 FT. NORTH OF MW12-2VD / N 17° 10' 15" E 8592.6</u>			
MATERIALS INVENTORY			
WELL CASING <u>2.0</u> in dia. <u>51.0</u> ft	WELL SCREEN <u>2.0</u> in dia. <u>12.8</u> ft	BENTONITE SEAL <u>PELLETS</u> <u>4.5'</u> DEEP	
CASING TYPE <u>304 STAINLESS STEEL</u>	SCREEN TYPE <u>304 STAINLESS STEEL</u>	INSTALLATION METHOD <u>TREMIÉ TUBE</u> ; WASH	
JOINT TYPE <u>THREADED</u> TAPE <u>O-RINGS</u>	SLOT SIZE <u>0.006</u> INCH	FILTER PACK QTY <u>15.0</u> L.F.	
GROUT QUANTITY <u>80</u> GAL.	CENTRALIZERS <u>NONE</u>	FILTER PACK TYPE <u>#1-Q SAND</u>	
GROUT TYPE <u>BENTONITE GROUT</u>	DRILLING MUD TYPE <u>NONE</u>	INSTALLATION METHOD <u>TREMIÉ TUBE</u> ; WASH	

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
314.7	GROUND SURFACE		AUGERED TO 19.3 FT. WITH 12 INCH (O.D.) AUGERS;
0.0	GRAVEL AND COBBLES, SOME SAND (FILL)		GROUTED 10 INCH PVC CASING TO 19.3 FT.;
311.7			PUSHED TO 19.6 FT. BELOW GROUND SURFACE (TOOK GROUT SAMPLE); AUGERED TO 63.5 FT. WITH 4 1/4" (ID) AUGERS; PULLED AUGERS; INSTALLED 6 INCH TEMPORARY STEEL CASING WASHED OUT, OPEN TO 63.5 FT. PLACED #4-Q SAND TO 62.4 FT. (SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN, 1-10' SCREEN, 2-3' RISERS, 1-5' RISER 4-10' RISERS) STICKUP 1.4 FT.; TREMIÉ (WITH WATER) #1-Q SAND TO 48.5 FT. (SAMPLE TAKEN); TREMIÉ PELLETS TO 44.0 FT.; #4-Q SAND TO 43.0 FT.; MIXED
3.0	UPPER CLAY TILL STIFF TO HARD, BROWN CLAYEY SILT, SOME F-C SAND, SOME F-C GRAVEL, CLASTS AS RED BROWN SHALE AND GREEN GRAY LIMESTONE FRAGMENTS; RED BROWN SILT LENSES FROM 9.9-10 FT. BECOMING FIRM AT 11.0 FT.		(CONTINUED ON NEXT PAGE)
301.3			WELL DEVELOPMENT NOTES
13.4	GLACIOLAUSTRINE CLAY SOFT TO VERY SOFT, BROWN GRAY CLAY TO SILTY CLAY, SOME F-C SAND, LITTLE # GRAVEL AS GRAY SUBROUND DRYPTONES, PLASTIC, SLICK, BECOMING SOFT TO FIRM, GRAY BROWN SILTY CLAY, SOME F-C SAND, LITTLE F-C GRAVEL, CLASTS AS GRAY SUBROUND TO SUBANGULAR DRYPTONES		DATE DEVELOPED: 9-4-86 TO 9-16-86
293.9			DEVELOPMENT METHOD: AIR LIFT
20.8	UPPER SILT TILL SEE BORING LOG MW12-2LD FOR DETAILS		VOLUME PURGED: 128.0 GAL.
279.5	MIDDLE SILT TILL		FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE
35.2	GLACIOLAUSTRINE CLAY SOFT TO FIRM, GRAY SILTY CLAY, SOME F-C SAND, INTERLAYERED WITH THIN (LESS THAN 1/8 INCH) BROWN, DILUTANT SILT AND SAND LENSES		
277.7			
37.0	GLACIOLAUSTRINE SILT/SAND COMPACT TO DENSE, GRAY BROWN F SAND, AND SILT, SOME TO LITTLE M-C SAND, LITTLE # GRAVEL AS MULTICOLORED CLASTS; INTERLAYERED WITH DENSE TO VERY DENSE, MULTICOLORED C-F SAND, LITTLE F-C GRAVEL		
254.8			
59.9	BASAL RED TILL VERY DENSE, RED BROWN SILT TO CLAYEY SILT, AND TO SOME F-C SAND, SOME GRAVEL, CLASTS AS GRAY SHALE, LIMESTONE AND RED BROWN WEATHERED SHALE, VERY DENSE, BROWN F-C SAND LAYER FROM 62.0-62.4 (POSSIBLE CAVED MATERIAL)		
251.4			
63.3	END OF SAMPLING AUGERED TO 63.5 FT.		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY MW12-2LD		
Job No. 853-3051	Made by SHB	Date 8-21-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

GROUT 130 lbs. BENTONITE / 80 GAL. H₂O (SAMPLE TAKEN).
GROUT PLACED TO 2.0 FT BELOW GROUND SURFACE; MIXED CEMENT
GROUT; FILLED TO GROUND SURFACE; PUT ON 8" ϕ ALUMINUM
PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH
#4- ϕ SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING
FOR DRAINAGE; PROTECTIVE POST WERE PLACED AROUND WELL;
A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE
AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS
INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

NYSDEC OHMS Document No. 201469232-00943

JOB NO. 853-3051 QA. INSP. SHB PROJECT CWM/WELLS/MOCEL CITY BORING NO. MW12-2UD
 DEPTH HOLE 51.4 FT. DEPTH WL. 11.4 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 66° F TIME WL. 9:23-86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.7 FT.
 WEATHER PARTLY CLOUDY DRILL RIG CME 55 DRILLER M. GADY DATUM MSL
 COORDINATES N 10785.79 E 8592.48 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 8:56 18-25-86
 LOCATION 8 FT. SOUTH OF MW12-2S, 4 FT. SOUTH OF MW12-2LD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 10:05 18-25-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC/ ATT	
	FOR DESCRIPTION OF SOILS AT THIS LOCATION, ALSO SEE BORING LOGS MW12-2S AND MW12-2LD							INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 34.0 FT. AUGERED TO 34.0 FT. NO SAMPLING
280.7	GROUND SURFACE							
34.0	VERY DENSE GRAY BROWN SILT TO CLAYEY SILT SOME F-C SAND, LITTLE F-C GRAVEL AS GRAY SUBROUNDED TO SUBANGULAR CLASTS	ML	107	1	DO	22-41-66-36	12/24	MIDDLE SILT TILL LAYER OF GRAY LIMESTONE OR SILTSTONE FROM 35.9 TO 36.0 FT.
277.7				2				
277.6	SOFT GRAY CLAY SOME F-M SAND	CH	99	3	DO	26-46-53-55	21/24	GLACIOLACUSTRINE CLAY
37.1	VERY DENSE GRAY BROWN F SAND SOME SILT, LITTLE M-C SAND, WET, DILATANT, STRATIFIED	UL						GLACIOLACUSTRINE SILT / SAND
276.7								
38.0	END OF SAMPLING							END OF SAMPLING
	CONTINUED AUGERING BOREHOLE TO 49.6 FT. FOR INSTALLATION OF MW12-2UD							

JOB NO. 853-3051

SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED _____

DATE DRAWN _____

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201409232-00043

JOB NO. <u>853-3051</u>	PROJECT <u>CWM/ WELLS/ MODEL CITY</u>	WELL NO. <u>MW12- ZUD</u>	SHEET <u>1</u> OF <u>2</u>
GA INSP. <u>SHB</u>	DRILLING METHOD <u>HOLLOW STEAM AUGERS - 4 1/4" I.D.</u>	GROUND ELEV. <u>314.7</u>	WATER DEPTH _____
WEATHER <u>SUNNY</u>	DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS INC.</u>	COLLAR ELEV. <u>315.7</u>	DATE/TIME _____
TEMP. <u>67° F</u>	DRILL RIG <u>CME 55</u>	DRILLER <u>M. GAUDY</u>	STARTED <u>3:00</u> <u>8/22/86</u> COMPLETED <u>1:40</u> <u>8/26/86</u>
LOCATION/COORDINATES <u>4.0 FT. SOUTH OF MW12- ZUD / N 10785.79</u>		<u>E 8597.48</u>	TIME / DATE

MATERIALS INVENTORY			
WELL CASING <u>2.0</u> IN DIA. <u>40.0</u> FT	WELL SCREEN <u>2.0</u> IN DIA. <u>10.4</u> FT	BENTONITE SEAL <u>PELLETS 4.1' DEEP</u>	
CASING TYPE <u>304 STAINLESS STEEL</u>	SCREEN TYPE <u>304 STAINLESS STEEL</u>	INSTALLATION METHOD <u>TREMIE TUBE & WASH</u>	
JOINT TYPE <u>FLUSH TEFLO 4 TON TAP</u>	SLOT SIZE <u>0.006 INCH</u>	FILTER PACK QTY <u>11.5 LF ; 230 LBS</u>	
GROUT QUANTITY <u>100 GAL.</u>	CENTRALIZERS <u>NONE</u>	FILTER PACK TYPE <u>#1-Q SAND</u>	
GROUT TYPE <u>BENTONITE GROUT</u>	DRILLING MUD TYPE <u>NONE</u>	INSTALLATION METHOD <u>TREMIE TUBE & WASH</u>	

ELEV./DEPTH	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
(FT.)			
314.7	GROUND SURFACE		AUGERED TO 19.5 FT. WITH 12 INCH (O.D.) AUGERS;
0.0	GRAVEL AND COBBLES, SOME SAND (FILL)		GROUTED 10 INCH PVC CASING TO 19.5 FT. BELOW GROUND SURFACE (TOOK GROUT SAMPLE); AUGERED TO 50.8 FT. WITH 4 1/4" (I.D.) AUGERS; PULLED AUGERS
311.7	UPPER CLAY TILL		INSTALLED 6 INCH TEMPORARY STEEL CASING
3.0	STIFF TO HARD, BROWN CLAYEY SILT, SOME F-C SAND, SOME F-C GRAVEL, CLASTS AS RED BROWN SHALE AND GREEN GRAY LIMESTONE FRAGMENTS, RED BROWN SILT LENSES FROM 5.0-7.0 FT. BROWN MOTTLED TO 9.0 FT., BECOMING FIRM AT 11.0 FT.		WASHED OUT; HAVE CAVE IN TO 49.4 FT.; DID NOT PUT #4-Q SAND IN BOTTOM OF HOLE;
301.3	GLACIOLACUSTRINE CLAY		INSTALLED WELL PIPE (1-10' SCREEN, 4-10' RISER)
13.4	SOFT TO VERY SOFT, BROWN GRAY CLAY TO SILTY CLAY, SOME F-C SAND, LITTLE F-C GRAVEL AS GRAY SUBROUND DROPTONES, PLASTIC, BITCHEN, BECOMING SOFT TO FIRM, GRAY BROWN SILTY CLAY, SOME F-C SAND, LITTLE F-C GRAVEL, CLASTS AS GRAY SUBROUND TO SUBANGULAR DROPTONES.		STICKUP 1.0 FT.; TREMIED (WITH WATER)
293.9	UPPER SILT TILL		#1-Q SAND TO 37.9 FT. BELOW GROUND SURFACE;
20.8	DENSE TO VERY DENSE, GRAY BROWN CLAYEY SILT, SOME F-C SAND, SOME F-C GRAVEL, CLASTS AS GRAY AND RED BROWN SUBROUND TO SUBANGULAR LIMESTONE AND SHALE FRAGMENTS, LAYERS OF BROWN SILT AND F-C SAND THROUGHOUT		HAD TO FLUSH HOLE ONE TIME DUE TO BRIDGING OF SAND; (TOOK SAMPLE OF SAND); TREMIED
288.1	GLACIOLACUSTRINE CLAY		(CONTINUED ON NEXT PAGE)
26.6	VERY SOFT TO FIRM, GRAY BROWN SILTY CLAY, SOME F-C SAND, LITTLE F-C GRAVEL, CLASTS AS GRAY TO DARK GRAY SUBROUND DROPTONES		WELL DEVELOPMENT NOTES
284.9	MIDDLE SILT TILL		DATE DEVELOPED: 9-4-86 TO 9-16-86
29.8	STIFF GRAY BROWN CLAYEY SILT TO COMPACT TO DENSE, BROWN GRAY SILT, SOME F-C SAND AS GRAY SUBROUND CLASTS, PLASTIC TO SLIGHTLY PLASTIC, WET RUNNING SAND LENSES AT 30.1 FT. AND FROM 32.0-32.8 FT. BECOMING VERY DENSE, GRAY BROWN SILT TO CLAYEY SILT, SOME F-C SAND, LITTLE F-C GRAVEL AS GRAY SUBROUND TO SUBANGULAR CLASTS, LAYER OF GRAY LIMESTONE OR SILTSTONE FROM 36.9-38.0 FT.		DEVELOPMENT METHOD: AIR LIFT
277.7	GLACIOLACUSTRINE CLAY		VOLUME PURGED: 231.0 GAL.
37.0	SOFT, GRAY CLAY, SOME F-C SAND		FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE
277.6	GLACIOLACUSTRINE SILT/SAND		
37.1	VERY DENSE, GRAY BROWN F-SAND, SOME SILT, LITTLE M-C SAND, WET PLASTIC, STRATIFIED, INTERLAYERED WITH DENSE TO VERY DENSE, MULTICOLORED C-F SAND, LITTLE F-C GRAVEL		
263.9			
50.8	END OF BORING		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY

MW12-2UD

Job No. 853-3051

Made by SHB

Date 8-26-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

(WITH WATER) BENTONITE PELLETS TO 33.8 FT.; ADDED #4-Q SAND TO 32.8 FT. BELOW GROUND SURFACE; MIXED GROUT 150 LBS OF BENTONITE / 100 GAL. H₂O (TOOK SAMPLE); 6" STEEL CASING PULLED; GROUT ~ 2 FT. BELOW GROUND SURFACE; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

JOB NO. 853-3051 GA. INSP. LEL PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-35
 DEPTH HOLE 24.0 FT. DEPTH WL. 7.2 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 73° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 313.7 F
 WEATHER SUNNY DRILL RIG CME 45 DRILLER J. LAUM DATUM MSL
 COORDINATES N 10894.03 E 8692.77 WT. SAMPLER HAMMER 140 LBS DROP 30 IN. STARTED 3:25 / 8-11-86
 LOCATION 5 FT. EAST OF MW12-31D, 8.5 FT. EAST OF MW12-3UD WT. CASING HAMMER 300 LBS DROP 30 IN. COMPLETED 10:20 / 8-12-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
313.7	GROUND SURFACE							GROUND SURFACE
311.7	ASPHALT AND ROAD FILL	GW	-	-	AS	-	-	NO SAMPLE TAKEN FROM 0-2.0 FT. AUGERED THROUGH ROAD PAVEMENT
310.7	COMPACT BROWN C-F SAND AND GRAVEL, GRADING TO GRAY BROWN SILT AND F SAND	SW SM	21	1	DO	10-11-10-15	17/24	ROAD FILL
310.7			23	4	DO	8-10-13-30	24/24	UPPER CLAY TILL
310.7			45	5	DO	20-20-25-35	24/24	MOTTLED TO 8.0 FT.
310.7	VERY STIFF TO FIRM, BROWN TO BROWN GRAY SILTY CLAY TO CLAYEY SILT SOME F-C SAND, LITTLE F GRAVEL AS SHALE AND LIMESTONE CLASTS, GRAY WEATHERING ALONG VERTICAL FRACTURES.	CL	29	6	DO	8-14-15-20	26/24	
			20	7	DO	6-9-11-13	19/24	
			20	-	DO	10-10-10-11	0/24	
			20	9	DO	6-8-12-10	14/24	
			18	10	DO	10-8-10-24	19/24	
			22	11	DO	10-9-13-20	17/24	
292.70			25	12	DO	10-10-15-6	15/24	
291.0	VERY SOFT GRAY SILTY CLAY SOME F-M SAND, OCCASIONAL RED BROWN AND GRAY SILT LENSES	CL	19	14	DO	7-9-10-10	21/24	GLACIOLACUSTRINE CLAY
289.7								
24.0	END OF BORING							END OF BORING

JOB NO. 853-3051

Golder Associates

CHECKED _____

DATE DRAWN _____

SCALE 1 INCH = 5 FEET

MONITORING WELL NO. 11362 LOCATION LOG

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW12-35 SHEET 1 OF 2
 QA INSP LEL DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV 313.7 WATER DEPTH _____
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV 315.2 DATE/TIME _____
 TEMP 75° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 10:35 8/12/86 COMPLETED 2:30 8/12/86
 LOCATION/COORDINATES 50 FT. EAST OF MW12-35D / N 10894 03 E 8692 17 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in dia 8.0 ft. WELL SCREEN 2.0 in dia 19.8 ft. BENTONITE SEAL PELLETS 4.6' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE FLUSH TEFLOW VITON SLOT SIZE 0.006 INCH FILTER PACK QTY 17.6 L.F. / 560 LBS.
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
313.7	GROUND SURFACE		AUGERED TO 23.0 FT.
0.0	ASPHALT AND ROAD FILL		WATER LEVEL AT 16 FT.
311.7	ROAD FILL		THEREFORE HAD TO MAKE
2.0	COMPACT, BROWN C-F SAND AND GRAVEL, GRADING TO GRAY BROWN SILT AND F SAND		A #1-Q SAND SLURRY
310.7	UPPER CLAY TILL		SO THAT THE SAND WOULD
3.0	VERY STIFF TO FIRM, BROWN TO BROWN GRAY SILTY CLAY TO CLAYEY SILT, SOME F-C SAND, LITTLE F GRAVEL AS SHALE AND LIMESTONE CLASTS, GRAY WEATHERING ALONG VERTICAL FRACTURES		SETTLE FASTER, TOOK A
292.7	GLACIOLACUSTRINE CLAY		SAMPLE OF DRY #1-Q SAND, ADDED 60 LBS OF #1-Q
21.0	VERY SOFT, GRAY SILTY CLAY, SOME F-M SAND, OCCASIONAL RED BROWN AND GRAY SILT LENSES		SAND BOTTOM STILL AT 23.0 FT. AFTER ADDING
289.7	END OF SAMPLING		100 LBS, BOTTOM AT 22.3 FT.
24.0	AUGERED TO 23.0 FT.		INSTALLED WELL PIPE (1-5' SCREEN, 1-10' SCREEN 1-3' RISER, 1-5' RISER)
			0.4 FT. STICKUP, CONTINUED TO ADD #1-Q SAND UNTIL 11.0 FT. BELOW GROUND SURFACE, PULLED WELL UP 1.5 FT. STICKUP, PULLED AUGERS SOME SAND FELL TO 20.0 FT. AFTER 180 LBS, WAITED 20 MINUTES FOR SAND TO SETTLE TO 11.0 FT. AFTER LUNCH.
			(CONTINUED ON NEXT PAGE)
			WELL DEVELOPMENT NOTES
			DATE DEVELOPED: 9-4-86 TO 9-25-86
			DEVELOPMENT METHOD: BAILER
			VOLUME PURGED: 29.0 GAL.
			FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.

**Golder
Associates**

NYS DEC OHMS Document No. 201469232-00043

SUBJECT CWM/WELLS/MODEL CITY

MW12-35

Job No. 853-3051

Made by LEL

Date 8.12.86

Ref.

Checked DJM

Sheet 2 of

Reviewed JFC

SAND WAS AT 7.0 FT. BELOW GROUND SURFACE ; PULLED UP ON AUGERS SAND FELL TO 8.0 FT. BELOW GROUND SURFACE ; AT 6. FT. HAD TROUBLE WITH BRIDGING THEREFORE REMOVED THE LAST 5' SECTION OF AUGERS; SAND NOW SETTLED TO 5.4 FT. ; ADDED 5 GAL. OF PELLETS TO WELL ; TOP OF PELLETS WAS 0.3 FT. BELOW GROUND SURFACE - PROBABLY DUE TO THE WET HOLE (RAPID SWELLING AND MORE SETTLING OF THE #1-Q SAND; HAD DRILLER TAMP THE PELLETS IN CASE OF BRIDGING ; TAMPED TO 0.9 FT. BELOW GROUND SURFACE ; MIXED CEMENT GROUT AND ADDED TO GROUND SURFACE PUT ON 8" ϕ ALUMINUM PROTECTIVE CASING ; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND ; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE ; PROTECTIVE POSTS WERE PLACED AROUND WELL ; CONCRETE PAD WAS LATER PLACED BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING ; A DEDICATED STAINLESS STEEL BAILE WAS INSTALLED TO COMPLETE DEVELOPMENT AND FOR SUBSEQUENT SAMPLING.

JOB NO. 853-3051 GA. INSP. SHB PROJECT CWM/WELLS/NOEL CITY BORING NO. MW12-3LD
 DEPTH HOLE 64.0 FT. DEPTH WL. 10.7 FT. DRILLING METHOD HOLCON STEM AUGERS 4 1/4 IN. SHEET 1 OF 1
 TEMP 58° F TIME WL. 9:23-86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.1 FT.
 WEATHER SUNNY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N 10893.19 E 8686.93 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 10:00 18-29-86
 LOCATION 3 FT. WEST OF MW12-35, 3.5 FT. EAST OF MW12-3LD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 2:56 18-29-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ATT	
	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-35							INSTALLED 10 IN. DIAMETER PVC SURFACE CASING TO FT. AUGERED TO 24 FT. NO SAMPLING
290.1								
24.0	COMPACT GRAY BROWN SILT OR CLAYEY SILT. SOME F-C SAND, SOME F-C GRAVEL AS RED BROWN AND GRAY SUBANGULAR CLASTS	ML	12	1	DO	3-6-6-8	16/24	UPPER SILT TILL
239.6								
24.5	SOFT TO FIRM GRAY SILTY CLAY TO CLAY TRACE TO AND M-C SAND, LITTLE F GRAVEL AT SAMPLE BOTTOM SEVERAL THIN SILT LENSES (1/2 IN.) THROUGHOUT	CL	20	4	DO	8-8-12-28	24/24	GLACIOLACUSTRINE CLAY
285.6								
28.5	DENSE BROWN GRAY SILT TO CLAYEY SILT AND F-C SAND, SOME F-C GRAVEL, CLASTS AS GREEN GRAY, BLACK GRAY, AND RED BROWN LIMESTONE AND SHALE FRAGMENTS	ML	36	6	DO	5-13-23-23	17/24	MIDDLE SILT TILL
			42	8	DO	15-20-22-40	18/24	
281.7								
32.4	DENSE TO VERY DENSE BROWN SILT SOME F-C SAND, DILATANT, TO A MULTICOLORED C-F SAND SOME F-C GRAVEL, WET RUNNING	SM	15*	9	DO	17-12-3-9*	25/24	GLACIOLACUSTRINE SILT/SAND
			25*	10	DO	9-12-13-12*	21/24	
			42*	12	DO	13-17-25-40*	25/24	BROWN SILT CHANGING TO MULTI COLORED C-F SAND AT 39.0 FT.
			21*	13	DO	2-9-12-17*	21/24	
		SW	15*	15	DO	3-5-10-12*	12/24	
			22*	16	DO	9-15-17-28*	21/24	
			22*	17	DO	9-10-12-13*	19/24	
			48*	18	DO	12-21-27-30*	25/24	
			13*	19	DO	1-3-10-12*	19/24	
			17*	20	DO	3-7-10-10*	20/24	
			32*	21	DO	15-17-15-39*	26/24	
			31*	-	DO	8-10-21-40*	0/24	STRATIFIED GRAY AND BROWN SILT AND F SAND FROM 52.5 TO 58.0 FT.
			25*	23	DO	8-10-15-15*	15/24	
			12*	24	DO	5-6-6-8*	16/24	
			18*	26	DO	6-8-10-13*	22/24	
250.6			60*	27	DO	18-29-31-47*	26/24	
63.5	VERY DENSE RED BROWN CLAYEY SILT AND F TO C GRAVEL, SOME C SAND, BLUE GRAY AND RED BROWN LIMESTONE AND SHALE FRAGMENTS	ML						BASAL RED TILL
250.1								END OF BORING
64.0	END OF BORING							

*NOTE: 300 LBS. CASING HAMMER WAS USED.

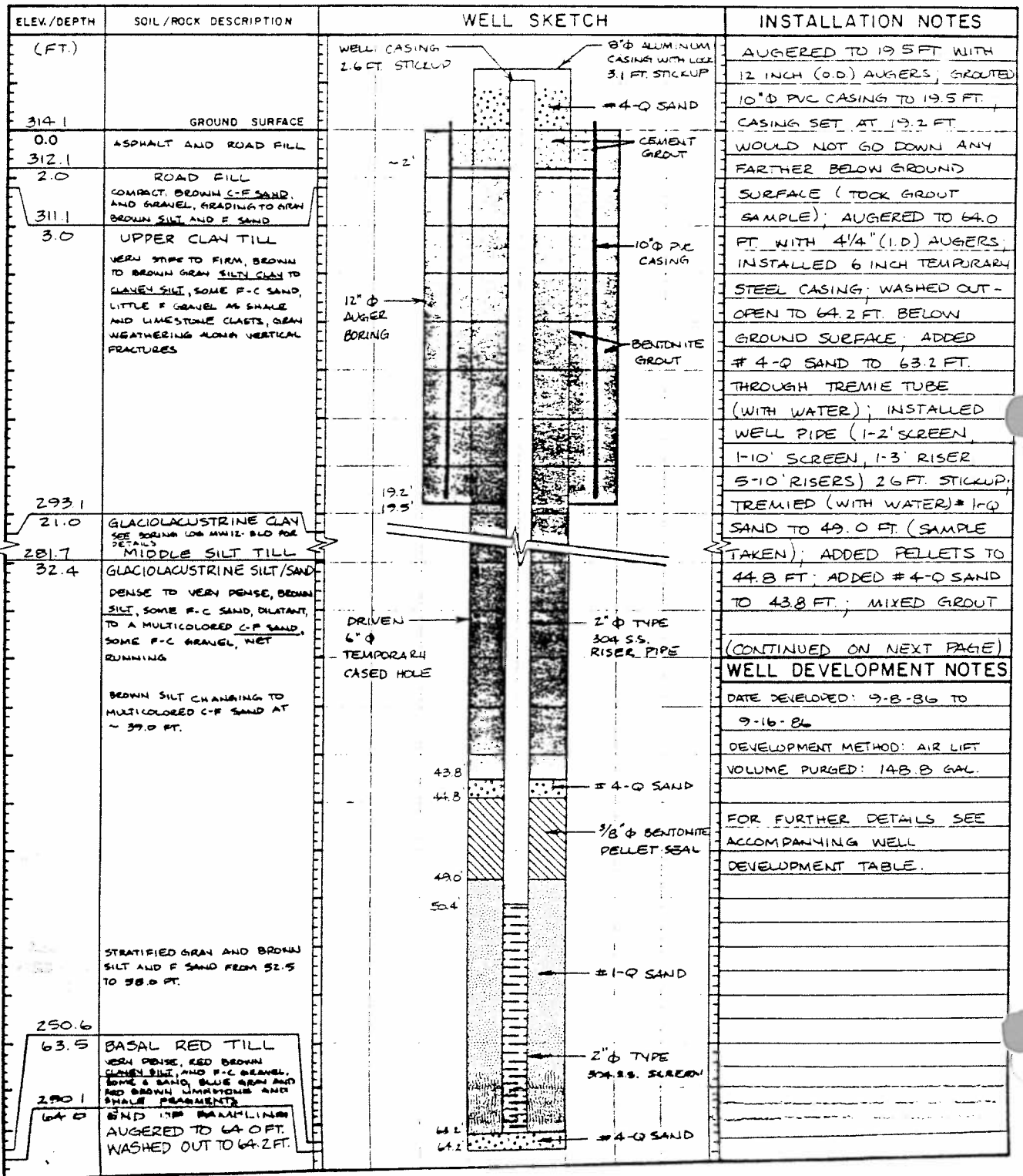
MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201409232-00043

JOB NO. 353-3051 PROJECT CWM / WELLS / MOCE CITY WELL NO. MW12-3LD SHEET 1 OF 2
 GA INSP. SHB DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 314.1 WATER DEPTH _____
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 316.7 DATE/TIME _____
 TEMP. 67° F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 9:15 3/29/86 COMPLETED 2:55 4/3/86
 LOCATION/COORDINATES 5.0 FT. WEST OF MW12-3S AND 3.5 FT. EAST OF MW12-3UD TIME / DATE / TIME / DATE

MATERIALS INVENTORY

WELL CASING 20 in dia. 53.0 ft. WELL SCREEN 2.0 in dia. 12.8 ft. BENTONITE SEAL PELLETS 4.2' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIE TUBE & WASH
 JOINT TYPE FLUSH TEFLOON VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 15.2 L.F. 305 LBS.
 GROUT QUANTITY 120 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIE TUBE & WASH



**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY MW12-3LE		
Job No. 853-3051	Made by SHB	Date 9-3-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

180 lbs. BENTONITE / 100 lbs H₂O (TOOK SAMPLE): GROUT TO TO
OF CASING. REMOVE 6" STEEL CASING; GROUT ~2 FT. BELOW
GROUND SURFACE; MIXED CEMENT GROUT. FILLED TO TOP OF
10" PVC CASING ~0.8 FT. ABOVE GROUND SURFACE; PUT ON
Φ ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECT
CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN
PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE
PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED
AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT
IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO
DEVELOPMENT.

JOB NO. 853-3051 GA. INSP. SHB PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-34D
 DEPTH HOLE 50.5 FT. DEPTH WL. 10.8 FT. DRILLING METHOD HOLLOW STEM AUGERS 4" 1/4 ID SHEET 1 OF 1
 TEMP 70° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.1 F
 WEATHER CLOUDY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N 10892.29 E 8682.94 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 9:25 / 9-4-86
 LOCATION 8.5 FT. WEST OF MW12-3S, 3.5 FT. WEST OF MW12-3LD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:35 / 9-4-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
	FOR DESCRIPTIONS OF SOILS AT THIS LOCATION ALSO SEE BORING LOGS MW12-3S AND MW12-3LD							INSTALLED 10 INCH. DIAM. PVC SURFACE CASING TO FT. AUGERED TO 34 FT. NO SAMPLING
280.1								
34.0	VERY DENSE GRAY BROWN SILT TO CLAYEY SILT SOME F-C SAND, CLASTS AS SHALE AND LIMESTONE	ML	54	2	DO	16-26-28-31*	21/24	MIDDLE SILT TILL
279.1								
35.0	VERY DENSE MULTICOLORED F-M SAND TRACE SILT GRADING TO GRAY BROWN SILT AND F-M SAND, DILATANT	SW 3M	79	3 4	DO	20-38-41 100/4	25/24	GLACIOLACUSTRINE SILT/SAND
276.1								END OF SAMPLING
38.0	END OF SAMPLING, AUGERED TO 49.6 FT. FOR INSTALLATION OF MW12-3UD							* NOTE: 300 LB. HAMMER WAS USED.

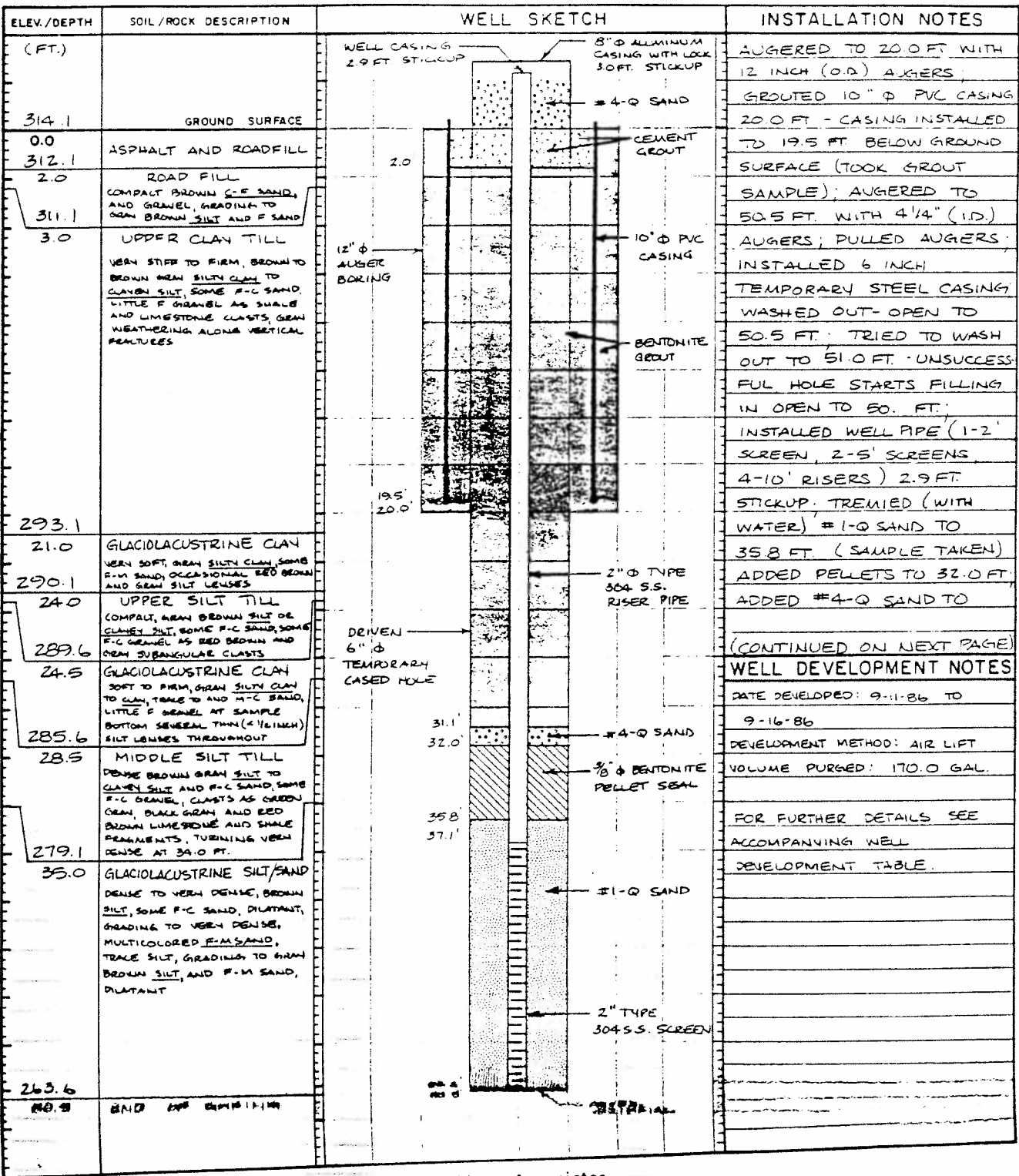
MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO <u>853-3051</u>	PROJECT <u>CWM / WELLS / MODEL CITY</u>	WELL NO <u>MW12-3UD</u>	SHEET <u>1</u> OF <u>2</u>
GA INSP <u>SHB</u>	DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4 ID</u>	GROUND ELEV <u>314.1</u>	WATER DEPTH _____
WEATHER <u>CLOUDY</u>	DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS INC</u>	COLLAR ELEV <u>317.0</u>	DATE/TIME _____
TEMP <u>70°F</u>	DRILL RIG <u>CME 55</u>	DRILLER <u>M. SANDY</u>	STARTED <u>4-15 9:38</u>
LOCATION/COORDINATES <u>3.5 FT. WEST OF MW12-3UD / N 108° 22' 29" E 8682.94</u>		COMPLETED <u>11-00 9:58</u>	

MATERIALS INVENTORY

WELL CASING <u>2.0</u> in dia <u>40.0</u> ft	WELL SCREEN <u>2.2</u> in dia <u>13.1</u> ft	BENTONITE SEAL <u>PELLETS 3.8' DEEP</u>
CASING TYPE <u>304 STAINLESS STEEL</u>	SCREEN TYPE <u>304 STAINLESS STEEL</u>	INSTALLATION METHOD <u>TREMIETUBE + WASH</u>
JOINT TYPE <u>FLUSH TEPON JITON</u>	SLOT SIZE <u>0.006 INCH</u>	FILTER PACK QTY <u>14.4 L.F. ; 200 LBS.</u>
JOINT TYPE <u>THREADED TAPE 2-RINGS</u>	CENTRALIZERS <u>NONE</u>	FILTER PACK TYPE <u>#1-Q SAND</u>
GROUT QUANTITY <u>100 GAL</u>	DRILLING MUD TYPE <u>NONE</u>	INSTALLATION METHOD <u>TREMIETUBE + WASH</u>
GROUT TYPE <u>BENTONITE GROUT</u>		



(CONTINUED ON NEXT PAGE)

WELL DEVELOPMENT NOTES

DATE DEVELOPED: 9-11-86 TO 9-16-86

DEVELOPMENT METHOD: AIR LIFT

VOLUME PURGED: 170.0 GAL.

FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.

**Golder
Associates**

NYSDEC OHMS Document No. 201469232-00043

SUBJECT CWM/WELLS/MODEL CITY

MW12-3UD

Job No. 853-3051

Made by SHB

Date 9-5-86

Ref.

Checked DJM

Sheet 2 of

Reviewed JFC

31.1 FT. BELOW GROUND SURFACE; MIXED 3 BATCHES OF GROUT
TOTAL 150 lbs. BENTONITE / 100 GAL. H₂O; GROUT TO SURFACE;
REMOVE REMAINING 6" STEEL CASING; GROUT TO SURFACE;
REMOVE 2.0 FT OF GROUT; MIX CEMENT GROUT; FILLED TO
GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING;
FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Ø SAND; WEEP
HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE.
PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE
PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW
WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS
INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. LEL PROJECT CWM/WEELS/MODEL CITY BORING NO. MW12-45
 DEPTH HOLE 260 FT. DEPTH WL. 5.0 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 73° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.6 FT.
 WEATHER SWIMY DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL
 COORDINATES N10898.93 E 8880.33 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 3:50 / 8-12-86
 LOCATION 45 FT EAST OF MW12-4D WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 10:25 / 8-13-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
314.6	GROUND SURFACE							GROUND SURFACE
0.0	ASPHALT AND GRAVEL ROADFILL VERY DENSE F-C GRAVEL AND F-C SAND SOME CLAYEY SILT	GM	-	-	A5	-	-	AUGERED TO 2.0 FT., NO SAMPLE (AUGERED THROUGH ASPHALT ROADWAY) ROAD FILL
310.6			-	-	A5	-	-	AUGERED TO 4.0 FT., NO SAMPLE
4.0	LOOSE TO COMPACT, BROWN SILT AND TO TRACE F-M SAND, DILATANT	ML	41	3	DO	6-16-25-32	20/24	UPPER ALLUVIUM MOTTLED TO 5.5 FT.
306.9			40	5	DO	25-23-17-15	22/24	
7.7	STIFF TO VERY STIFF, BROWN AND RED BROWN MOTTLED SILTY CLAY SOME F-C SAND CLASTS AS RED BROWN AND GRAY SHALE AND LIMESTONE SUBROUNDED FRAGMENTS	CL	26	7	DO	8-12-14-14	23/24	UPPER CLAY FILL GRAY WEATHERING ALONG VERTICAL FRACTURES AND OCCASIONAL SILT LENSES TO 8.0 FT.
304.6			9	8	DO	4-4-5-9	1/24	GLACIOLACUSTRINE CLAY
10.0			17	9	DO	6-8-9-10	24/24	
	SOFT TO FIRM GRAY BROWN TO BROWN SILTY CLAY SOME F-C SAND, TRACE F GRAVEL CLASTS AS GRAY SUBROUNDED DROPSTONES	CL	7	10	DO	2-3-4-6	22/24	1/2 INCH THICK BROWN F SAND AND SILT LENSE AT 13.5 FT.
			14	11	DO	6-6-8-10	24/24	
			7	12	DO	2-2-5-5	17/24	SEVERAL THIN RED BROWN DILATANT SILT LENSES FROM 19.5 TO 20.0 FT.
			7	13	DO	3-3-4-5	20/24	
			11	14	DO	5-5-6-6	24/24	
288.6	AT 23.3 FT. CHANGING TO SOFT TO VERY SOFT GRAY CLAY LITTLE F-C SAND OCCASIONAL RED BROWN SILT LENSE	CH	5	16	DO	2-3-2-4	24/24	
26.0	END OF BORING							END OF BORING

JOB NO. 853-3051

Golder Associates

CHECKED _____

DATE DRAWN _____

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201460232-00043

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW12-45 SHEET 1 OF 2
 GA INSP. LEL DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV 314.6 WATER DEPTH _____
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV 316.5 DATE/TIME _____
 TEMP 65° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 10:30 8/13/86 COMPLETED 2:10 8/13/86
 LOCATION/COORDINATES 4.5 FT EAST OF MW12-40 / N 108° 09' 03" E 8880.33 TIME / DATE _____

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 10.0 ft. WELL SCREEN 2.0 in dia. 15.8 ft. BENTONITE SEAL PELLETS 4.2' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE FLUSH TEFALON VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 18.2 L.F. 400 lbs.
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
314.6	GROUND SURFACE		AUGERED TO 24.4 FT.; ADDED #1-Q SAND THROUGH 4 1/4" (1.0') AUGERS TO 23.9 FT. (SAMPLE TAKEN); INSTALLED
0.0	ASPHALT AND GRAVEL ROAD FILL		WELL PIPE (1-5' SCREEN, 1-10' SCREEN, 1-10' RISER)
310.6	VERY DENSE F-C GRAVEL AND F-C SAND, SOME CLAYEN SILT		1.9 FT. STICKUP; ADDED
4.0	UPPER ALLUVIUM		#1-Q SAND HAD TO MAKE A SLURRY WITH WATER TO HELP KEEP SAND FROM FLOATING IN WELL - WATER
306.9	LOOSE TO COMPACT, BROWN SILT, AND TO TRACE F-M SAND, DILATANT		LEVEL IN HOLE IS AT 3 FT BELOW GROUND SURFACE; ADDED SAND TO 6.2 FT. BELOW GROUND SURFACE; ADDED 7 GAL. BENTONITE
7.7	UPPER CLAY TILL		PELLETS TO 2.0 FT.; MIXED
304.6	STIFF TO VERY STIFF BROWN AND RED BROWN, MOTTLED SILTY CLAY, SOME F-C SAND, CLUMPS AS RED BROWN AND GRAY SHALE AND LIMESTONE SUBROUNDING FRAGMENTS, OCCASIONAL SILT LENSES TO 8.0 FT.		CEMENT GROUT; REMOVED
10.0	GLACIOFLUVIAL CLAY		AUGERS; ADDED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Ø PROTECTIVE CASING; FILLED
	SOFT TO FIRM, GRAY BROWN TO BROWN SILTY CLAY, SOME F-C SAND, TRACE F GRAVEL, CLUMPS AS GRAY SUBROUNDING DEPOSITED. 0.5 INCH THICK BROWN F SAND AND SILT LENSE AT 13.5 FT. SEVERAL THIN RED BROWN, DILATANT SILT LENSES FROM 19.5 - 20.0 FT. AT 23.3 FT. CHANGING TO SOFT TO VERY SOFT, GRAY CLAY, LITTLE F-C SAND, OCCASIONAL 260 BROWN SILT LENSE		INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND;
288.6			(CONTINUED ON NEXT PAGE)
26.0	END OF SAMPLING AUGERED TO 24.4 FT.		WELL DEVELOPMENT NOTES
			DATE DEVELOPED: 8-24-86 TO 9-24-86
			DEVELOPMENT METHOD: AIR LIFT
			VOLUME PURGED: 25.4 GAL.
			FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY		MW12-4S
Job No. 853-3051	Made by LEL	Date 8-13-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE;
PROTECTIVE POSTS WERE PLACED AROUND WELL; A DEDICATED
STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO
DEVELOPMENT.

Boring Log

JOB NO. <u>853-3051</u>	GA. INSP. <u>SHB</u>	PROJECT <u>CWM/WELLS/NOVEL CITY</u>	BORING NO. <u>MW12-4D</u>
DEPTH HOLE <u>52.3 FT.</u>	DEPTH WL. <u>11.5 FT.</u>	DRILLING METHOD <u>HOLLOW STEM AUGERS 4" 1/4 ID</u>	SHEET <u>1</u> OF <u>1</u>
TEMP <u>62° F</u>	TIME WL. <u>9-23-86</u>	DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS, INC.</u>	SURFACE ELEV. <u>313.8 F</u>
WEATHER <u>CLOUDY</u>	DRILL RIG <u>CME 55</u>	DRILLER <u>M. GAUDY</u>	DATUM <u>MSL</u>
COORDINATES <u>N10898.58 E 3875.05</u>	WT. SAMPLER HAMMER <u>140 LBS.</u>	DROP <u>30 IN.</u>	STARTED <u>10:05</u> / <u>18-27-86</u>
LOCATION <u>4.5 FT. WEST OF MW12-4S</u>	WT. CASING HAMMER <u>300 LBS.</u>	DROP <u>30 IN.</u>	COMPLETED <u>1:55</u> / <u>18-27-86</u>

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ATT	
	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-4S							INSTALLED 10 INCH DIAM. P/C SURFACE CASING TO 11.5 FT. AUGERED TO 24.0 FT. NO SAMPLING
289.8 24.0	VERY SOFT, GRAY TO GRAY BROWN CLAY SOME TO TRACE F-C SAND, CLASTS AS GRAY SUBROUNDED DROPSTONES, OCCASIONAL RED BROWN SILT LENSES FROM 25.5 FT.	CH	5	1	DO	7-2-3-3	27/24	GLACIOLACUSTRINE CLAY
286.5 27.3			31	2	DO	6-9-22-40	25/24	
277.6 36.2	COMPACT TO DENSE GRAY BROWN TO BROWN GRAY F-C SAND AND SILT TO SILT TO CLAYEY SILT SOME F-C SAND, LITTLE TO TRACE F-C GRAVEL, CLASTS AS RED BROWN SHALE AND GRAY LIMESTONE FRAGMENTS, DILATANT TO SLIGHTLY DILATANT	SH ML	20	5	DO	8-10-10-10	10/24	MIDDLE SILT TILL
			15	6	DO	6-6-9-24	17/24	
			45	7	DO	25-21-24-30	25/24	
			50	8	DO	17-24-26-23	22/24	
			274.6 39.2	32	10	DO	17-17-15-12	
262.1 51.7	COMPACT TO VERY DENSE GRAY BROWN SILT AND TO SOME F-C SAND, DILATANT	ML	32	12	DO	6-12-20-24	23/24	GLACIOLACUSTRINE SILT/SAND FIRM GRAY LACUSTRINE CL LENSES FROM 39.2 TO 40.0 LITTLE F GRAVEL TO 43.5 FT. AUGERED 43.5 TO 44.0 FT. NO SAMPLING AUGERED 45.5 TO 46.0 FT. NO SAMPLING AUGERED 47.5 TO 48.0 FT. NO SAMPLING
			22	14	DO	6-10-12-14	24/24	
			144	15	DO	38-44-100	22/18	
			122*	16	DO	44-72-50*	24/18	
			90*	18	DO	38-40-50*/4	23/17	
			72*	19	DO	20-30-42-45*	21/24	
			40*	20	DO	10-16-24-15*	20/24	
			261.5 52.3	710*	22	DO	100/.3*	
	VERY DENSE RED BROWN SILT AND F-C SAND SOME F-C GRAVEL CLASTS AS RED BROWN AND GRAY SHALE AND LIMESTONE FRAGMENTS	ML					END OF BORING	* NOTE: 300 LB. HAMMER WAS USED.
	END OF BORING							

JOB NO. 853-3051

Golder Associates

CHECKED _____

DATE DRAWN _____

SCALE 1 INCH = 5 FEET

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 PROJECT CWM/WELLS/MODEL CITY WELL NO. MW12-4D SHEET 1 OF 2
 GA INSP. SHB DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 313.8 WATER DEPTH _____
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 316.7 DATE/TIME _____
 TEMP. 58° F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 9:53 8/27/86 COMPLETED 1:38 8/28/86
 LOCATION/COORDINATES 4.5 FT. WEST OF MW12-4S / N 108° 28' 52" E 2872.05 TIME / DATE TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 43.0 ft. WELL SCREEN 2.0 in dia. 12.8 ft. BENTONITE SEAL PELLETS 4.1' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIE TUBE & WASH
 JOINT TYPE FLUSH TEFLON VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 15.0 LB. ; 275 lbs.
 GROUT QUANTITY 80 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIE TUBE & WASH

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
313.8	GROUND SURFACE	WELL CASING 2.0 FT. STICKUP	AUGERED TO 19.5 FT. WITH 12" (O.D.) AUGERS; GROUTED 10" PVC CASING TO 19.5 FT.; TOOK GROUT SAMPLE;
0.0	ASPHALT AND GRAVEL ROADFILL VERY DENSE F-C GRAVEL AND F-C SAND, SOME CLAYEN SILT	20'	AUGERED TO 53.5 FT. WITH 4 1/4" I.D. AUGERS; PULLED AUGERS; INSTALLED 6" TEMPORARY STEEL CASING; WASHED OUT - OPEN TO 54.0 FT. BELOW GROUND SURFACE; #4-Q SAND
309.8	UPPER ALLUVIUM LOOSE TO COMPACT BROWN SILT, AND TO TRACE F.M. SAND, DILUTANT	4.0'	ADDED TO 52.9 FT. (SAMPLE TAKEN); INSTALLED WELL PIPE (1-2' SCREEN 1-10' RISERS) 2.9 FT. STICKUP; TREMIED (WITH WATER) #1-Q SAND TO 39.0 FT.
306.1	UPPER CLAY TILL STIFF TO VERY STIFF BROWN AND RED BROWN, MOTTLED SILTY CLAY, SOME F-C SAND, CLASTS AS RED BROWN AND GRAY SHALE AND LIMESTONE SUBROUNDING FRAGMENTS, OCCASIONAL SILT LENSES TO 8.0 FT.	7.7'	ADDED BENTONITE PELLETS TO 34.9 FT. BELOW GROUND SURFACE; ADDED #4-Q SAND TO 33.9 FT.; MIXED GROUT 130 LBS BENTONITE/ 80 GAL. H ₂ O; FILLED TO
303.8	GLACIOLACUSTRINE CLAY SOFT TO FIRM, GRAY BROWN TO BROWN SILTY CLAY, SOME F-C SAND, TRACE F-GRAVEL, CLASTS AS GRAY SUBROUNDING DROPTONES, 1/2 INCH THICK BROWN F SAND AND SILT LENSES AT 13.5 FT. SEVERAL THIN RED BROWN, DILUTANT SILT LENSES FROM 19.9 FT. - 20.0 FT. AT 23.5 FT. CHANGING TO SOFT TO VERY SOFT, GRAY TO GRAY BROWN CLAY, SOME TO TRACE F-C SAND, CLASTS AS GRAY SUBROUNDING DROPTONES, OCCASIONAL RED BROWN SILT LENSES FROM 25.5 FT.	10.0'	(CONTINUED ON NEXT PAGE)
286.5	MIDDLE SILT TILL COMPACT TO DENSE, GRAY BROWN TO BROWN GRAY F-C SAND, AND SILT, TO SILT TO CLAYEN SILT, SOME F-C SAND, LITTLE TO TRACE F-C GRAVEL, CLASTS AS RED BROWN SHALE AND GRAY LIMESTONE FRAGMENTS, DILUTANT TO SLIGHTLY DILUTANT	19.5'	WELL DEVELOPMENT NOTES
27.3	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS) SOFT TO FIRM, GRAY CLAY, SOME M-C SAND AS GRAY SUBROUNDING DROPTONES, INTERLAYERED WITH RED BROWN, DILUTANT SILT LENSES.	27.3'	DATE DEVELOPED: 7/15-86 TO 9-24-86
277.6	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS) SOFT TO FIRM, GRAY CLAY, SOME M-C SAND AS GRAY SUBROUNDING DROPTONES, INTERLAYERED WITH RED BROWN, DILUTANT SILT LENSES.	33.9'	DEVELOPMENT METHOD: AIR LIFT
36.2	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS) SOFT TO FIRM, GRAY CLAY, SOME M-C SAND AS GRAY SUBROUNDING DROPTONES, INTERLAYERED WITH RED BROWN, DILUTANT SILT LENSES.	34.9'	VOLUME PURGED: 33.5 GAL.
274.6	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS) SOFT TO FIRM, GRAY CLAY, SOME M-C SAND AS GRAY SUBROUNDING DROPTONES, INTERLAYERED WITH RED BROWN, DILUTANT SILT LENSES.	39.0'	FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.
39.2	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS) SOFT TO FIRM, GRAY CLAY, SOME M-C SAND AS GRAY SUBROUNDING DROPTONES, INTERLAYERED WITH RED BROWN, DILUTANT SILT LENSES.	40.1'	
262.1	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS) SOFT TO FIRM, GRAY CLAY, SOME M-C SAND AS GRAY SUBROUNDING DROPTONES, INTERLAYERED WITH RED BROWN, DILUTANT SILT LENSES.	52.9'	
51.7	BASAL RED TILL VERY DENSE, RED BROWN SILT, AND F-C SAND SOME F-C GRAVEL, CLASTS AS RED BROWN AND GRAY SHALE AND LIMESTONE FRAGMENTS.	54.0'	
261.5	BASAL RED TILL VERY DENSE, RED BROWN SILT, AND F-C SAND SOME F-C GRAVEL, CLASTS AS RED BROWN AND GRAY SHALE AND LIMESTONE FRAGMENTS.		
52.3	END OF SAMPLING AUGERED TO 53.5 FT. WASHED OUT TO 54.0 FT.		

**Golder
Associates**

NYSDOC OHMS Document No. 201469232-00043

SUBJECT CWM/WELLS/MODEL CITY

MW12-4D

Job No. 853-3051

Made by SHB

Date 8-28-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

GROUND SURFACE; PUT ON 8" ϕ ALUMINUM PROTECTIVE CASING
FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP
HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE;
PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD
WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP
HOLES PUT IN CASING; A WELL WIZARD WAS INSTALLED
SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. JHB PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-55
 DEPTH HOLE 16.0 FT DEPTH WL. 12.5 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 65°-70° F TIME WL. 9-23-86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC SURFACE ELEV. 314.16 FT
 WEATHER CLOUDY DRILL RIG CME 55 DRILLER U. BAUDY DATUM MSL
 COORDINATES N10899.09 E9077.48 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 1:30 / 18-14-86
 LOCATION 3 FT. EAST OF MW12-50 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 2:10 / 18-14-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
314.6	GROUND SURFACE							GROUND SURFACE
0.0	BROWN AND GRAY F-C SAND AND F-C GRAVEL GRADING TO BROWN MOTTLED CLAYEY SILT (FILL)	SW ML	-	-	AS	-	-	FILL AUGERED TO 2.0 FT, NO SAMPLING ROAD SIDE FILL
311.6	DENSE YELLOW BROWN TO RUST BROWN SILT AND F SAND TO F SAND AND SILT, CRUMBLY	ML	25	1	DO	11-9-16-60	15/24	UPPER ALLUVIUM
309.0		SM	39	3	DO	16-23-16-10	23/24	
5.6	FIRM TO VERY STIFF BROWN MOTTLED CLAYEY SILT TO BROWN GRAY SILTY CLAY SOME F TO C SAND, CLASTS AS GRAY SUBROUNDED Limestone	CL	49	5	DO	11-21-28-30	14/24	UPPER CLAY TILL
			16	7	DO	5-6-10-11	18/24	YELLOW BROWN SILT STRINGERS FROM 5.6 TO 6.0 FT.
			11	9	DO	4-5-6-8	22/24	COMPACT BROWN F SAND AND SILT LAYER FROM 6.0 TO 6.6 FT.
300.6			20	10	DO	10-10-10-10	25/24	
14.0	VERY SOFT GRAY CLAY SOME F-C SAND TRACE C GRAVEL, LENSES OF GRAY BROWN CLAYEY SILT THROUGHOUT	CL	16	11	DO	4-6-10-9	15/24	GLACIOLACUSTRINE CLAY
298.6								
16.0	END OF SAMPLING							END OF SAMPLING

NYSDEC OHMS Document No. 201469232-00043

JO# NO. <u>853-3051</u>	PROJECT <u>CWM / WELLS / MODEL CITY</u>	WELL NO. <u>MW12-55</u>	SHEET <u>1</u> OF <u>3</u>
GA INSP. <u>SHB</u>	DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" ID</u>	GROUND ELEV. <u>314.6</u>	WATER DEPTH _____
WEATHER <u>CLOUDY</u>	DRILLING COMPANY <u>EMPRE SOILS INVESTIGATIONS, INC.</u>	COLLAR ELEV. <u>316.0</u>	DATE/TIME _____
TEMP. <u>70°F</u>	DRILL RIG <u>CME 55</u>	DRILLER <u>M. GAUDY</u>	STARTED <u>1:30</u> <u>8/14/86</u>
LOCATION/COORDINATES <u>30 FT. EAST OF MW12-5D / N 10899 09 ; E 9077.48</u>		TIME / DATE	COMPLETED <u>3:45</u> <u>8/14</u>
			TIME / DATE

MATERIALS INVENTORY

WELL CASING	2.0 in dia	9.0 lf	WELL SCREEN	2.0 in dia	7.8 lf	BENTONITE SEAL	PELLETS 40' DEEP
CASING TYPE	304 STAINLESS STEEL		SCREEN TYPE	304 STAINLESS STEEL		INSTALLATION METHOD	THROUGH AUGERS
JOINT TYPE	FLUSH THREADED TAPES	TEFLON VITON O-RINGS	SLOT SIZE	0.006 INCH		FILTER PACK QTY	97 L.F. ; 200 LBS.
GROUT QUANTITY	NA		CENTRALIZERS	NONE		FILTER PACK TYPE	#1-0 SAND
GROUT TYPE	NA		DRILLING MUD TYPE	NONE		INSTALLATION METHOD	THROUGH AUGERS

ELEV./DEPTH	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
(FT.)			
314.6	GROUND SURFACE		AUGERED TO 16.5 FT., ADDED
0.0	FILL		#4-Q SAND TO 15.4 FT
311.6	BROWN AND GRAY F-C SAND AND F-C GRAVEL LEADING TO BROWN MOTTLED CLAYEN SILT (FW)		THROUGH 4 1/4" (I.D.) AUGERS (SAMPLE TAKEN);
3.0	UPPER ALLUVIUM		INSTALLED WELL PIPE
309.0	DENSE YELLOW BROWN TO RUH BROWN SILT AND F-SAND TO F-SAND AND SILT CUMBLY		(1-2' SCREEN, 1-5' SCREEN, 3-3' RISERS); ADDED
5.6	UPPER CLAY TILL		#1-Q SAND TO 6.8 FT.
309.0			(SAMPLE TAKEN); ADDED
5.6			BENTONITE PELLETS TO 2.8
			FT. BELOW GROUND SURFACE;
			REMOVED AUGERS; MIXED
			CEMENT GROUT; FILLED
			TO GROUND SURFACE;
300.6	PIRM TO VERY STIFF BROWN MOTTLED CLAYEN SILT TO BROWN GRAY SILTY CLAY		PUT ON 8" ϕ ALUMINUM
14.0	SOME F-C SAND CLASTS AS GRAY SUBUNDDED LIMESTONE. YELLOW BROWN SILT STRINGERS FROM 5.6-6.0 FT. COMPACT BROWN F-SAND AND SILT LAYER FROM 6.0-6.6 FT.		PROTECTIVE CASING;
298.6	GLACIOLACUSTRINE CLAY		FILLED INTERIOR OF
16.0	VERY SOFT GRAY CLAY SOME F-C SAND TRACE C GRAVEL LENSES OF GRAY BROWN CLAYEN SILT THROUGHOUT		PROTECTIVE CASING WITH
	END OF SAMPLING		#4-Q SAND; WEED HOLES
	AUGERED TO 16.5 FT.		WERE PUT IN PROTECTIVE
			CASING FOR DRAINAGE;
			PROTECTIVE POSTS WERE
			PLACED AROUND WELL; A
			CONCRETE PAD WAS LATER
			(CONTINUED ON NEXT PAGE)
			WELL DEVELOPMENT NOTES
			DATE DEVELOPED: 8-26-86 TO
			9-25-86
			DEVELOPMENT METHOD: BAILER
			VOLUME PURGED: 3.7 GAL.
			FOR FURTHER DETAILS SEE
			ACCOMPANYING WELL
			DEVELOPMENT TABLE.

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY MW12-55

Job No. 853-3051

Made by SHB

Date 8-14-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

PLACED AROUND WELL BY THE SITE AND NEW WEED HOLES WERE
PUT IN CASING; A DEDICATED STAINLESS STEEL BAILER WAS
INSTALLED TO COMPLETE DEVELOPMENT AND FOR SUBSEQUENT
SAMPLING.

Boring Log

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 GA. INSP. PM5 PROJECT CWN/WELLS/MODEL CITY BORING NO. MW12-5D
 DEPTH HOLE 58.3 FT. DEPTH WL. 10.3 FT. DRILLING METHOD HOLLOW STEEL AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 60° FT. TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.3 FT.
 WEATHER CLEAR DRILL RIG CME 55 DRILLER N. GAUDY DATUM MSL
 COORDINATES N 10898.78 E 9074.06 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:20 / 9-8-86
 LOCATION 23 FT. WEST OF MW12-5S WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:00 / 9-10-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ATT	
294.3	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE MW12-5S							INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO FT. AUGERED TO 20.0 FT., NO SAMPLING
20.0	VERY SOFT GRAY CLAY TRACE TO LITTLE F-C SAND, STICKY PLASTIC	CH	6	1	DO	1-2-4-4	24/24	GLACIOLACUSTRINE CLAY
290.3			10	2	DO	4-5-5-15	24/24	FROM 23.0 TO 24.0 INTER-LAYED WITH BROWN SILT LENSES
24.0	COMPACT TURNING DENSE AT BOTTOM GRAY BROWN SILT AND TO LITTLE F-C SAND LITTLE TO TRACE C-F GRAVEL CLASTS AS MULTICOLORED LIMESTONE AND SHALE FRAGMENTS	ML	22	4	DO	7-11-13-18	24/24	MIDDLE SILT TILL
			24	6	DO	15-11-13-12	15/24	LOOSE BROWN GRAY C SAND AND F GRAVEL FROM 24.0 TO 24.9 FT.
			22	7	DO	18-12-10-9	14/24	
			22	8	DO	9-10-12-9	17/24	
			23	9	DO	6-12-11-15	17/24	
			34	10	DO	2-13-21-11	14/24	
			40	11	DO	17-21-19-13	17/24	
276.8	FIRM BECOMING VERY SOFT GRAY CLAY SOME F-C SAND TRACE F GRAVEL, INTERLAYERED WITH NUMEROUS BROWN SILT LENSES	CL/ML	15	12	DO	3-9-6-10	24/24	GLACIOLACUSTRINE SILT/SAND
37.5			17	13	DO	3-11-6-13	24/24	(LAMINATED CLAYS)
			24	14	DO	6-9-15-30	24/24	COMPACT GRAY BROWN SILT AND SAND FROM 43.1 TO 44.0 FT.
			65	16	DO	20-29-36 100/4	24/24	
269.4	DENSE BROWN SILT AND F SAND, DILATANT TO 50.0 FT., TO DENSE TO VERY DENSE RED BROWN TO GRAY BROWN F-C SAND SOME SILT, SOME GRAVEL TO 54.0 FT., TO SILT SOME F-C SAND, LITTLE TO TRACE F GRAVEL SLIGHTLY DILATANT TO 58.0 FT.	ML	33	18	DO	10-13-20-28	24/24	GLACIOLACUSTRINE SILT/SAND
44.9			42	19	DO	9-20-22-48	24/24	AUGERED FROM 45.9 TO 46.0 FT., NO SAMPLING
			7100	20	DO	22-58-100/2	14/14	
		SN	7100	21	DO	100/2	6/3	← AUGERED FROM 51.2 TO 52.0 FT., NO SAMPLING
			7100	22	DO	50-100/3	10/10	← AUGERED FROM 52.4 TO 54.0 FT., NO SAMPLING
		ML	7100	23	DO	12-48-100/3	14/16	← AUGERED FROM 54.8 TO 55.0 FT., NO SAMPLING
256.3	VERY DENSE RED BROWN SILT SOME F-C SAND LITTLE F GRAVEL, CLASTS AS RED BROWN SHALE FRAGMENTS	ML	7100	24	DO	100/3 *	4/4	BASAL RED TILL
58.0								END OF BORING
256.0	END OF BORING							
58.3								* NOTE: 300 LB. HAMMER WAS USED.

JOB NO. 853-3051

Golder Associates

CHECKED _____

SCALE 1 INCH = 5 FEET

DATE DRAWN _____

MONITORING WELL INSTALLATION LOG

JOB NO. 853-2051 PROJECT CNM/ WELLS/ MODEL CITY WELL NO. MW12-50 SHEET 1 OF 2
 GA INSP. PMS DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 314.3 WATER DEPTH _____
 WEATHER CLEAR DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 316.0 DATE/TIME _____
 TEMP. 65°F DRILL RIG CME 55 DRILLER M GAUDIN STARTED 10:30 9-9-86 COMPLETED 3:15 9-10-86
 LOCATION/COORDINATES 30 FT. WEST OF MW12-55 / N 2898.78' E 9074.00' TIME / DATE

MATERIALS INVENTORY

WELL CASING 20 in dia. 450 ft. WELL SCREEN 20 in dia. 12.8 ft. BENTONITE SEAL PELLETS 40' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH 6" CASING
 JOINT TYPE FLUSH TEFLON VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY. 16.0 L.P. 350 LBS
 GROUT QUANTITY 100 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIED TYPE & WASH

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
314.3	GROUND SURFACE	WELL CASING 1.7 FT. STICKUP	AUGERED TO 20.0 FT. WITH 12" (O.D.) AUGERS. GROUTED 10" PVC CASING TO 20.0 FT. BELOW GROUND SURFACE.
0.0	FILL BROWN AND GRAY F.C. SAND AND F.C. GRAVEL GRADING TO BROWN MOTTLED CLAYEY SILT (FILL)	8" Ø ALUMINUM CASING WITH LOCK 2.4 FT. STICKUP	AUGERED TO 58.0 FT. WITH 4 1/4" (I.D.) AUGERS. PULLED AUGERS. INSTALLED 6" TEMPORARY STEEL CASING. WASHED OUT - OPEN TO 58.0 FT. ADDED #4-Q SAND TO 56.1 FT. BELOW GROUND SURFACE (SAMPLE TAKEN). INSTALLED WELL PIPE (1-2' SCREEN, 1-10' SCREEN, 1-5' RISER, 4-10' RISERS) 1.7 FT. STICKUP. TREMIED (WITH WATER) #1-Q SAND TO 42.0 FT. BELOW GROUND SURFACE. TOOK SAMPLE. ADDED BENTONITE PELLETS DRY TO 38.0 FT. THROUGH 6" CASING. ADDED #4-Q SAND TO 37.5 FT. MIXED GROUT 150 LBS BENTONITE / 100 GAL.
311.3	UPPER ALLUVIUM DENSE YELLOW BROWN TO RUFT BROWN SILT AND F SAND TO FINE SAND AND SILT CRUMBLY	15'	(CONTINUED ON NEXT PAGE)
308.7	UPPER CLAY TILL FIRM TO VERY STIFF BROWN MOTTLED CLAYEY SILT TO BROWN GRAY SILTY CLAY SOME F.C. SAND. CLASTS AS GRAY SUBROUNDED LIMESTONE. YELLOW BROWN SILT STRINGERS FROM 5.6 - 6.0 FT. COMPACT BROWN F SAND AND SILT LAYER FROM 6.0 - 6.6 FT.	12" Ø AUGER BORING	WELL DEVELOPMENT NOTES
300.3	GLACIOLACUSTRINE CLAY VERY SOFT GRAY CLAY SOME F.C. SAND TRAIL CARAMEL LENSES OF GRAY BROWN CLAYEY SILT THROUGHOUT. CHANGING AT 20.0 FT. TO VERY SOFT GRAY CLAY TRAIL TO LITTLE F.C. SAND. STICKY PLASTIC. FROM 23.0 - 24.0 FT. INTERLAYERED WITH BROWN SILT LENSES	20.0'	
290.3	MIDDLE SILT TILL COMPACT TURNING DENSE AT BOTTOM, GRAY BROWN SILT AND TO LITTLE F.C. SAND LITTLE TO TRAIL C-F GRAVEL CLASTS AS MULTICOLORED LIMESTONE AND SHALE FRAGMENTS. LOOSE BROWN GRAY C SAND AND F GRAVEL FROM 24.0 - 24.9 FT.	DRIVEN 6" Ø TEMPORARY CASED HOLE	
276.8	GLACIOLACUSTRINE SILT/SAND FIRM BROWNING VERY SOFT GRAY CLAY SOME F.C. SAND TRAIL F GRAVEL, INTERLAYERED WITH NUMEROUS BROWN SILT LENSES. COMPACT GRAY BROWN SILT AND SAND FROM 43.1 - 44.0 FT. (LAMINATED CLAYS)	37.5 38.0	
269.4	GLACIOLACUSTRINE SILT/SAND DENSE BROWN SILT AND F SAND PLATANT TO 50.0 FT. TO DENSE TO VERY DENSE RED BROWN TO GRAY BROWN F.C. SAND SOME SILT, SOME GRAVEL TO 54.0 FT., TO SILT SOME F.C. SAND, LITTLE TO TRAIL F GRAVEL SLIGHTLY PLATANT TO 58.0 FT.	2" Ø TYPE 304 S.S. RISER PIPE	
256.3	BASAL RED TILL VERY DENSE RED BROWN SILT SOME F.C. SAND LITTLE F GRAVEL CLASTS AS RED BROWN SHALE FRAGMENTS	#4-Q SAND	
256.0	END OF BORING	3/8" Ø BENTONITE PELLET SEAL	
58.3		42.0 43.3	
		#1-Q SAND	
		2" Ø TYPE 304 S.S. SCREEN	
		56.1	
		#4-Q SAND	
		58.0	

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY

MW12-5D

Job No. 853-3051
Ref.

Made by PMS
Checked DJM
Reviewed JFC

Date 9.10.86
Sheet 2 of 2

H₂O (TOOK SAMPLE); REMOVED 6" CASING; GROUT 1.5 FT. BELOW GROUND SURFACE; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" ϕ ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. PMS PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-6S
 DEPTH HOLE 22.0 FT DEPTH WL. 11.2 FT DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 65° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 314.3 FT.
 WEATHER OVERCAST DRILL RIG CUE 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N10903.30 E9269.68 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:11 / 9-10-86
 LOCATION 13.5 FT. EAST OF MW12-6D WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 12:10 / 9-10-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES			REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	
314.3 0.0	GROUND SURFACE						GROUND SURFACE
310.3 4.0	BROWN AND GRAY BROWN F-C GRAVEL AND F-C SAND, SOME COBBLES, TRACE CLAYEY SILT	GW	-	-	AS	-	FILL NO SAMPLE TAKEN FROM 0.0 TO 4.0 FT. DUE TO ROAD FILL
304.3 10.0	STIFF PURPLE BROWN AND MOTTLED CLAYEY SILT, SOME F-C SAND, LITTLE TO TRACE GRAVEL GRAY SUBROUNDED CLASTS INCREASING IN FREQUENCY TOWARDS THE BOTTOM, GRAY WEATHERING ALONG VERTICAL FRACTURES	CL	37	1	DO	8-16-21-32	24/24 UPPER CLAY TILL
			46	2	DO	21-24-27-31	24/24 DECAYED ORGANIC MATERIAL IN POCKETS FROM 8.0-10.0 FT.
			28	3	DO	6-12-16-25	24/24
		CL	18	4	DO	6-8-10-12	21/24 GLACIOLACUSTRINE CLAY
			28	5	DO	10-13-15-17	24/24 TRACE F GRAVEL TO 14.0 FT.
			12	6	DO	4-5-7-8	11/24
			27	7	DO	9-13-14-14	24/24
		CH	22	8	DO	7-11-11-12	18/24 SOFT GRAY CLAY (CH) FROM 18.0 TO 20.0 FT.
292.3 22.0	END OF BORING		32	9	DO	14-15-17-21	24/24 TRACE F GRAVEL FROM 20.0-21.9 FT. F SAND AND SILT LAYER 21.9-22.0 FT.
							END OF BORING

JOB NO. 853-3051

Golder Associates

CHECKED _____

DATE DRAWN _____

~~NIJSDÉC OHMS Document No. 201469232-00043~~

MATERIALS INVENTORY

WELL CASING	2.0	in dia	0.0	1.1	WELL SCREEN	2.0	in dia	10.4	1.1	BENTONITE SEAL	PELLETS 4.0' DEEP
CASING TYPE	304	STAINLESS STEEL			SCREEN TYPE	304	STAINLESS STEEL			INSTALLATION METHOD	THROUGH AUGERS
JOINT TYPE	THREADED	FLUSH TAPES	TEFLON TAPES	2-RINGS	SLOT SIZE	0.006	INCH			FILTER PACK QTY	4.0 L.F. ; 375 lbs.
GROUT QUANTITY	NA				CENTRALIZERS	NONE				FILTER PACK TYPE	#1-Q SAND
GROUT TYPE	NA				DRILLING MUD TYPE	NONE				INSTALLATION METHOD	THROUGH AUGERS

Golder Associates

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY		MW12-6S
Job No. 853-3051	Made by PMS	Date 9-10-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

HOLES WERE PUT IN CASING ; A DEDICATED STAINLESS STEEL
BAILER WAS INSTALLED FOR DEVELOPMENT AND FOR SUBSEQUENT
SAMPLING

JOB NO. B53-3051 GA. INSP. K50 PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-6D
 DEPTH HOLE 54.6 FT DEPTH WL. 10.4 FT DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 55° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC SURFACE ELEV. 314.0
 WEATHER PARTLY CLOUDY DRILL RIG ACKER AD-2 DRILLER _____ DATUM MSL
 COORDINATES N10903.30 E926513 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:30 / 9-11-86
 LOCATION ~3.5 FT. WEST OF MW12-6S WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 11:15 / 9-16-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ATT	
294.0	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION SEE BORING LOG MW12-6S							INSTALLED 10IN. DIA. PVC SURFACE CASING TO 1 FT. AUGERED TO 20.0 FT. NO SAMPLING
20.0	DENSE BROWN GRAY TO BROWN SILT TO CLAY/ SILT SOME F-C SAND WITH THIN GRAY BROWN SILTY CLAY LAYERS	ML	33	1	DO	7-13-20-23	13/24	UPPER SILT TILL
291.0			50	2	DO	19-21-29-30	14/24	
23.0	VER/ SOFT GRAY CLAY LITTLE TO TRACE F-C SAND, TRACE F GRAVEL	CH	19	4	DO	7-9-10-10	8/24	GLACIOLACUSTRINE CLAY
286.0			7	5	DO	3-3-4-4	24/24	
28.0	COMPACT TO VERY DENSE, GRAY BROWN TO BROWN SILT AND TO SOME F-C GRAVEL, CLASTS AS GRAY SUBROUNDED TO SUBANGULAR LIMESTONE, DILATANT	ML	25	6	DO	3-11-14-32	14/24	MIDDLE SILT TILL
280.0			81	7	DO	17-35-26-24	10/24	
34.0			74	8	DO	18-30-14-45	20/24	
278.5	SOFT TO FIRM BROWN GRAY SILTY CLAY, SOME F-C GRAVEL, LITTLE F-C SAND, THIN BROWN SILT LENSES PRESENT	CL	20	9	DO	5-9-11-24	20/23	GLACIOLACUSTRINE CLAY
35.5	DENSE TO VERY DENSE, BROWN TO BROWN GRAY SILT AND TO SOME F SAND TO F SAND AND SILT, SOUPY DILATANT	ML	13	11	DO	6-6-7 *	16/18	GLACIOLACUSTRINE SILT / SAND
	TO GRAY BROWN SILT AND TO SOME F-C SAND SOME F GRAVEL, CLASTS AS GRAY LIMESTONE, WITH OCCASIONAL RED BROWN SHALE FRAGMENT, SLIGHTLY DILATANT	SM	36	12	DO	4-9-27 *	10/18	AUGERED 36.0 FT. TO 37.0 FT. NO SAMPLE, BROWN SILT WITH GRAY STREAKS FROM 42.0 FT. TO 43.3 FT.,
			93	13	DO	23-46-47-50	18/24	AUGERED 43.3 FT. TO 44.0 FT. NO SAMPLE
			7100	14	DO	45-60-100 *	13/16	AUGERED 45.5 FT. TO 46.0 FT. NO SAMPLE
			145	15	DO	21-45-100 *	18/18	AUGERED 46.4 FT. TO 48.0, NO SAMPLE
			2100	16	DO	100-14 *	6/5	AUGERED 49.3 FT. TO 50.0 FT. NO SAMPLE
264.0			7100	17	DO	21-33-100/3	18/16	
50.0	VERY DENSE RED BROWN SILT AND F-C SAND SOME F-C GRAVEL, CLASTS AS RED BROWN SUBROUNDED TO SUBANGULAR SHALE FRAGMENTS AND WEATHERED GREEN GRAY LIMESTONE	ML	2100	18	DO	83-100/3 *	10/10	BASAL RED TILL
260.0			2100	19	DO	100/3 *	6/6	AUGERED 50.8 FT. TO 52.0 FT. NO SAMPLE
54.0	VERY DENSE RED BROWN SHALE, WEATHERED OCCASIONAL BLUE GRAY LIMESTONE NODULE		2100	20	DO	55-100/1 *	7/7	AUGERED 52.5 FT. TO 54.0 FT. NO SAMPLE
29.4								BEDROCK QUEENSTON FORMATION (WEATHERED)
54.6	END OF BORING							END OF BORING

* NOTE: 300 LB. HAMMER WAS USED.

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 PROJECT CAM / WELLS / MODEL C-74 WELL NO. MW12-6D SHEET 1 OF 2
 GA INSP. KSO DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 314.0 WATER DEPTH _____
 WEATHER RAIN DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 316.2 DATE/TIME _____
 TEMP 55° F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 11:30 9-11-86 COMPLETED 1:15 9-17-86
 LOCATION/COORDINATES 35 FT. WEST OF MW12-6S / N 109°03'30" E 9265.13 TIME / DATE _____

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 40.0 ft. WELL SCREEN 2.0 in dia. 15.8 ft. BENTONITE SEAL PELLETS 4.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIE TUBE & WASH
 JOINT TYPE THREADED TEFLON VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 170 LBS. 350 lbs
 GROUT QUANTITY 90 GAL CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIE TUBE & WASH

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
(FT.)			
314.0	GROUND SURFACE		AUGERED TO 19.3 FT WITH 12" (O.D.) AUGERS; GROUTED 10' PVC CASING TO 19.3 FT BELOW GROUND SURFACE (GROUT SAMPLE TAKEN);
0.0	FILL BROWN AND GRAY BROWN CLAY GRAVEL AND F.C. SAND, SOME COBBLES, TRACE CLAYEN SILT		AUGERED TO 54.0 FT WITH 4 1/4" (I.D.) AUGERS; PULLED AUGERS; INSTALLED 6" TEMPORARY STEEL CASING; WASHED OUT, OPEN TO 53.5 FT. (0.5 FT. WELL CUTTINGS);
310.0	UPPER CLAY TILL STIFF PURPLE BROWN AND MOTTLED GRAYEN SILT SOME F.C. SAND, LITTLE TO TRACE GRAVEL, GRAY SUBROUNDED CLASTS INCREASING IN FREQUENCY TOWARDS THE BOTTOM, GRAY WEATHERING ALONG VERTICAL FRACTURES, DECEASED ORGANIC MATERIAL IN POCKETS FROM 8.0-10.0 FT.		INSTALLED WELL PIPE (1-5' SCREEN, 1-10' SCREEN 4-10' RISERS) 2.2 FT. STICKUP; TREMIED (WITH WATER) #1-Q SAND TO 36.5 FT. (SAMPLE TAKEN);
4.0	GLACIOLACUSTRINE CLAY FIRM TO SOFT GRAY BROWN CLAY TO SILTY CLAY, SOME F.C. SAND, OCCASIONAL BROWN SILT LENSES (4 1/4" THICK) THROUGHOUT, TRACE OF GRAVEL TO 14.0 FT. SOFT GRAY CLAY (CH) FROM 18.0-20.0 FT.		ADDED PELLETS TO 32.5 FT. BELOW GROUND SURFACE; ADDED #4-Q SAND TO 32.0 FT; MIXED GROUT 120 LBS BENTONITE/90 GAL H ₂ O; PULLED UP 6" CASING; GROUTED TO 2.0 FT.
304.0	UPPER SILT TILL DENSE BROWN GRAY TO BROWN SILT TO GRAYEN SILT, SOME F.C. SAND WITH THIN GRAY BROWN SILTY CLAY LAYERS		(CONTINUED ON NEXT PAGE)
10.0	GLACIOLACUSTRINE CLAY VERY SOFT GRAY CLAY, LITTLE TO TRACE F.C. SAND, TRACE OF GRAVEL		WELL DEVELOPMENT NOTES
294.0	MIDDLE SILT TILL COMPACT TO VERY DENSE, GRAY BROWN TO BROWN SILT AND TO SOME F.C. GRAVEL, CLASTS AS GRAY SUBROUNDED TO SUBANGULAR LIMESTONE, DILATANT		
20.0	GLACIOLACUSTRINE CLAY SOFT TO FIRM BROWN GRAY SILTY CLAY, SOME F.C. GRAVEL, LITTLE F.C. SAND, THIN BROWN SILT LENSES PRESENT.		
291.0	GLACIOLACUSTRINE SILT/SAND DENSE TO VERY DENSE, BROWN TO BROWN GRAY SILT AND TO SOME F.C. SAND TO F.C. SAND AND SILT, SOFTLY DILATANT, TO GRAY BROWN SILT AND TO SOME F.C. SAND, SOME F.C. GRAVEL, CLASTS AS GRAY LIMESTONE WITH OCCASIONAL RED BROWN SHALE FRAGMENTS, SLIGHTLY DILATANT, BROWN SILT WITH GRAY STREAKS FROM 42.0-43.5 FT.		
23.0	BASAL RED TILL VERY DENSE GRAY BROWN SILT AND F.C. SAND, SOME F.C. GRAVEL, CLASTS AS GRAY LIMESTONE WITH OCCASIONAL RED BROWN SHALE FRAGMENTS, SLIGHTLY DILATANT, BROWN SILT WITH GRAY STREAKS FROM 42.0-43.5 FT.		
286.0			
28.0			
280.0			
34.0			
278.5			
35.5			
264.0			
50.0			
259.4			
54.6	END OF BORING		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY		MW12-6D
Job No. 853-3051	Made by KSO	Date 9-17-86
Ref.	Checked DSM	Sheet 2 of 2
	Reviewed JFC	

BELOW GROUND SURFACE; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Φ ALUMINUM PROTECTIVE CASING FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL. A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. LEL PROJECT CWM/WELLS/NOBEL CITY BORING NO. MW12-75
 DEPTH HOLE 22.0 FT. DEPTH WL. 6.8 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 73° TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 313.5 FT
 WEATHER CLOUDY DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL
 COORDINATES N 10908.46 E 9455.38 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 2:35 / 18-14-86
 LOCATION ~50 EAST OF MW12-70 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 3:55 / 18-14-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC/ ATT	
313.5	GROUND SURFACE							GROUND SURFACE
0.0	BROWN AND GRAY FC GRAVEL AND F-C SAND, TRACE CLAYEY SILT	GW	-	-	AS	-	-	FILL NO SAMPLE TAKEN FROM 0.0 TO 4.0 FT. DUE TO ROAD FILL
309.4			-	-	AS	-	-	
4.1	COMPACT BROWN TO RED BROWN F-C SAND AND TO SOME SILT, SOME TO TRACE F-C GRAVEL OCCASIONAL GRAY SHALEY LIMESTONE FRAGMENT AT 12.6 FT. TURNING TO DENSE TO COMPACT BROWN SILT AND F-C SAND LITTLE TO TRACE F GRAVEL, DILATANT	SM	15	1 3	DO	10-8-7-8	24/24	UPPER ALLUVIUM SLIGHT ODOR (ORGANIC DECAY ?)
			14	4 5	DO	7-8-6-5	17/24	
			14	6	DO	6-7-7-10	12/24	
			23	7 8	DO	8-10-13-26	22/24	
		ML	77	9 10	DO	42-39-38-45	26/24	
298.7			20	11 12	DO	10-9-11-25	18/24	UPPER CLAY TILL
14.8	FIRM TO STIFF BROWN TO GRAY BROWN SILTY CLAY TO CLAYEY SILT, SOME F-C SAND, TRACE GRAVEL, PREDOMINANTLY GRAY SUBROUNDED LIMESTONE CLAST WITH OCCASIONAL RED BROWN SHALE FRAGMENT	CL	43	13	DO	39-25-18-17	22/24	
295.8			16	14	DO	4-4-14-12	21/24	
18.0	SOFT TO FIRM GRAY CLAY, SOME FROM SAND, FROM 18.0 TO 18.5 INTERLAYED WITH F SAND LENSES	CL	26	15	DO	6-13-13-18	18/24	GLACIOLACUSTRINE CLAY
293.5								
20.0	COMPACT GRAY BROWN SILT AND F-C SAND LITTLE F-C GRAVEL DILATANT, GRAY CLAY LENSÉ AT 20.2 FT., CLASTS PREDOMINANTLY SUBROUNDED LIMESTONE FRAGMENTS	ML						MIDDLE SILT TILL
291.5								END OF BORING
22.0	END OF BORING							

MONITORING WELL INSTALLATION LOG

JOB NO. BS3-3051 PROJECT CWM/ WELLS/ MODEL CITY WELL NO. MW12-75 SHEET 1 OF 2
 GA INSP. LEL DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" GROUND ELEV. 313.5 WATER DEPTH _____
 WEATHER HAZY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 315.3 DATE/TIME _____
 TEMP. 63° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 4:15 8-14-86 COMPLETED 5:25 8-14-
 LOCATION/COORDINATES 5.0 FT. EAST OF MW12-75 / N 10908.46 E 9455.38 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 10.0 l.f. WELL SCREEN 2.0 in dia. 10.4 l.f. BENTONITE SEAL PELLETS 4.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE FLUSH TEPLOX VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 13.4 L.F. 220 LBS.
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
(FT.)			AUGERED TO 20.0 FT.
313.5	GROUND SURFACE		ADDED BENTONITE PELLETS TO 19.2 FT. IN ORDER TO BE SURE TO OBTAIN AND SAMPLE ONLY WATER ABOVE THE THIN LAYER OF GLACIOLACUSTRINE CLAY.
0.0	FILL BROWN AND GRAY F-C GRAVEL AND F-C SAND, TRACE CLAYEY SILT		ADDED #1-Q SAND THROUGH 4 1/4" (I.D.) AUGERS TO 5.8 FT. BELOW GROUND SURFACE (SAMPLE TAKEN); INSTALLED WELL PIPE (1-10' SCREEN 1-10' RISER) 1.8 FT. STICKUP.
309.4	UPPER ALLUVIUM COMPACT BROWN TO RED BROWN F-C SAND AND TO SOME SILT, SOME TO TRACE F-C GRAVEL OCCASIONAL GRAY SHALEY LIMESTONE FRAGMENT. AT 12.6 FT, TURNING TO DENSE TO COMPACT BROWN SILT AND F-C SAND LITTLE TO TRACE F GRAVEL, DILUTANT		ADDED BENTONITE PELLETS TO 1.8 FT. BELOW GROUND SURFACE; REMOVED AUGER.
4.1	UPPER CLAY TILL FIRM TO STIFF BROWN TO GRAY BROWN SILTY CLAY TO CLAYEY SILT SOME F-C SAND, TRACE GRAVEL PREDOMINANTLY, GRAY SUBUNDUND LIMESTONE CLAYEY WITH OCCASIONAL RED BROWN SHALE FRAGMENT.		MIXED CEMENT GROUT; FILLED TO GROUND SURFACE.
14.8	GLACIOLACUSTRINE CLAY SOFT TO FIRM GRAY CLAY SOME P-M SAND, FROM 18.0-18.5 FT. INTERLAYERED WITH F SAND LENSES		PUT ON 8" Φ ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE;
298.7	MIDDLE SILT TILL COMPACT GRAY BROWN SILT AND F-C SAND LITTLE F-C GRAVEL, DILUTANT, GRAY CLAY LENSE AT 20.2 FT, CLASTS PREDOMINANTLY SUBUNDUND LIMESTONE FRAGMENTS		(CONTINUED ON NEXT PAGE)
180			WELL DEVELOPMENT NOTES
293.5			
20.0			
291.5			
22.0	END OF BORING		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY		MW12-75
Job No. 853-3051	Made by LEL	Date 8-14-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

PROTECTIVE POSTS WERE PLACED AROUND WELL, A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED TO COMPLETE DEVELOPMENT AND FOR SUBSEQUENT SAMPLING.

Boring Log

JOB NO. 853-3051 GA. INSP. KSO PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-7D
 DEPTH HOLE 52.5 FT. DEPTH WL. 10.6 FT. DRILLING METHOD HOLLOW STEEL AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 60° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 313.8 FT.
 WEATHER CLEAR/PARTLY CLOUDY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL
 COORDINATES N10908.28 E9451.28 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 8:30 1986
 LOCATION ~5 FT. EAST OF MW12-7S WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 4:30 1986

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES			REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN. REC./ATT	
294.3 19.5	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-7S						INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 22.0 FT. AUGER TO 19.5 FT. NO SAMPLING
271.6 42.2	COMPACT TO VERY DENSE GRAY TO GRAY BROWN SILT AND TO SOME F-C SAND SOME TO LITTLE F-C GRAVEL CLASTS AS GRAY LIMESTONE FRAGMENTS, SLIGHTLY DILATANT OCCASIONAL LAYER OF VERY DENSE MULTICOLORED F-C SAND	ML	36	2	DO	13-17-19-2	MIDDLE SILT TILL
269.3			68	3	DO	21-30-38-30	AUGERED FROM 21.5 TO 22.0 FT. NO SAMPLING
			45	4	DO	17-19-26-30	F-C SAND LAYERS
			75	5	DO	30-35-40-30	FROM 19.5-19.6 FT.
			21*	6	DO	27-9-12-20*	FROM 24.0-24.3 FT.
			44*	7	DO	10-22-22-22*	FROM 26.0-26.6 FT.
			78*	8	DO	30-35-43-70*	FROM 30.0-30.1 FT.
			36*	9	DO	12-18-18-18*	FROM 40.0-40.1 FT.
			27*	10	DO	17-17-10-10*	
			36*	11	DO	11-22-14-18*	
263.8 50.0	SOFT TO FIRM GRAY CLAY, LITTLE TO SOME F-C SAND, OCCASIONAL THIN (< 1/4 INCH) RED BROWN SILT LENSES PRESENT	CL	11*	12	DO	7-6-5-5*	GLACIOLACUSTRINE CLAY
261.3			14*	13	DO	2-7-7-8*	GLACIOLACUSTRINE SILT/SAND
52.5			23	14	DO	7-13-10-10	LAYER OF COMPACT RED BROWN F-C SAND SOME GRAVEL AS SHALE FRAGMENTS FROM 44.5 TO 46.0 FT.
	DENSE TO VERY DENSE RED BROWN SILT AND TO SOME F-C SAND SOME F-C GRAVEL, CLASTS AS BLUE GRAY LIMESTONE AND RED BROWN SHALE FRAGMENTS	ML	41	25	DO	12-15-26-41	BASAL RED TILL
			2100	26	DO	20-25	
	END OF BORING						END OF BORING * NOTE: 300 LB. HAMMER WAS USED.

JOB NO. 853-3051

Golder Associates

CHECKED

DATE DRAWN

1 INCH = 5 FEET

MONITORING WELL INSTALLATION LOG

JOB NO. 853-3031 PROJECT CWM/WELLS/MODEL CITY WELL NO. MW12-7D SHEET 1 OF 2
 GA INSP. KSO DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 313.8 WATER DEPTH _____
 WEATHER 2 CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS COLLAR ELEV. 315.6 DATE/TIME _____
 TEMP. 50° F DRILL RIG ACKER AD-2 DRILLER GENOVESE STARTED 8:00 9-9-86 COMPLETED 8:30 9-11-86
 LOCATION/COORDINATES 50 FT. EAST OF MW12-7S N 10° 08' 28" E 9451.28 TIME / DATE _____

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 48.0 I.F. WELL SCREEN 2.0 in dia. 5.4 I.F. BENTONITE SEAL PELLETS 4.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIETUBE & WASH
 JOINT TYPE FLUSH TEPON VITON O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY. 7.5-LF
 GROUT QUANTITY 135 GAL CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIETUBE & WASH

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
313.8	GROUND SURFACE		AUGERED TO 19.6 FT WITH 12" (O.D.) AUGERS; GROUTED 10" Ø PVC CASING TO 19.6 FT. BELOW GROUND SURFACE (GROUT SAMPLE TAKEN);
0.0	FILL BROWN AND GRAY F-C GRAVEL AND F-C SAND, TRACE CLAY, SILT		AUGERED TO 52.5 FT. WITH 4 1/4" (I.D.) AUGERS; PULLED AUGERS; INSTALLED 6" TEMPORARY STEEL CASING; WASHED OUT - OPEN TO 52.5 FT. BELOW GROUND SURFACE; ADDED #4-Q SAND TO 52.0 FT.; INSTALLED WELL PIPE (1-5' SCREEN, 1-3' RISER, 1-5' RISER, 4-10' RISERS) 1.8 FT. STICKUP; TREMIED (WITH WATER) #1-Q SAND TO 45.0 FT. (TOOK SAMPLE); ADDED PELLETS TO 41.0 FT.; ADDED #4-Q SAND TO 40.5 FT.; MIXED GROUT 160 LBS BENTONITE/135 GAL H ₂ O; PULLED UP 6"
309.7	4.1 UPPER ALLUVIUM COMPACT BROWN TO RED BROWN F-C SAND AND TO SOME SILT, SOME TO TRACE F-C GRAVEL OCCASIONAL GRAY SHALE LESTONE FRAGMENT AT 12.6 FT. TURNING TO DENSE TO COMPACT BROWN SILT AND F-C SAND LITTLE TO TRACE F-C GRAVEL; DILUTANT		(CONTINUED ON NEXT PAGE)
299.0	14.8 UPPER CLAY TILL FIRM TO STIFF BROWN TO GRAY BROWN SILT CLAY TO GRAY SILT SOME F-C SAND, TRACE GRAVEL, PREDOMINANTLY GRAY SUBROUNDED LESTONE CLASTS WITH OCCASIONAL RED BROWN SHALE FRAGMENT		WELL DEVELOPMENT NOTES
295.8	18.0 GLACIOLACUSTRINE CLAY SOFT TO FIRM GRAY CLAY SOME F-C SAND, FROM 18.0-18.5 INTERLAYERED WITH F-C SAND LENSES		
294.3	19.5 MIDDLE SILT TILL COMPACT TO VERY DENSE GRAY TO GRAY BROWN SILT AND TO SOME F-C SAND SOME TO LITTLE F-C GRAVEL CLASTS AS GRAY LESTONE FRAGMENTS, SLIGHTLY DILUTANT OCCASIONAL LAYER OF VERY DENSE MULTICOLORED F-C SAND F-C SAND LAYERS FROM: 19.5-19.6 FT. 24.0-24.3 FT. 26.0-26.4 FT. 30.0-30.1 FT. 40.0-40.1 FT.		
271.6	42.2 GLACIOLACUSTRINE CLAY SOFT TO FIRM GRAY CLAY, LITTLE TO SOME F-C SAND, OCCASIONAL THIN (<1/4 INCH) RED BROWN SILT LENSES PRESENT		
269.3	44.5 GLACIOLACUSTRINE SILT/SAND COMPACT BROWN SILT SOME F-C SAND SATURATED, DILUTANT, SOFTY BECOMING BROWN SILT SOME F-C SAND SOME F-C GRAVEL LAYER OF COMPACT RED BROWN F-C SAND SOME GRAY SHALE FRAGMENTS FROM 22.3-44.0 FT.		
263.8	50.0 BASAL RED TILL DENSE TO VERY DENSE RED BROWN SILT AND TO SOME F-C SAND SOME F-C GRAVEL, CLASTS AS BLUE GRAY LESTONE AND RED BROWN SHALE FRAGMENT		
261.3	52.5 END OF BORING		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY MW12-7D		
Job No. 853-3051	Made by KSO	Date 9.11.86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

CASING; GROUTED TO 2FT. BELOW GROUND SURFACE; MIXED CEMENT
GROUT; GROUTED TO GROUND SURFACE; PUT ON 8" ϕ ALUMINUM
PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH
#4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR
DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A
CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND
NEW WEEP HOLES WERE PUT IN CASING. A WELL WIZARD WAS
INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. <u>853-3051</u>	GA. INSP. <u>SHB</u>	PROJECT <u>CWM/WELLS/MOORE CITY</u>	BORING NO. <u>MW12-85</u>
DEPTH HOLE <u>180 FT.</u>	DEPTH WL. <u>9.3 FT.</u>	DRILLING METHOD <u>HOLLOW STEM AUGERS 4 1/4 ID</u>	SHEET <u>1</u> OF <u>1</u>
TEMP <u>68°</u>	TIME WL. <u>9/23/86</u>	DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS, INC.</u>	SURFACE ELEV. <u>312.9 FT.</u>
WEATHER <u>CLOUDY</u>		DRILL RIG <u>CNE 55</u>	DRILLER <u>M. GAUDY</u> DATUM <u>MSL</u>
COORDINATES <u>N10910.76 E9648.43</u>		WT. SAMPLER HAMMER <u>140 LBS.</u>	DROP <u>30 IN.</u> STARTED <u>8:30</u> / <u>18-15-86</u>
LOCATION <u>8.0 FT. EAST OF MW12-BUD</u>		WT. CASING HAMMER <u>300 LBS.</u>	DROP <u>30 IN.</u> COMPLETED <u>9:25</u> / <u>18-15-86</u>

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT.	
312.9	GROUND SURFACE							GROUND SURFACE
310.9	ROADFILL - F-C SAND AND GRAVEL	SW	-	AS	-	-	-	FILL AUGERED 0.0-2.0 FT., NO SAMPLE
2.0	COMPACT GRAY BROWN AND RED BROWN MOTTLED CLAYEY SILT AND F TO C SAND SOME C GRAVEL. OXIDIZED, RUST, ORANGE AND YELLOW SAND AND SILT LENSES. TURNING AT 5.2 FT. TO COMPACT TO VERY DENSE. GRAY BROWN MOTTLED TURNING RED BROWN MOTTLED F-C GRAVEL AND F-C SAND TO F-C SAND AND GRAVEL, CLASTS AS BLUE GRAY LIMESTONE AND RED BROWN WEATHERED SHALE	ML	13	1	DO	13-7-6-8	11/24	UPPER ALLUVIUM SLIGHT ODOR (ORGANIC DECAY?) TO 6.0 FT.
			15	2	DO	7-8-7-13	16/24	
		SW	2100	4	DO	37-50-1	11/7	
		GW	85	5	DO	28-45-40-38	15/24	WEATHERED SHALE AT 6.6 FT., AUGERED 6.6 TO 8.0 FT., NO SAMPLING
10.3	STIFF BROWN GRAY SILTY CLAY SOME F TO C SAND LITTLE C GRAVEL TRACE BLUE GRAY SHALE OR LIMESTONE	CL	34	6	DO	12-24-10-9	14/24	UPPER CLAY TILL
12.0	FIRM BROWN GRAY SILTY CLAY SOME TO LITTLE F TO C SAND GRADING TO VERY SOFT GRAY CLAY LITTLE F-M SAND, STICKY PLASTIC	CL	22	8	DO	7-11-11-12	16/24	GLACIOLACUSTRINE CLAY 12.0-13.0 FT, MIXED WITH LENSES OF GRAY SILT AND F TO C BROWN SAND
			6	10	DO	1-2-4-4	15/24	
		CH	8	12	DO	2-3-5-5	25/24	14.0-14.2 FT., GRAY F. SAND
18.0	END OF BORING							END OF BORING

MONITORING WELL INSTALLATION LOG

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW12-85 SHEET 1 OF 2
 GA INSP. SHB DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 312.9 WATER DEPTH _____
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 314.8 DATE/TIME _____
 TEMP. 75° F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 8:30 8:15:26 COMPLETED 11:10 8:15
 LOCATION/COORDINATES 40 FT. EAST OF MW12-850 / N 10910.76; E 9648.43 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 8.0 in. WELL SCREEN 2.0 in dia. 12.8 in. BENTONITE SEAL PELLETS 3.1' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE FLUSH TEFLON 11" ON SLOT SIZE 0.006 INCH FILTER PACK QTY 14.9 L.F. 350 LBS.
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
		WELL CASING 1.9 FT. STICKUP	AUGERED TO 20.0 FT. ADDED #4-Q SAND TO 18.9 FT.
312.9	GROUND SURFACE		BELOW GROUND SURFACE (SAMPLE TAKEN); INSTALLED
0.0	ROADFILL - F-C SAND AND GRAVEL		WELL PIPE (1-2' SCREEN, 1-10' SCREEN, 1-3' RISER, 1-5' RISER) 1.9 FT. STICKUP; ADDED #1-Q SAND TO 5.8 FT. (SAMPLE TAKEN); ADDED BENTONITE PELLETS TO 2.0 FT. BELOW GROUND SURFACE. REMOVED AUGERS MIXED CEMENT GROUT. FILLED TO GROUND SURFACE PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILL INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND. WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED
310.9			
2.0	UPPER ALLUVIUM COMPACT GRAY BROWN AND RED BROWN MOTTLED CLAYEN SILT AND F-C SAND SOME C GRAVEL OXIDIZED, RUST, ORANGE AND YELLOW SAND AND SILT LENSES TURNING AT 5.2 FT. TO COMPACT TO VERY DENSE GRAY BROWN MOTTLED TURNING RED BROWN MOTTLED F-C GRAVEL AND F-C SAND TO F-C SAND AND GRAVEL CLASTS AS BLUE GRAY LIMESTONE AND RED BROWN WEATHERED SHALE. WEATHERED SHALE AT 6.0 FT.	2.0' 5.1' 5.8'	
302.6	UPPER CLAY TILL STIFF BROWN GRAY SILTY CLAY SOME F-C SAND LITTLE C GRAVEL TRACE BLUE GRAY SHALE OR LIMESTONE		
10.3			
300.6	GLAUCOLAUSTRINE CLAY FIRM BROWN GRAY SILTY CLAY SOME F-C SAND LITTLE C GRAVEL GRADING TO VERY SOFT GRAY CLAY LITTLE P-M SAND, SILTY PLASTIC. 12.0-13.0 FT. MIXED WITH LENSES OF GRAY SILT AND F-C BROWN SAND 14.0- 14.2 FT. GRAY F SAND.		
12.0			
294.9			
18.0	END OF BORING		

(CONTINUED ON NEXT PAGE)
 WELL DEVELOPMENT NOTES

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY		MW 12-85
Job No. 853-3051	Made by SHB	Date 8-15-86
Ref.	Checked DJM	Sheet 2 of 2
	Reviewed JFC	

AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN
CASING; A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED
TO COMPLETE DEVELOPMENT AND FOR SUBSEQUENT SAMPLING.

Boring Log

JOB NO. 853-3051 QA. INSP. DJM/LEL PROJECT CWM/WELLS/MODEL CITY BORING NO. MW12-BLD
 DEPTH HOLE 48.5 FT DEPTH WL. 9.3 FT DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 68° F TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOIL INVESTIGATIONS, INC. SURFACE ELEV. 312.8
 WEATHER SUNNY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM NGL
 COORDINATES N10909.81 E9043.78 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:00 / 8-28-86
 LOCATION 4.0 FT. EAST OF MW12-B5 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 2:20 / 9-3-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ ATT	
292.8	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-B5							INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 20.0 FT. AUGERED TO 20.0 FT. NO SAMPLING
289.9	VERY SOFT GRAY CLAY INTERLAYERED WITH GRAY AND RED BROWN SILT AND GRAY F TO M SAND LAYERS, STICKY	CH CL	4	1	DO	1-2-2-3	6/24	GLACIOLACUSTRINE CLAY
286.8	COMPACT TO DENSE GRAY BROWN TO BROWN SILT AND TO SOME F-C SAND SLIGHTLY DILATANT SUBROUNDED GRAY CLASTS	ML	20	4	DO	4-9-11-8	5/24	MIDDLE SILT TILL
279.8	SOFT TO FIRM GRAY TO GRAY BROWN SILTY CLAY SOME F-M SAND	CL	23	5	DO	9-14-9-7	9/24	GLACIOLACUSTRINE CLAY
272.6			9	7	DO	1-3-6-9	15/24	
270.6			6	9	DO	1-3-3-5	11/24	FROM 32.0 TO 33.0 FT. OCCASIONAL SILT LENSE
268.0	VERY DENSE TO COMPACT, GRAY AND BROWN F TO C SAND AND F-C GRAVEL TO F-C GRAVEL AND F-C SAND GRAVEL AS RED BROWN SHALE AND GRAY Limestone FRAGMENTS	SW GW	19	12	DO	4-7-12-20	24/24	GLACIOLACUSTRINE SILT/SAND
264.8			54	13	DO	12-22-32-36	7/24	CLEAN GRAVEL LAYER FROM 36.0 TO 38.0 FT.
262.2			92	14	DO	36-46-46-70	8/24	
260.6			23	15	DO	11-15-8-4*	6/24	
258.0	VERY SOFT TO SOFT GRAY CLAY SOME F TO C SAND TRACE C GRAVEL	CL	10	16	DO	9-5-5-4*	14/24	GLACIOLACUSTRINE CLAY
254.8	INTERLAYERED VERY SOFT GRAY CLAY AND RED BROWN F SAND OR SILT LAYERS, DILATANT	CL	12	18	DO	4-4-8-12*	16/24	GLACIOLACUSTRINE SILT/SAND (LAMINATED CLAYS)
252.2	DENSE TO VERY DENSE RED BROWN F SAND AND SILT SOME M TO C SAND TRACE TO LITTLE GRAVEL SLIGHTLY DILATANT	SP	59	22	DO	12-14-45-53*	18/24	GLACIOLACUSTRINE SILT/SAND
248.0			80	24	DO	24-35-45-45*	18/24	
244.2	VERY DENSE RED BROWN SILT AND F-M SAND TRACE F GRAVEL GRAY GREEN AND RED SHALE FRAGMENTS	ML	2100	26	DO	100-2-8-8	6/6	BASAL RED TILL
242.6	END OF BORING							END OF BORING
240.0								* NOTE: 300 LB HAMMER WAS USED.

JOB NO. 853-3051

Golder Associates

CHECKED _____

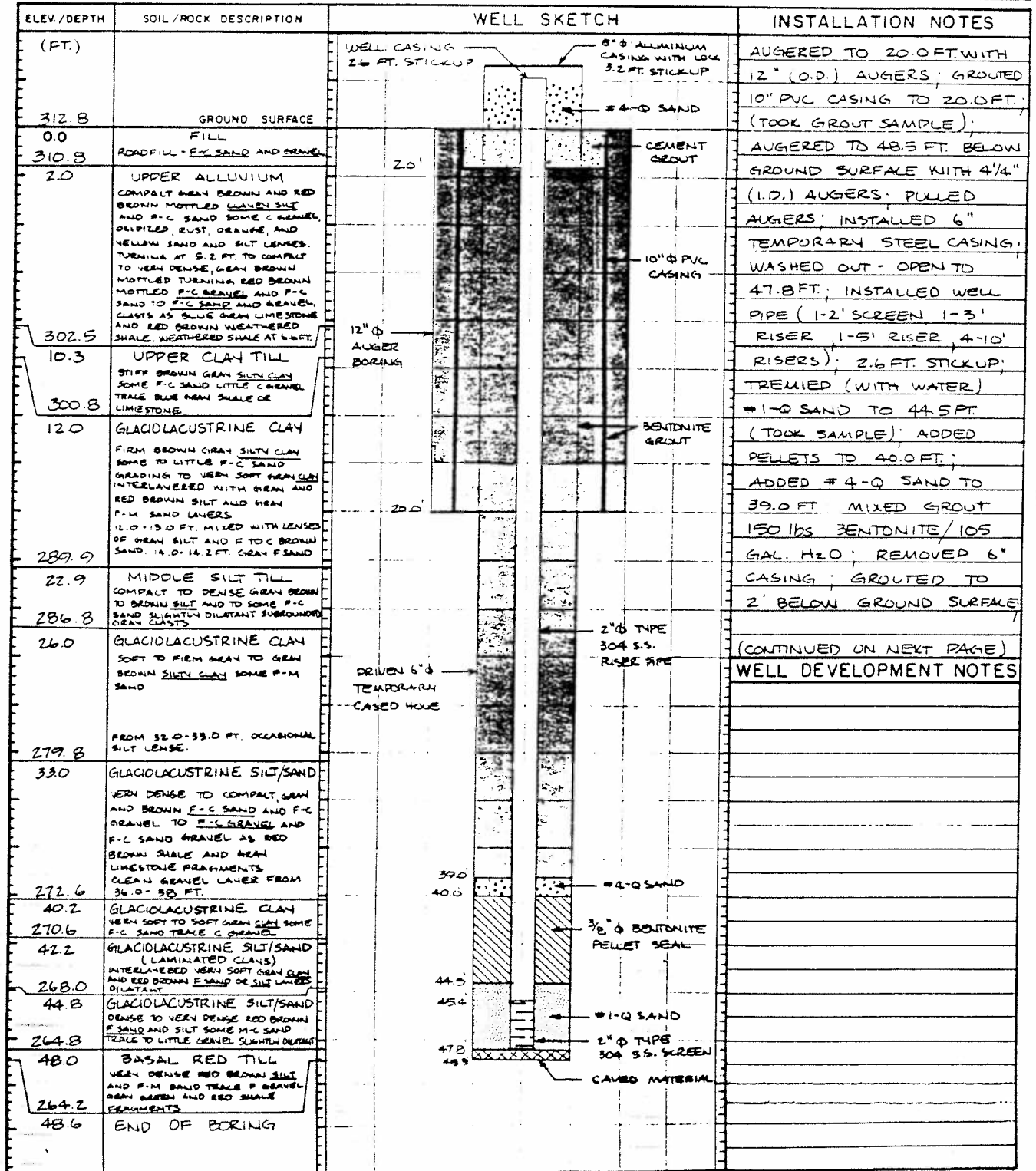
DATE DRAWN _____

MONITORING DOCUMENT NO. 2014-0232-0004ATION LOG

JOB NO. <u>853-3051</u>	PROJECT <u>CWM / WELLS / MODE CTN</u>	WELL NO. <u>MW12-BLD</u>	SHEET <u>1</u> OF <u>2</u>
GA INSP. <u>LEL</u>	DRILLING METHOD <u>HOLLOW STEM AUGERS - 4 1/4" I.D.</u>	GROUND ELEV. <u>312.8</u>	WATER DEPTH _____
WEATHER <u>PCLOUDY</u>	DRILLING COMPANY <u>EMPIRE SOILS INVESTIGATIONS INC.</u>	COLLAR ELEV. <u>315.4</u>	DATE/TIME _____
TEMP. <u>70°F</u>	DRILL RIG <u>ALKER AD-2</u>	DRILLER <u>GENOVESE</u>	STARTED <u>9:00 9/4/86</u>
LOCATION/COORDINATES <u>4.0 FT. WEST OF MW12-B5 AND 4.0 FT. EAST OF MW12-BUD / N 10° 29' 31" E 96° 43' 78"</u>	COMPLETED <u>12:00 9/4/86</u>	DATE _____	TIME _____

MATERIALS INVENTORY

WELL CASING <u>2.0</u> in dia. <u>48.0</u> ft.	WELL SCREEN <u>2.0</u> in dia. <u>2.4</u> ft.	BENTONITE SEAL <u>PELLETS 4.5' DEEP</u>
CASING TYPE <u>304 STAINLESS STEEL</u>	SCREEN TYPE <u>304 STAINLESS STEEL</u>	INSTALLATION METHOD <u>TREMIE TUBE & WASH</u>
JOINT TYPE <u>FLUSH TEFON VITON</u>	SLOT SIZE <u>0.006 INCH</u>	FILTER PACK QTY <u>3.3 L.F. ; 50 LBS</u>
JOINT TYPE <u>THREADED TAPE O-RINGS</u>	CENTRALIZERS <u>NONE</u>	FILTER PACK TYPE <u>#1-Q SAND</u>
GROUT QUANTITY <u>105 GAL.</u>	DRILLING MUD TYPE <u>NONE</u>	INSTALLATION METHOD <u>TREMIE TUBE & WASH</u>



**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY

MW12-BLD

Job No. 853-3051

Made by LEL

Date 9-4-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE RAISED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

MONITORING WELL INSTALLATION LOG

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW12-BUD SHEET 1 OF 2
 GA INSP. LEL/KSO DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 313.2 WATER DEPTH _____
 WEATHER P.CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 314.5 DATE/TIME _____
 TEMP. 70° F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 8:00 9.8.86 COMPLETED 5:00 9.8.86
 LOCATION/COORDINATES 40 FT. WEST OF MW12-BLD / N 109°10.38' E 9639.59' TIME / DATE _____

MATERIALS INVENTORY

WELL CASING 2.0 IN DIA. 35.0 IF WELL SCREEN 2.0 IN DIA. 7.8 IF BENTONITE SEAL PELLETS 4.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD TREMIE TUBE WASH
 JOINT TYPE ELBOW TEFLOW J-TON SLOTTED SIZE 0.006 INCH FILTER PACK QTY. 10.0 L.F. 200/10S
 GROUT QUANTITY 80 GAL CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE GROUT DRILLING MUD TYPE NONE INSTALLATION METHOD TREMIE TUBE WASH

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
			AUGERED TO 19.5 FT. WITH 12" (O.D.) AUGERS; GROUTED 10" DIA. CASING TO 19.5 FT. BELOW GROUND SURFACE (TOOK SAMPLE); AUGERED TO 42.0 FT. WITH 4 1/4" I.D. AUGERS; REMOVED AUGERS; INSTALLED 6" Ø TEMPORARY STEEL CASING; WASHED OUT - OPEN TO 42.0 FT.; ADDED #4-Q SAND TO 41.5 FT.; INSTALLED WELL PIPE (1-2' SCREEN 1-5' SCREEN 1-5' RISER, 3-10' RISERS) 1.3 FT. STICKUP; TREMIED #1-Q SAND (WITH WATER) TO 32.0 FT. BELOW GROUND SURFACE; ADDED BENTONITE PELLETS TO 28.0 FT.; ADDED #4-Q SAND TO 27.5 FT.; MIXED GROUT 100/10S; BENTONITE/BOGAL H2O; FILLED TO 2.0 FT. BELOW GROUND SURFACE; REMOVED CASING; MIXED CEMENT (CONTINUED ON NEXT PAGE) WELL DEVELOPMENT NOTES
313.2	GROUND SURFACE		
0.0	FILL		
311.2	ROADFILL - F-C SAND AND GRAVEL		
2.0	UPPER ALLUVIUM COMPACT GRAY BROWN AND RED BROWN MOTTLED CLAYEY SILT AND F-C SAND SOME C GRAVEL, OXIDIZED, RUST ORANGE, AND YELLOW SAND AND SILT LENSES, TURNING AT 5.2 FT. TO COMPACT TO VERY DENSE, GRAY BROWN MOTTLED F-C GRAVEL AND F-C SAND TO F-C SAND AND GRAVEL, CLASTS AS BLUE GRAY LIMESTONE AND RED BROWN WEATHERED SHALE, WEATHERED SAND AT 5.0 FT.		
302.9	UPPER CLAY TILL STIFF BROWN GRAY SILTY CLAY SOME F-C SAND LITTLE C GRAVEL, TRACE BLUE GRAY SHALE OR LIMESTONE		
10.3	GLACIOLACUSTRINE CLAY FIRM BROWN GRAY SILTY CLAY SOME TO LITTLE F-C SAND GRADING TO VERY SOFT GRAY CLAY INTERLAYERED WITH GRAY AND RED BROWN SILT AND GRAY F-M SAND LAYERS, 12.0-13.0 FT. MIXED WITH LENSES OF GRAY SILT AND F-C BROWN SAND, 14.0-16.2 FT. GRAY F SAND.		
290.3	MIDDLE SILT TILL COMPACT TO DENSE GRAY BROWN TO BROWN SILT AND TO SOME F-C SAND SLIGHTLY PLANT SUBROUND GRAY CLASTS		
287.2	GLACIOLACUSTRINE CLAY SOFT TO FIRM GRAY TO GRAY BROWN SILTY CLAY SOME F-M SAND TURNING AT 31.0 FT. TO VERY SOFT GRAY SILTY CLAY SOME F-M SAND, STICKY OCCASIONAL GRAY SILT AND SAND LAYER		
281.2	GLACIOLACUSTRINE SILT/SAND LOOSE TO COMPACT GRAY BROWN F SAND AND SILT, LITTLE M SAND TRACE CLAY, WET PLANTAIN TURNING TO VERY DENSE TO COMPACT, GRAY AND BROWN F-C SAND AND F-C GRAVEL TO F-C GRAVEL AND F-C SAND, GRAVEL AS RED BROWN SHALE AND GRAY LIMESTONE FRAGMENTS CLEAN GRAVEL LAYER, 36.0-38.0 FT.		
273.2	GLACIOLACUSTRINE CLAY VERY SOFT TO FIRM GRAY CLAY AND F-M SAND, OCCASIONAL RED BROWN AND GRAY SILT LAYER		
40.0	GLACIOLACUSTRINE SILT/SAND LOOSE RED BROWN F-C SAND, LITTLE SILT, TRACE F GRAVEL, WET		
269.2	GLACIOLACUSTRINE SILT/SAND LOOSE RED BROWN F-C SAND, LITTLE SILT, TRACE F GRAVEL, WET		
44.0	END OF SAMPLING		

Boring Log

NYSDEC OHMS Document No. 201469232-00043

JOB NO. 853-3051 GA. INSP. LEE PROJECT WATER WELLS MODEL CITY BORING NO. MW12-BUD

DEPTH HOLE 44.0 FT. DEPTH WL. 9.5 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1

TEMP 75°F TIME WL. 9-23-86 DRILLING COMPANY EMARE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 313.2 FT.

WEATHER CUNNY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL

COORDINATES N 10910.38 E 9639.59 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:25 / 9-

LOCATION 60 FT. WEST OF MW12-B5 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 2:15 / 9-5-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES			REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN. REC./ATT	
	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW12-B5 AND MW12-BLD						INSTALLED 10 INCH DIAM. PVC SURFACE CASING TO 20.0 FT., AUGERED TO 31.0 FT., NO SAMPLING
282.2							
31.0	VERY SOFT GRAY SILTY CLAY SOME F-M SAND, STICKY OCCASIONAL GRAY SILT AND SAND LAYER	CL	15	1	DO	3-6-9-12	GLACIOLACUSTRINE CLAY
281.2				2			GLACIOLACUSTRINE SILT/SAND
32.0	LOOSE TO COMPACT GRAY BROWN F SAND AND SILT, LITTLE U SAND TRACE CLAY WET DILATANT	SP					
280.2							AUGERED TO 40.0 FT., NO SAMPLING
33.0							
273.2							
40.0	VERY SOFT TO FIRM GRAY CLAY AND F TO M SAND OCCASIONAL RED BROWN AND GRAY SILT LAYER	CL	17	3	DO	6-7-10-9	GLACIOLACUSTRINE CLAY
271.0				4			
42.2	LOOSE RED BROWN F TO C SAND LITTLE SILT, TRACE F GRAVEL WET	SP	11	5	DO	3-4-7-6	GLACIOLACUSTRINE SILT/SAND
269.2				6			
44.0	END OF BORING						END OF BORING

JOB NO. 853-3051 **Golder Associates** CHECKED _____

SCALE 1 INCH = 5 FEET DATE DRAWN _____

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY

MW12-BUD

Job No. 853-3051

Made by LEL/KSO

Date 9.8.86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

GROUT; FILLED TO TOP OF 10" PVC CASING; PUT ON 8" ϕ ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING. A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. LEL PROJECT CWAI/WELLS/MODEL CITY BORING NO. P12-18
 DEPTH HOLE 14.0 FT. DEPTH WL. 9.0 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 67° F TIME WL. 9:23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. SURFACE ELEV. 312.1
 WEATHER SUNNY DRILL RIG CME 45 DRILLER J. LAMM DATUM USL
 COORDINATES N10399.47 E 7566.67 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 9:07 / 8-14-86
 LOCATION _____ WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 10:00 / 8-14-86

ELEV. DEPTH (FT)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
312.1	GROUND SURFACE							GROUND SURFACE
309.6	COMPACT BROWN F SAND AND SILT TRACE M SAND SATURATED DILATANT	SM	19	-	DO	8-9-10-30	0/24	UPPER ALLUVIUM 0.0-2.0 FT. NO RECOVERY STONE FOUND IN MOUTH OF SPOON
302.1	FIRM TO STIFF GRAY BROWN SILTY CLAY SOME F TO C SAND LITTLE F GRAVEL CLASTS AS GRAY SUBROUNDED DROPSTONES	CL	13	2	DO	7-6-7-8	17/24	UPPER CLAY TILL AT 4.0 FT. AND 6.5 FT. 0.5 INCH TAN SILT LENSE AT 6.7 FT. GRAY CLAY MIXTURE
299.3	COMPACT GRAY BROWN SILT TO CLAYEY SILT SOME F TO C SAND LITTLE F GRAVEL CLAST AS GRAY SUBROUNDED DROPSTONES	ML	26	6	DO	8-9-17-12	23/24	UPPER SILT TILL AT 10.0 FT. 0.5 INCH TAN SILT LENSE 12.1-12.7 FT. SAMPLE SPUT IN HALF VERTICALLY, ONE HALF FIRM BROWN SILTY CLAY SOME F TO C SAND, OTHER HALF CRUMBLY BROWN F SAND AND SILT
298.1	VERY SOFT GRAY CLAY, TRACE TO LITTLE F-M SAND	CL	27	9	DO	10-10-17-35	24/24	GLACIO-LACUSTRINE CLAY FROM 13.3-14.0 FT. LAYER OF DENSE BROWN AND RED BROWN SILT AND F-M SAND
14.0	END OF BORING							END OF BORING

JOB NO. 853-3051

Golder Associates

CHECKED _____

SCALE 1 INCH = 5 FEET

DATE DRAWN _____

INSIDE OF HMG Document No. 201269232-0043

JOB NO. 853-3091 PROJECT CWM / WELLS / MODEL CITY WELL NO. P12-15 SHEET 1 OF 2
GA INSP. LEL DRILLING METHOD HOLLOW STEM AUGERS - 4 1/2" ID GROUND ELEV. 312.1 WATER DEPTH _____
WEATHER Hazy DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 313.7 DATE/TIME _____
TEMP. 65° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 10:35 8/4/86 COMPLETED 11:30 8/4/86
LOCATION/COORDINATES N 10399.47 E 7566.67 TIME / DATE TIME / DATE

MATERIALS INVENTORY

WELL CASING <u>20</u> in dia <u>30</u> ft	WELL SCREEN <u>20</u> in dia <u>54</u> ft	BENTONITE SEAL <u>PELLETS 40' DEEP</u>
CASING TYPE <u>304 STAINLESS STEEL</u>	SCREEN TYPE <u>304 STAINLESS STEEL</u>	INSTALLATION METHOD <u>THROUGH AUGERS</u>
JOINT TYPE <u>FLUSH TIGHTEN TAPES WITH O-RINGS</u>	SLOT SIZE <u>0.006 INCH</u>	FILTER PACK QTY <u>75 L.F. ; 200lbs</u>
GROUT QUANTITY <u>NA</u>	CENTRALIZERS <u>NONE</u>	FILTER PACK TYPE <u>#1-Q SAND</u>
GROUT TYPE <u>NA</u>	DRILLING MUD TYPE <u>NONE</u>	INSTALLATION METHOD <u>THROUGH AUGERS</u>

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
312.1	GROUND SURFACE		AUGERED TO 12.5 FT; ADDED #1-Q SAND TO 11.8 FT BELOW GROUND SURFACE; INSTALLED WELL PIPE (1-5' SCREEN, 1-3' RISER, 1-5' RISER)
0.0	UPPER ALLUVIUM COMPACT BROWN F SAND AND SILT TRACE M SAND SATURATED, DILATANT		1-6 FT. STICKUP; ADDED #1-Q SAND TO 5.0 FT (TOOK SAMPLE); ADDED BENTONITE PELLETS TO 1.0 FT BELOW GROUND SURFACE; REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE;
309.6	UPPER CLAY TILL FIRM TO STIFF GRAY BROWN SILTY CLAY SOME P.T.O.C. SAND LITTLE F GRAVEL CLASTS AS GRAY SUBROUND PEDSTONES AT 4.0 FT. AND 6.5 FT. - 0.5 INCH TAN SILT LENSE, AT 6.7 FT. GRAY CLAY MIXTURE		PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE
2.5	UPPER CLAY TILL FIRM TO STIFF GRAY BROWN SILTY CLAY SOME P.T.O.C. SAND LITTLE F GRAVEL CLASTS AS GRAY SUBROUND PEDSTONES AT 4.0 FT. AND 6.5 FT. - 0.5 INCH TAN SILT LENSE, AT 6.7 FT. GRAY CLAY MIXTURE		(CONTINUED ON NEXT PAGE)
302.1	UPPER SILT TILL COMPACT GRAY BROWN SILT TO CLAYEY SILT SOME P.T.O.C. SAND LITTLE F GRAVEL CLAST AS GRAY SUBROUND PEDSTONES, AT 0.0 FT. 0.5 INCH TAN SILT LENSE AT 12.1-12.7 FT. SAND/SILT SPLIT IN HALF VERTICALLY, ONE HALF FIRM BROWN SILTY CLAY SOME P.C. SAND, OTHER HALF CRUMBLY BROWN F SAND AND SILT		WELL DEVELOPMENT NOTES
10.0	UPPER SILT TILL COMPACT GRAY BROWN SILT TO CLAYEY SILT SOME P.T.O.C. SAND LITTLE F GRAVEL CLAST AS GRAY SUBROUND PEDSTONES, AT 0.0 FT. 0.5 INCH TAN SILT LENSE AT 12.1-12.7 FT. SAND/SILT SPLIT IN HALF VERTICALLY, ONE HALF FIRM BROWN SILTY CLAY SOME P.C. SAND, OTHER HALF CRUMBLY BROWN F SAND AND SILT		
299.3	GLACIOFLUSTRINE CLAY VERY SOFT GRAY CLAY TRAIL TO LITTLE F-M SAND, FROM 13.5-14.0 FT. LAYER OF DENSE BROWN AND RED BROWN SILT AND F-M SAND.		
12.8	GLACIOFLUSTRINE CLAY VERY SOFT GRAY CLAY TRAIL TO LITTLE F-M SAND, FROM 13.5-14.0 FT. LAYER OF DENSE BROWN AND RED BROWN SILT AND F-M SAND.		
298.1	END OF BORING		
14.0	END OF BORING		

**Golder
Associates**

SUBJECT CWM/WELLS/MODEL CITY

P12-15

Job No. 853-3051
Ref.

Made by LEL
Checked DJM
Reviewed JFC

Date 8-14-86
Sheet 2 of 2

SITE AND NEW WEEP HOLES WERE PUT IN CASING ; A DEDICATED
STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPME

Boring Log

JOB NO. 853-3051 GA. INSP. PMS PROJECT CWM/WELLS/MODEL CITY BORING NO. P12-25
 DEPTH HOLE 19.0 FT. DEPTH WL. 4.6 DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 65° TIME WL. 9-23-86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 315.3
 WEATHER RAINY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N10534.15 E9932.35 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 4:30 / 9-10-86
 LOCATION _____ WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:00 / 9-11-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES			REC./ATT	REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.		
298.3	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG TB12-25							THIS BORING WAS LOCATED 15 FT. EAST OF TB12-25.
17.0	FIRM TO STIFF BROWN AND GRAY MOTTLED SILTY CLAY SOME F TO C SAND LITTLE SILT	CL	38	1	DO	4-13-25-28	13/24	GLACIOLACUSTRINE CLAY GRAY GRAVEL FRAGMENTS IN BOTTOM OF SPOON
296.3								
19.0	END OF BORING							END OF BORING

JOB NO. 853-3051 GA. INSP. SHB PROJECT CWM/WELLS/MODEL CITY BORING NO. TB12-25
 DEPTH HOLE 20.0 FT. DEPTH WL. — DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 80° TIME WL. — DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. ~313.5
 WEATHER SUNNY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES — WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 4:05 / 8-13-86
 LOCATION ~15 FT. WEST OF P12-25 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:25 / 8-14-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ ATT	
313.5	GROUND SURFACE							GROUND SURFACE
0.0								
311.5	COARSE GRAVEL (ROADFILL)	GW	—	—	AS	—	—	AUGERED 0.0-2.0 FT., NO SAMPLE TAKEN DUE TO ROADFILL
2.0	VERY STIFF BROWN MOTTLED CLAYEY SILT SOME F TO C SAND TRACE F GRAVEL GRAY WEATHERING ALONG VERTICAL FRACTURES AND JOINTS, CLASTS AS RED BROWN SHALE AND GRAY LIMESTONE	CL	21	1	DO	8-10-11-13	15/24	UPPER CLAY TILL
308.5			24	2	DO	9-13-11-13	23/24	
2.0			7100	4	DO	15-85-50-1	15/13	UPPER SILT TILL AUGERED 7.1 TO 8.0 FT., NO SAMPLE TAKEN DUE TO ROADFILL
306.5								
3.0	COMPACT TO VERY DENSE BROWN TO GRAY BROWN SILT TO CLAYEY SILT AND TO SOME F TO C SAND SOME C GRAVEL CLASTS GRAY SUBROUNDED DROP STONES	ML	33	5	DO	19-21-12-10	10/24	8.0-8.5 FEET, LARGE PIECES OF SHALE, SATURATED, DILATANT.
			23	7	DO	8-13-10-12	9/24	8.5-8.8 FEET, SOFT GRAY BROWN SILTY CLAY, FOLLOWED BY DRY TAN SILT LENSE
			42	9	DO	15-20-22-19	4/24	
297.5			19	10	DO	4-8-11-13	20/24	
16.0	SOFT TO FIRM BROWN GRAY SILTY CLAY SOME F TO C SAND SOME C GRAVEL CLASTS PREDOMINANTLY GRAY SUBROUNDED DROP STONES WITH OCCASIONAL RED BROWN SHALEY FRAGMENT	CL	24	11	DO	5-12-12-15	17/24	GLACIOLACUSTRINE CLAY 16.0-18.0 FT. OCCASIONAL TAN SILT LENSE PRESENT. DRY CRUMBL. 18.0-20.0 FT. OCCASIONAL GRAY AND BROWN SAND LENSES PRESENT
293.5			14	12	DO	2-6-8-10	24/24	
20.0	END OF BORING							END OF BORING

MONITORING WELL INSTALLATION LOG

NYSDEC O&MS Document No. 201469232-00043

JOB NO. 853-3051 PROJECT CWM/WELLS/ MODEL CITY WELL NO. P12-25 SHEET 1 OF 2
 GA INSP. PMS DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" I.D. GROUND ELEV. 315.3 WATER DEPTH _____
 WEATHER RAIN DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 317.7 DATE/TIME _____
 TEMP. 65° F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 9:00 9:11:56 COMPLETED 10:10 9:11:56
 LOCATION/COORDINATES N 10534.15 ; E 9932.35 TIME / DATE TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in dia. 10.0 I.D. WELL SCREEN 2.0 in dia. 10.4 I.D. BENTONITE SEAL PELLETS 4.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE FLUSH TEFLO/VITON SLOT SIZE 0.006 INCH FILTER PACK QTY 130 L.F. 370 LBS
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH (FT.)	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
315.3	GROUND SURFACE		AUGERED TO 19.0 FT; ADDED #4-Q SAND TO 18.0 FT (SAMPLE TAKEN); INSTALLED WELL PIPE (1-10' SCREEN, 1-10' RISER) 2.4 FT STICKUP, ADDED #1-Q SAND TO 6.0 FT BELOW GROUND SURFACE; ADDED BENTONITE PELLETS TO 2.0 FT; REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" Φ PROTECTIVE CASING; FILLED INTERIOR OF PROTECTIVE CASING WITH #4-Q SAND; WEED HOLES WERE PUT IN PROTECTIVE CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL; A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEED HOLES WERE PUT IN CASING; A
0.0	COARSE GRAVEL (ROADFILL)		
313.3			
2.0	UPPER CLAY TILL VERY STIFF BROWN MOTTLED SILTY CLAY SOME F-C SAND TRACE & GRAVEL GRAIN WEATHERING ALONG VERTICAL FRACTURES AND JOINTS, CLASTS AS RED BROWN SHALE AND GRAY LIMESTONE		
310.3			
5.0	UPPER SILT TILL COMPACT TO VERY DENSE BROWN TO GRAY BROWN SILT TO CLAYEN SILT AND TO SOME F-TO-C SAND SOME C GRAVEL CLASTS AS GRAY SUBROUND DEEPSTONES 0.0-0.5 FT, LARGE PIECES OF SHALE, SATURATED, PLIANT 0.5-0.8 FT, SOFT GRAY BROWN SILTY CLAY, FOLLOWED BY DRY TAN SILT LENS		
299.3			
16.0	GLACIOLACUSTRINE CLAY WET TO STIFF BROWN AND GRAY MOTTLED SILTY CLAY SOME F-C SAND LITTLE SILT, GRAY GRAVEL FRAGMENTS IN BOTTOM OF SPOON		(CONTINUED ON NEXT PAGE)
296.3			WELL DEVELOPMENT NOTES
19.0	END OF BORING		

**Golder
Associates**

NYSDEC

OHMS Document No. 201469232-00043

SUBJECT CWM/WELLS/MODEL CITY

PIZ-ZS

Job No. 853-3051

Made by PMS

Date 9-11-86

Ref.

Checked DJM

Sheet 2 of

Reviewed JFC

DEDICATED STAINLESS STEEL BAILER WAS INSTALLED FOR
DEVELOPMENT AND FOR SUBSEQUENT SAMPLING.

Boring Log

JOB NO. 853-3051 QA. INSP. G.R. PROJECT CWM/WEIS WIDE CITY BORING NO. MWZ-2
 DEPTH HOLE 63.4 FT. NYSDEC OHMS Document No. 201469232-00043 DEPTH WL 145.0 FT. DRILLING METHOD PODSW STEM AUGERS-4 1/4" ID SHEET 1 OF 1
 TEMP 59°F TIME WL 9/22/86 DRILLING COMPANY EUROPE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 324.2
 WEATHER COOL/WINDY DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N 86° 56.56' E 9176.53 WT. SAMPLER HAMMER 140 LBS DROP 30 IN. STARTED 10:10 / 16
 LOCATION 3.0 FT. E. OF MWZ-23 WT. CASING HAMMER 300 LBS DROP 30 IN. COMPLETED 9:00 / 16
 LOCATION 3.3 FT. W. OF MWZ-20D

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ ATT	
306.2 28.0	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION, ALSO SEE BORING LOG MWZ-23							INSTALLED 10 IN. DIAM. PV SURFACE CASING TO 19.0 AUGERED TO 28.0 FT. NO SAMPLING
294.1 40.1	SOFT, GRAY, CLAY, SOME F TO M SAND, LITTLE SILT	CL	12	1	DO	4-5-7-8	14/24	GLACIOLACUSTRINE CL.
			27	2	DO	6-10-17-27	22/24	31.1-32.1 FT., FIRM GRAY BROWN SILTY CLAY
			50	4	DO	26-24-26-30	24/24	SOME F TO M SAND
			56	7	DO	19-26-30-34	20/24	34.2-36.2 FT., DENSE GR. BROWN AND RED BROWN CLAYEY SILT SOME M
			35	8	DO	24-16-18-16	24/24	C SAND GRAY SAND SATURATED
			17	10	DO	3-4-13-12	24/24	38.0-39.5 FT., SOME SMALL SILT LENSES
276.2 58.0	COMPACT TO VERY DENSE, BROWN TO GRAY BROWN, F SAND, SOME SILT, LITTLE M TO C SAND, MOIST	ML	24	12	DO	7-10-14-14	16/24	GLACIOLACUSTRINE SILT
			28	14	DO	8-11-17-19	22/24	40.3-43.0 FT., COMPAC GRAY SILT TO GRAY BROWN CLAYEY SILT
			47	15	DO	18-26-21-31	4/24	48.0-55.6 FT., LITTLE GRAVEL SHALE FRAGMEN
			91	16	DO	27-53-38-45	24/24	
			82	17	DO	4-26-56-44	22/24	
			170	18	DO	33-70-100-18	18/18	51.5-52.0 FT., NO RECOVER
272.2 62.0	VERY DENSE, RED BROWN, SILT, AND F-C SAND, SOME F GRAVEL, RED BROWN SHALEY FRAGMENTS	ML	185	19	DO	131-85-100-3	18/18	53.5-54.5 FT., NO RECOVER
			80	20	DO	-26-54-70	20/24	56.0-56.5 FT., NO RECOVER
			>100	21	DO	58-100-3	24/11	
270.2 63.4	HARD, RED BROWN SHALE, AND GREEN GRAY LIMESTONE		>100	23	DO	60-100-2	10/10	58.0-58.7 FT., NO RECOVER, 60.0-60.7 FT., NO RECOVER
				24	DO	125/5	6/6	
				25	DO	200/1.4	17/17	WEATHERED BEDROCK (QUEENSTON FORMATION)
	END OF SAMPLING AUGERED TO 62.8 FT.							END OF SAMPLING
								INSTALLED MWZ-20D SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED DJM

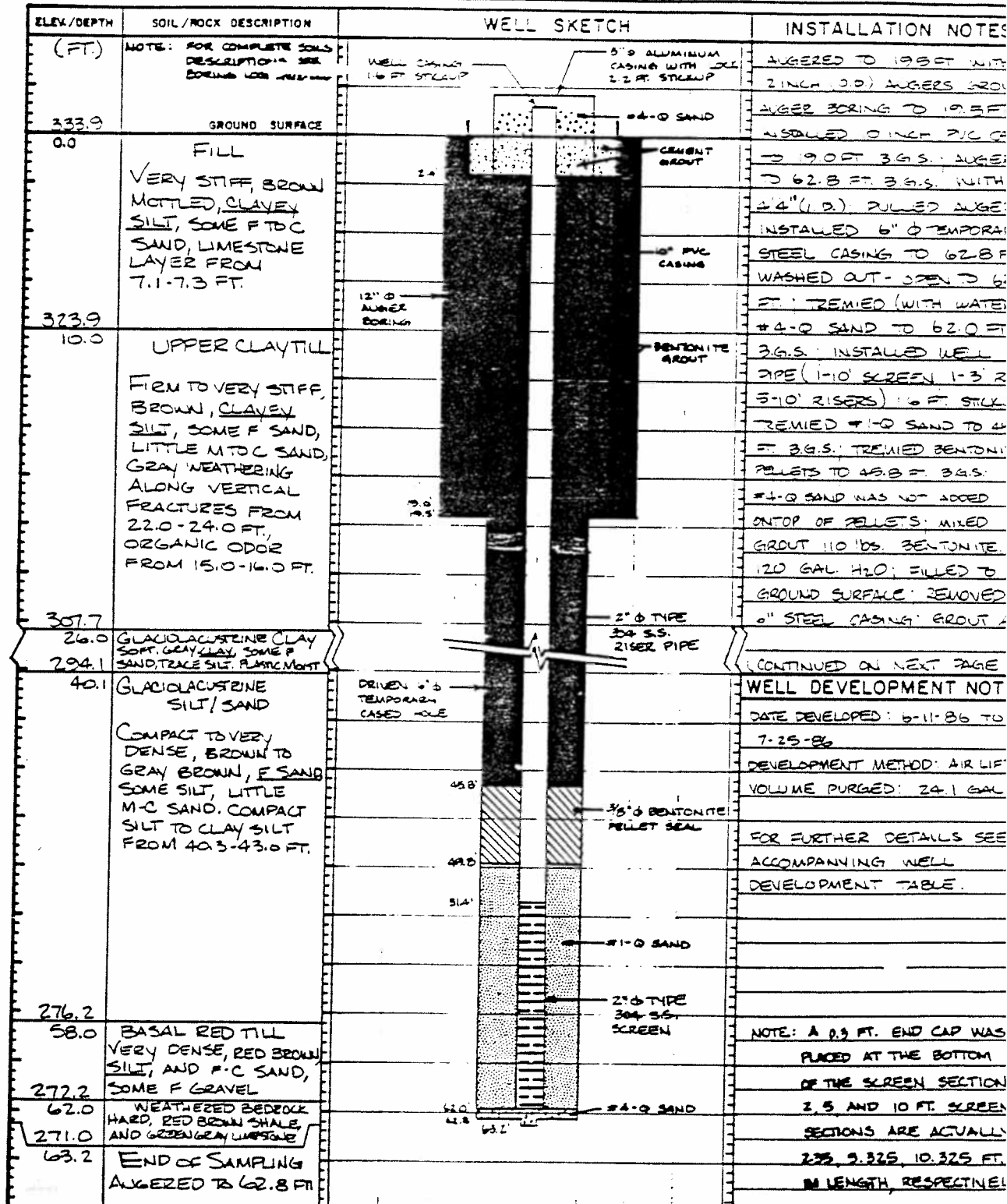
DATE DRAWN 12/13/86

MONITORING WELL INSTALLATION LOG

JOB NO. 853-3051 PROJECT CWM / WELLS / MODE WELL NO. MW2-26D SHEET 1 OF 1
 GA INSP. GR NYSDEC OHMS Document No. 201469232-00043 GROUND ELEV. 333.9 WATER DEPTH 12.8
 WEATHER WINDY DRILLING METHOD HOLLOW STEM AUGER 25' 4 1/4" ID COLLAR ELEV. 335.51 DATE/TIME 9-22-
 TEMP. 60° F DRILL RIG CME 95 DRILLER M. GAUDY STARTED 3:20 9-22-86 COMPLETED 11:30 9-22-86
 LOCATION/COORDINATES 5.0 FT. EAST OF MW2-25 55.5' WEST OF MW2-200 / N 84° 26' 56" E 9176.53

MATERIALS INVENTORY

WELL CASING 2.0 IN. DIA. 53.0 L.F. WELL SCREEN 2.0 IN. DIA. 10.6 L.F. BENTONITE SEAL PELLETS 40' DE
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD REMI-73E 1.2
 JOINT TYPE FLARED TEFLOON VITON SLOT SIZE 0.006 INCH FILTER PACK QTY 130 LBS 275
 GROUT QUANTITY 120 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND
 GROUT TYPE BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD REMI-73E 1.2



JOB NO. 853-3051

Golder Associates

CHECKED DJM

SCALE 1 INCH = 5 FEET

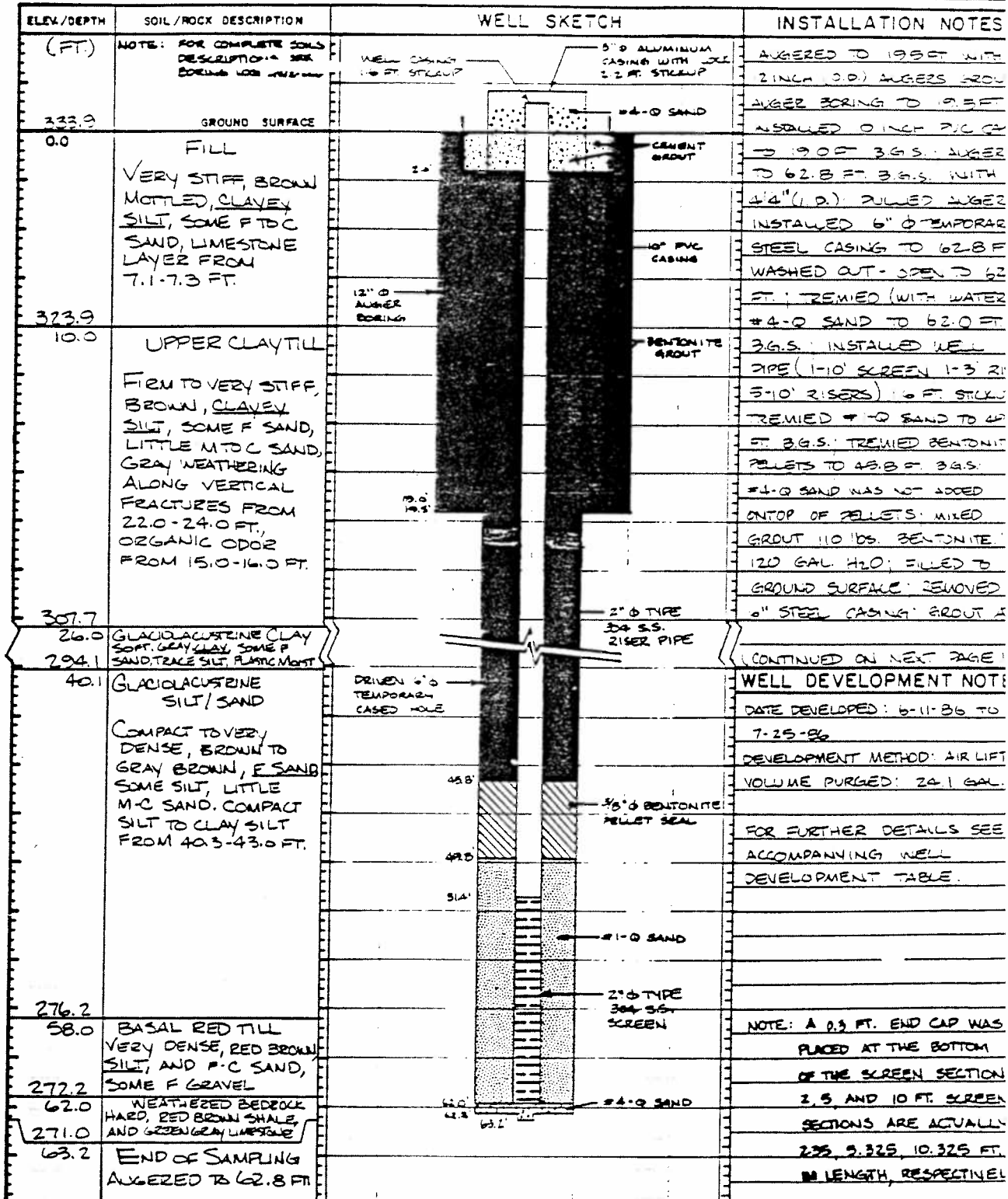
DATE DRAWN 12-11-86

MONITORING WELL INSTALLATION LOG

JOB NO. 853-3051 PROJECT SWAMP WELLS / PROJECT NO. 201469232-00043 WELL NO. MW2-2LD SHEET 1 OF 1
 GA INSP. GR DRILLING METHOD HOLLOW STEM AUGERS - 3 1/4" ID GROUND ELEV. 333.9 FT WATER DEPTH 2.2
 WEATHER WINDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS INC. COLLAR ELEV. 335.51 FT DATE/TIME 9-23-11
 TEMP. 60° F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 3:30 6-2-86 COMPLETED 11:44 6-4
 LOCATION/COORDINATES 5.0 FT. EAST OF MW2-2S 55 FT. WEST OF MW1-2UD / N 24° 36' 56" E 9176.53 TIME 1:03

MATERIALS INVENTORY

WELL CASING 2.0 IN. DIA. 53.0 FT. WELL SCREEN 2.0 IN. DIA. 10.6 FT. BENTONITE SEAL PELLETS 40' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD REMIED-33 IN. H
 JOINT TYPE FLUSH TEPLOX VITON TAPE JOINTS SLOT SIZE 2.006 INCH FILTER PACK QTY 13.06 FT 275 LB
 GROUT QUANTITY 120 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND
 GROUT TYPE BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD REMIED-33 IN. H



JOB NO. 853-3051

Golder Associates

CHECKED DJM

SCALE 1 INCH = 5 FEET

DATE DRAWN 12-11-86

Golder Associates

NYSDEC O&MS Document No. 20146924200049

SUBJECT CWM/WELLS/MODEL CITY MW2-2LD

Job No. 853-3051

Made by GR

Date 6-4-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

2.0 FT. B.G.S.; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE;
PUT ON 8" ϕ ALUMINUM PROTECTIVE CASING; FILLED INTERIOR
CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN CASING FOR
DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL; A CONCRETE
PAD WAS LATER PUT AROUND WELL BY THE SITE AND NEW WEEP
HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED
SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INSP. G.R. PROJECT CWM/WELLS/MODEL CITY BORING NO. MW2-2
 DEPTH HOLE 50.3 FT. NYSDEC OHMS Document No. 201469232-00043 DRILLING METHOD DOWN-STEM AUGERS-4 1/4 ID SHEET 1 OF 1
 TEMP 78° F TIME WL. 9/22/86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 334
 WEATHER CLEAR DRILL RIG CME 55 DRILLER M. GAUDY DATUM MSL
 COORDINATES N 86° 57.54' E 9182.87 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 1:00 PM
 LOCATION 25.5 FT. EAST OF MW2-2LD WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 1:00 PM
10.5 FT. WEST OF MW2-25

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ATT	
298.3 36.0	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW2-25 AND MW2-2LD							INSTALLED 10 INCH DIA PVC SURFACE CASING TO 20.0 FT. AUGERED TO 36.0 FT, NO SAMPLING
294.3 40.0	SOFT GRAY CLAY TRACE F SAND	CL	28	1	DO	10-17-11-10	20/24	GLACIOLACUSTRINE C 36.0-36.9 FT., COMPACT & BROWN SILT AND F SAND
294.3 40.0			14	3	DO	6-7-7-11	24/24	36.0-40.0 FT. FIRM BROWN LENSES, SCATTERED THREE SAMPLES
290.3 44.0	COMPACT GRAY BROWN AND BROWN F SAND SOME SILT CLAY LENSES	SM	20	4	DO	5-8-12-14	6/24	GLACIOLACUSTRINE SILT/CLAY 42.0-43.5 FT., SOFT GR
290.3 44.0			42	5	DO	15-20-22-22	24/24	CLAY SOME F TO C SA
	END OF SAMPLING, AUGERED BOREHOLE TO 50.3 FT. FOR INSTALLATION OF MW2-2UD							END OF SAMPLING AUGERED BOREHOLE TO 50.3 FT. FOR INSTALLATION OF MW2-2UD INSTALLED MW2-2UD SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

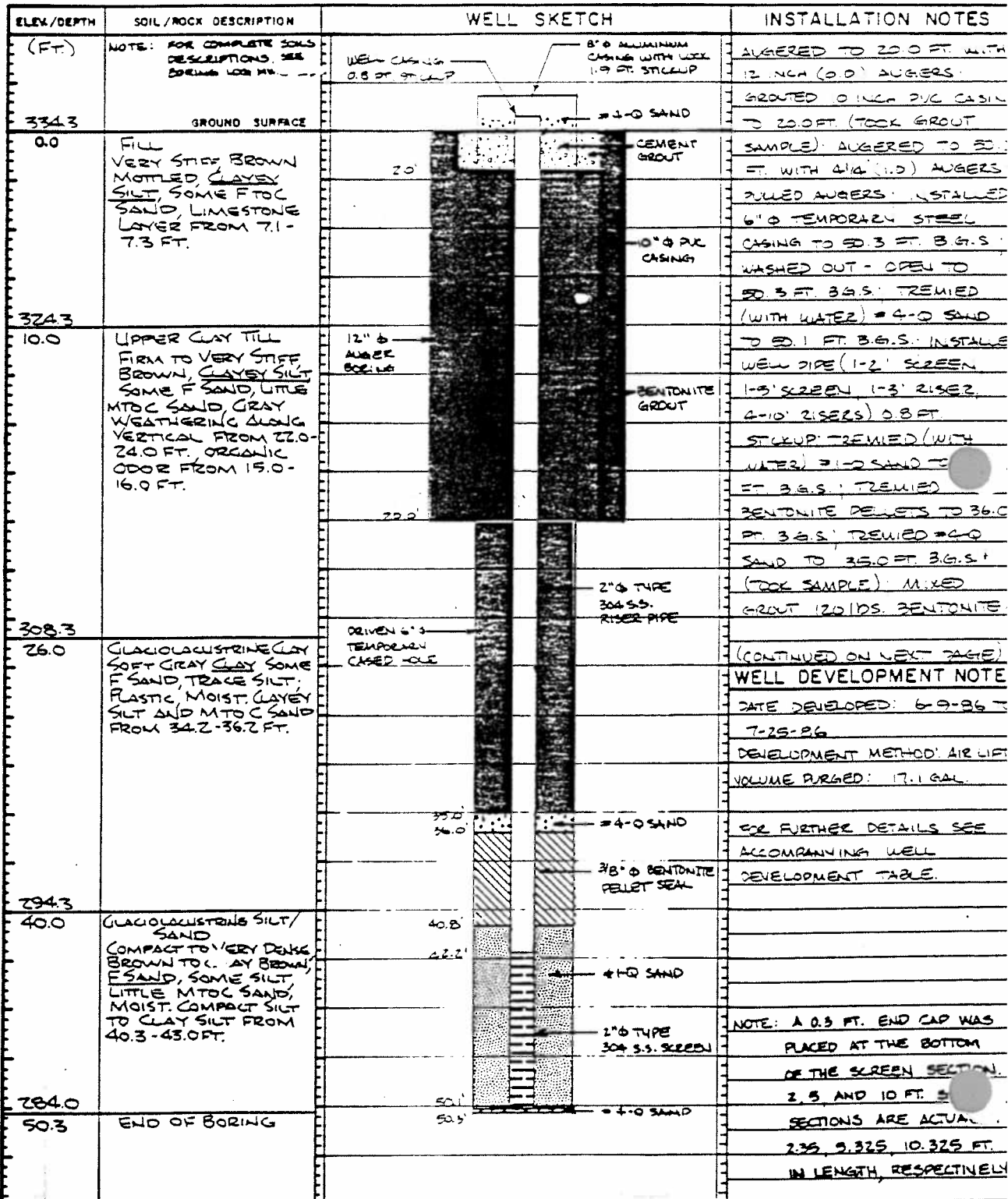
CHECKED DJM

DATE DRAWN 12/13/86

JOB NO. 853-3051 PROJECT CNM/WELLS/ MODEL 2-7 WELL NO. MW 2-2UD SHEET 1 OF 2
 QA INSP. GR/ JEL DRIVING METHOD DRILLING NO. 201369292-00049 GROUND ELEV. 334.3 FT. WATER DEPTH 20.12 FT.
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOIL INVESTIGATIONS, INC. COLLAR ELEV. 335.10 FT. DATE/TIME 9-22-86
 TEMP. 60°F DRILL RIG CME 55 DRILLER M. GAUDY STARTED 2:30 6:58 COMPLETED 9:30 6:68
 LOCATION/COORDINATES 9.5 FT. EAST OF MW 2-2UD N 36.5° E 9182.87 TIME / DATE TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 IN. DIA. 43.0 I.D. WELL SCREEN 2.0 IN. DIA. 7.9 I.D. BENTONITE SEAL PELLETS 4.8' 2'
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD REIN. TUBE WASH.
 JOINT TYPE PUSH TIGHTEN WITH O-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 250 LBS. 200 IDS
 GROUT QUANTITY 30 GAL. CENTRALIZERS NONE FILTER PACK TYPE #1-0 SAND
 GROUT TYPE BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD REIN. TUBE WASH.



Golder Associates

NYSDEC OHMS Document No. 20146933-00049

SUBJECT GWM/WELL 6/MODEL CITY MW2-2UD

Job No. 853-3051

Ref.

Made by GR/LEL

Checked DJM

Reviewed JFC

Date 6-6-86

Sheet 2 of 2

80 GAL. H₂O; FILLED TO GROUND SURFACE; REMOVED 6" STEEL CASING; GROUT AT 2.0 FT. B.G.S.; MIXED CEMENT GROUT. FILLED TO GROUND SURFACE; PUT ON 8" Ø ALUMINUM PROTECTIVE CASING; FILL INTERIOR OF CASING WITH #4-0 SAND; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL. A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

JOB NO. 853-3051 GA. INSP. HMS PROJECT CWM / WELLS / MODEL CITY BORING NO. MW3-1
 DEPTH HOLE 300 FT DEPTH WL. 11.79 FT DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1
 TEMP 65°F NYSDEC O&MS Document No. 201469232-09043 DRILLING COMPANY SALES SOILS INVESTIGATIONS SURFACE ELEV. 334.9
 WEATHER PARTLY CLOUDY DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL
 COORDINATES N 84° 49' E 9374.90 WT. SAMPLER HAMMER 140 LBS DROP 30 IN STARTED 8:40 / 6/1
 LOCATION 40 FT. E OF MW3-10 WT. CASING HAMMER 300 LBS DROP 30 IN COMPLETED 11:16

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ ATT.	
334.4	GROUND SURFACE							GROUND SURFACE
0.0	COARSE GRAVEL (ROADFILL)	GW				NO SAMPLE ROAD FILL	-	NO SAMPLE FROM 0.0-2.0
2.0	STIFF, DARK BROWN, CLAYEY SILT TO SILTY CLAY, SOME F TO C SAND, LITTLE GRAVEL	CL	21	1	DO	6-9-12-14	24/24	SILT LENSES 2 IN. THICK AT 3.0 FT., 4.0 FT., AND 5.8 FT.
			24	2	DO	6-8-16-19	24/24	
			27	3	DO	14-13-4-15	21/24	
8.0	FIRM TO STIFF, BROWN TO GRAY BROWN, SILTY CLAY TO CLAYEY SILT, SOME F TO C SAND, TRACE GRAVEL	CL	8	4	DO	2-3-5-6	19/24	UPPER CLAY TILL
			9	5	DO	3-5-6-10	22/24	8.0-16.0 FT., GRAY WEATHERING ALONG VERTICAL FRACTURE
			22	6	DO	9-11-11-15	24/24	BROWN MOTTLED TO 20.0 FT.
			18	7	DO	5-8-10-11	20/24	
			26	8	DO	10-12-14-15	22/24	
			10	9	DO	2-3-7-17	22/24	19.4-20.0 FT., 5 IN. SILT LENSE
			23	10	DO	10-12-11-17	24/24	
			46	11	DO	24-21-25-21	24/24	
26.0	SOFT, GRAY BROWN, CLAY, LITTLE F-C SAND	CH	16	12	DO	8-8-6-10	12/24	24.0-25.0 FT., NO SAMPLE 25.7-25.9 FT., C SAND LENS
			28	13	DO	14-15-13-14	5/24	GLACIOLACUSTRINE CLAY
30.0	END OF SAMPLING AUGERED TO 29.7 FT.		7	14	DO	1-3-4-5	24/24	29.1-30.0 FT., CLAY AND:
								END OF SAMPLING * NOTE: PLUG GOT AHEAD OF AUGER! INSTALLED MW3-15 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED DJM
 DATE DRAWN 12/13/86

JOB NO. B53-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW3-15 SHEET 1 OF 2
 GA INSP. PMS DRILLING METHOD HYDRAULIC STEAM AUGER GROUND ELEV. 334.5 FT WATER DEPTH 11.79 FT
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 335.16 FT DATE/TIME 9-22-86
 TEMP. 65° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 11:20 6-13-86 COMPLETED 1:20 6-13-86
 LOCATION/COORDINATES 4.0 FT. EAST OF MW3-1D / N 20deg 49' E 9374.90 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in. dia. 13.0 in. dia. WELL SCREEN 2.0 in. dia. 18.2 in. dia.
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL BENTONITE SEAL PELLETS 40' DEEP
 JOINT TYPE FLUSH TEFLOM VITON THREADED TAPE O-RINGS SLOT SIZE 2.006 INCH INSTALLATION METHOD THROUGH AUGER
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK QTY 23.7 L.F. 575 LBS.
 GROUT TYPE NA DRILLING MUD TYPE NONE FILTER PACK TYPE #1-0 SAND
 INSTALLATION METHOD THROUGH AUGERS

ELEV./DEPTH	SOIL/ROCK DESCRIPTION	WELL SKETCH	INSTALLATION NOTES
(FT.)	NOTE: FOR COMPLETE SOIL DESCRIPTIONS, SEE BORING LOG MW3-14	WELL CASING STICKUP	AUGERED TO 29.7 FT.; ADDED #1-0 SAND TO 23.7 FT. BELOW GROUND SURFACE (TOOK SAMPLE); INSTALLED WELL PIPE (1-2' SCREEN 1-5' SCREEN, 1-10' RISER) DRILLERS DROPPED WELL PIPE IN HOLE CONSEQUENTLY WELL PIPE WENT TO BOTTOM OF HOLE
334.5	GROUND SURFACE	8" ALUMINUM CASING WITH LOCK 2.0 FT. STICKUP	A 29.7 FT., 1.5 FT. STICKUP; ADDED #1-0 SAND TO 6.0 FT. BELOW GROUND SURFACE; ADDED PELLETS TO 2.0 FT.
0.0	FILL	#4-0 SAND	REMOVED AUGERS; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 2" ALUMINUM PROTECTIVE CASING; FILL INTERIOR OF PROTECTIVE CASING WITH #4-0 SAND; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PLACED AROUND WELL.
326.5	COARSE GRAVEL (ROADFILL) FROM 0.0-2.0 FT. TURNING TO STIFF, DARK BROWN, CLAYEY SILT TO SILTY CLAY, SOME F TO C SAND, LITTLE GRAVEL	CEMENT GROUT	(CONTINUED ON NEXT PAGE)
326.5	UPPER CLAY TILL	3/8" BENTONITE PELLET SEAL	WELL DEVELOPMENT NOTES
8.0	FIRM TO STIFF, BROWN TO GRAY BROWN, SILTY CLAY TO CLAYEY SILT, SOME F TO C SAND, TRACE GRAVEL. GRAY WEATHERING ALONG VERTICAL FRACTURES FROM 8.0-16.0 FT.	2" TYPE 304 S.S. RISER PIPE	DATE DEVELOPED: 7-9-86
308.5	GLACIOLACUSTRINE CLAY	#1-0 SAND	TO 7-30-86
26.0	SOFT, GRAY BROWN, CLAY, LITTLE F TO C SAND, CLAY AND SILT FROM 29.1-30.0 FT.	NOM. 8" BOREHOLE	DEVELOPMENT METHOD: AIR LIFT
304.5	END OF SAMPLING	2" TYPE 304 S.S. SCREEN	VOLUME PURGED: 3.8 GAL.
30.0	AUGERED TO 29.7 FT.		FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.
			NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION 2.5, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT IN LENGTH, RESPECTIVELY.

JOB NO. B53-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED DJM

DATE DRAWN 12-11-86

Golder Associates

NYSDEC

SUBJECT

CWM/WELLS/MODEL CITY

MW3-1S

Job No.

853-3051

Made by

PMS

Date

6-13-86

Ref.

Checked

DJM

Sheet

2 of 2

Reviewed

JFC

A CONCRETE PAD WAS LATER PLACED AROUND WELL BY THE 51
AND NEW WEEP HOLES WERE PUT IN CASING; A DEDICATED
STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO
DEVELOPMENT.

JOB NO. 853-3051 QA. INSP. KTM PROJECT CWM / WELL / MODEL CITY BORING NO. MW3-10
 DEPTH HOLE 64.5 FT DEPTH W.C. QHMS DETAILING NO. 201409232-00043 STEM AUGER 4 1/4" ID SHEET 1 OF 1
 TEMP 55° F TIME WL. 9/22/86 DRILLING COMPANY EMERSON INVESTIGATIONS, INC. SURFACE ELEV. 324.6
 WEATHER PARTLY CLOUDY DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL
 COORDINATES N 86° 06' 00" E 9371.06 WT. SAMPLER HAMMER 300 LB DROP 30 IN STARTED 3:10 / 16/86
 LOCATION ~4.0 FT. W OF MW3-15 WT. CASING HAMMER 300 LB DROP 30 IN COMPLETED 9:05 / 16/86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ATT	
304.6	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW3-15							INSTALLED 10 IN. DIA. PVC SURFACE CASING TO 19.0 FT. AUGERED TO 30.0 FT., NO SAMPLING
30.0	SOFT TO FIRM, GRAY, CLAY. SOME F TO C SAND, TRACE TO LITTLE GRAVEL.	CL TO CH	32	1	DO	18-16-16-18	8/24	GLACIOLACUSTRINE CL
			100	3	DO	24-40-60-65	20/24	30.0-32.0 FT., TRACE GRA MIXED WITH BROWN SILT LENSES.
			6*	4	DO	2-3-3-3*	18/24	32.0-33.0 FT., DENSE BROWN F SAND SOME SILT DILATANT
			12	5	DO	2-3-9-7	20/24	33.0-33.7 FT. DENSE BROWN SILT
			8	6	DO	2-3-5-7	14/24	
			32	7	DO	3-12-20-30	6/24	
			44	8	DO	20-32-12-10	6/24	
			4	9	DO	WR-WH-4-4	20/24	
288.6	COMPACT TO VERY DENSE, GRAY BROWN, F SAND, SOME TO TRACE SILT TO CLAYEY SILT, LITTLE M TO C SAND.	SM	23	10	DO	4-4-19-11	24/24	GLACIOLACUSTRINE SILT/SAND
46.0			48	12	DO	12-18-30-32	10/24	46.0-48.0 INTERLAYER F SAND, SILT AND CLA
			135	13	DO	13-45-20-30*	20/24	54.0-56.0 FT., GRAVEL AS RED SHALE AND GR LIMESTONE CLASTS.
			51	16	DO	14-24-27-35	8/24	52.5-54.0 FT., NO SAMPL
		ML	56	18	DO	20-26-30-36	20/24	56.5-58.0 FT., NO SAMPL
			27	19	DO	6-10-17-20	12/24	
			24	20	DO	6-9-15-21	18/24	
270.6								
64.0	VERY DENSE, BROWN TO DARK RED, CLAYEY SILT, LAYERED SHALEY	ML	210*	21	DO	100/1.2*	5/E	BASAL RED TILL
270.4	END OF SAMPLING AUGERED TO 64.5 FT.							END OF SAMPLING
64.2								* NOTE: 300 LB. HAMMER USED.
								INSTALLED MW3-10 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

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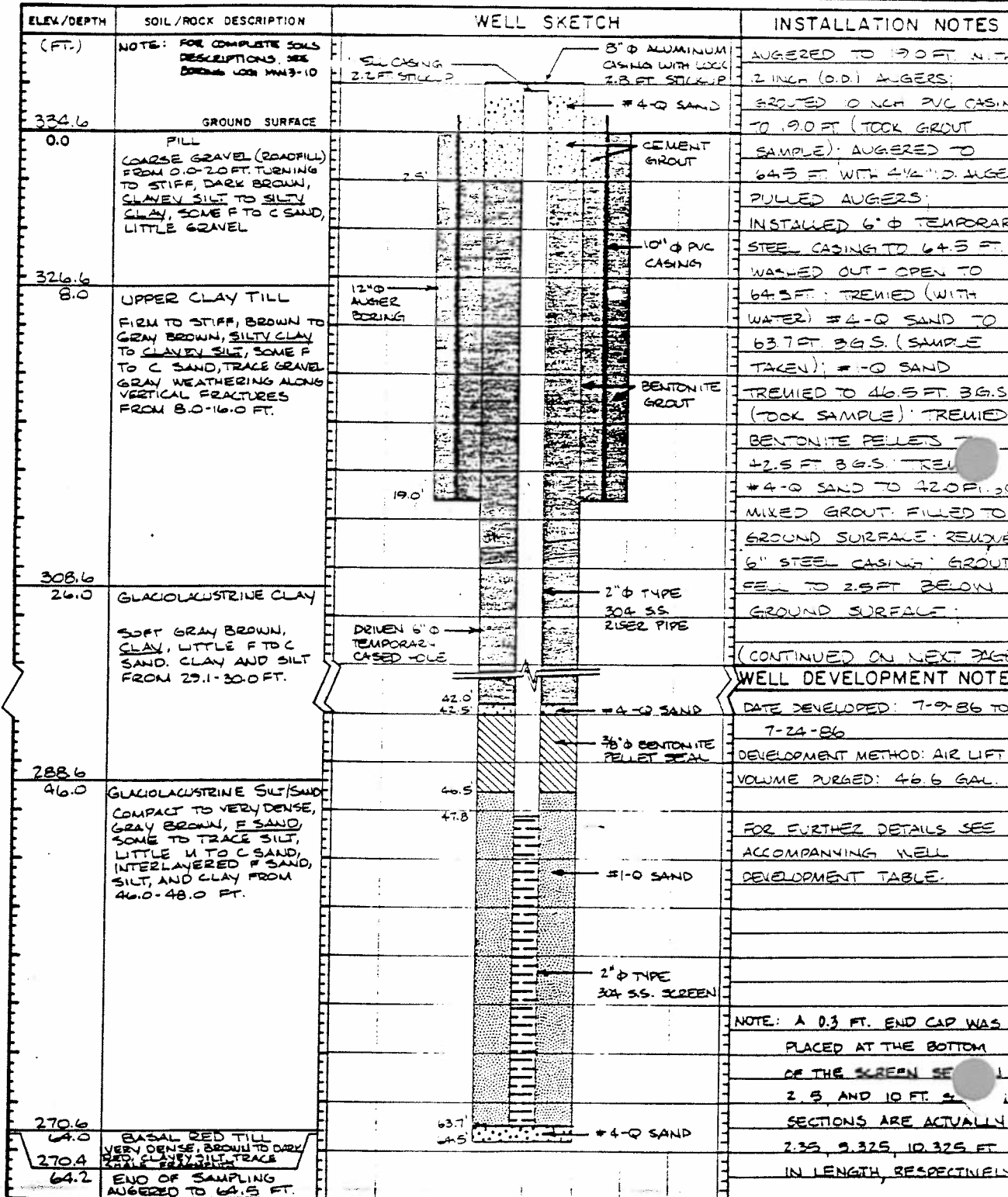
DATE DRAWN 12/13/86

MONITORING WELL INSTALLATION LOG

JOB NO. 853-3051 PROJECT CWA/WELLS / MODEL 1-7 WELL NO. MW3-10 SHEET 1 OF 2
 GA INSP. KTM DRILLING METHOD HOLLOW STEEL AUGERS - 2" & 3" GROUND ELEV. 334.6 FT. WATER DEPTH 20.04
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS COLLAR ELEV. 336.81 FT DATE/TIME 9-22-86
 TEMP. 54°F DRILL RIG ACKER AD-2 DRILLER J. GENDRESE STARTED 11:00 6-20-86 COMPLETED 12:00 6-24-86
 LOCATION/COORDINATES 2.5 FT. WEST OF MW3-15 / N 3000 26' E 9371.06 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 IN. DIA. 90.0 LF. WELL SCREEN 2.0 IN. DIA. 13.9 LF. BENTONITE SEAL PELLETS 40 LBS.
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD REMI TUBE
 JOINT TYPE FLUSH TAPERED TAPER JOINTS SLOT SIZE 0.006 IN. FILTER PACK QTY. 180 LBS. 500 LB.
 GROUT QUANTITY — CENTRALISERS NONE FILTER PACK TYPE #1-0 SAND
 GROUT TYPE BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD REMI TUBE



JOB NO. 853-3051

Golder Associates

CHECKED DJM

SCALE 1 INCH = 5 FEET

DATE DRAWN 12-11-86

**Golder
Associates**

NYSDEC

SUBJECT CWM/WELLS/MODEL CITY

MW 3-1D

Job No. 853-3051

Made by KTM

Date 6-24-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

MIXED CEMENT; FILLED TO GROUND SURFACE; PUT ON 8" ϕ
ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF CASING WITH
#4-Q SAND; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE;
PROTECTIVE POSTS WERE PUT AROUND WELL;

JOB NO. 853-3061 GA. INSP. PM5 PROJECT CWM/WELLS/MODEL CITY BORING NO. MW4-15
 DEPTH HOLE 300 FT. DEPTH W. 201.1 FT. SHIELDING METHOD NO. 201169282-00043 SHEET 1 OF 1
 TEMP 60°/70° F TIME WL. 9/22/86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 333.1 FT.
 WEATHER OVERCAST DRILL RIG CME 45 DRILLER J. LAUM DATUM USL
 COORDINATES N8676.62 E9648.56 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 11:02 11/1/86
 LOCATION 4.5 FT. W OF MW4-10 WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 2:52

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ ATT	
333.1	GROUND SURFACE							GROUND SURFACE
0.0								
331.1	COARSE GRAVEL (ROADFILL)	GW	-	-	AS	-	-	0.0-2.0 FT., NO SAMPLE TAKEN DUE TO ROADFILL
2.0								
	STIFF TO VERY STIFF, BROWN AND ORANGE MOTTLED, <u>CLAYEY SILT</u> TO <u>SILTY CLAY</u> , SOME F-C SAND, LITTLE C GRAVEL.	ML	53	1	DO	6-13-40-13	21/24	FILL 10.0-12.0 FT., SLIGHT ORGANIC ODOR
			28	2	DO	14-14-14-21	24/24	
			47	3	DO	21-24-23-26	24/24	
			16	4	DO	7-7-9-11	21/24	
			18	5	DO	5-8-10-11	24/24	
321.1								
12.0	SOFT TO STIFF, BROWN, <u>SILTY CLAY</u> , SOME F-C SAND, LITTLE GRAVEL.	CL	36	6	DO	13-17-19-13	22/24	UPPER CLAY TILL 12.0-24.0 FT., SLIGHT ORGANIC ODOR 20.0-24.9 FT., GRAY BROWN MOTTLED COLOR
			18	7	DO	5-8-10-10	22/24	
			23	8	DO	11-11-12-14	24/24	
			16	9	DO	5-8-8-14	13/24	
			11	10	DO	1-5-6-7	20/24	
			20	11	DO	7-9-11-11	24/24	
308.2								
24.9	COMPACT, BROWN, <u>SILT</u> AND F SAND, SOME M TO C SAND, LITTLE GRAVEL, TRACE CLAY, SATURATED.	ML	19	12	DO	4-7-11-14	20/24	UPPER SILT TILL
			13	13	DO			
307.1								
26.0	FIRM TO VERY SOFT, GRAY BROWN TO GRAY, <u>SILTY CLAY</u> TO <u>CLAY</u> , TRACE TO SOME F-C SAND.	CL	39	14	DO	13-18-21-24	12/24	GLACIOLACUSTRINE CLAY
			3	15	DO	WR-WH-3-2	13/24	
303.1		CH	3	15	DO	WR-WH-3-2	13/24	
300	END OF SAMPLING AUGERED TO 29.7 FT.							END OF SAMPLING INSTALLED MW4-15 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3061

Golder Associates

CHECKED DJM

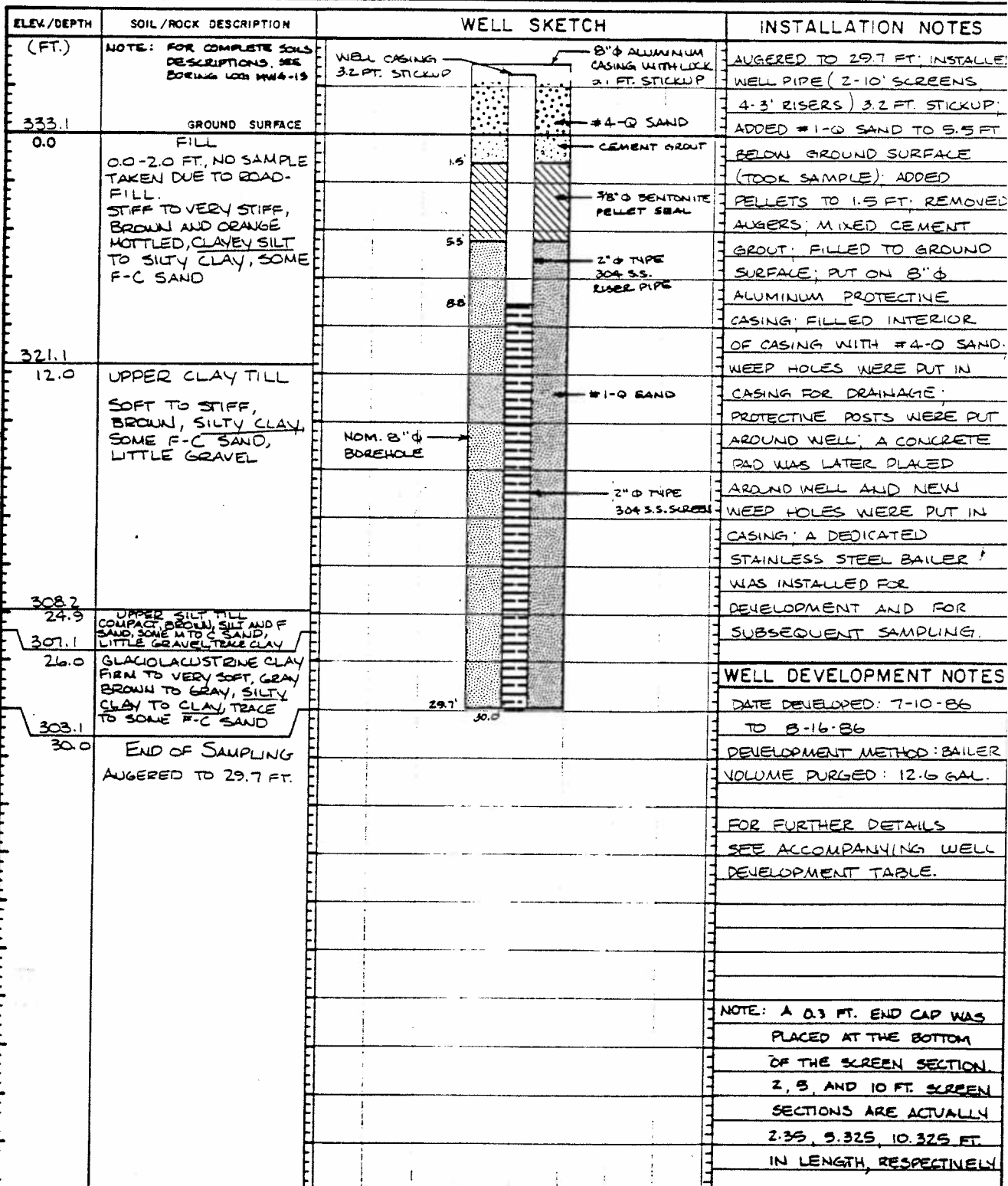
SCALE 1 INCH = 5 FEET

DATE DRAWN 12/13/86

JOB NO. 853-3051 PROJECT CWM / WELLS / MODEL CITY WELL NO. MW4-15 SHEET 1 OF 1
 GA INSP. PMS DRILLING METHOD OHMS DRILLING NO. 204-60332-00043D GROUND ELEV. 333.1 FT. WATER DEPTH 12.33 FT.
 WEATHER OVERCAST DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 336.30 FT. DATE/TIME 9-22-86
 TEMP. 70° F DRILL RIG CME 45 DRILLER J. LAMM STARTED 3:30 6-11-86 COMPLETED 5:08 6-11-86
 LOCATION/COORDINATES 4.5 FT. WEST OF MW4-1D / N 86° 16' 62" E 9648.36 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in. dia. 12.0 I.L. WELL SCREEN 2.0 in. dia. 20.9 I.L. BENTONITE SEAL PELLETS 4.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGER
 JOINT TYPE FLUSH TEFLOON VITON SLOT SIZE 0.006 INCH FILTER PACK QTY 24.2 L.F. ; 550 LBS
 JOINT TYPE THREADED TAPE O-RINGS CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT QUANTITY NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS
 GROUT TYPE NA



WELL DEVELOPMENT NOTES

DATE DEVELOPED: 7-10-86
 TO 8-16-86
 DEVELOPMENT METHOD: BAILER
 VOLUME PURGED: 12.6 GAL.
 FOR FURTHER DETAILS SEE ACCOMPANYING WELL DEVELOPMENT TABLE.
 NOTE: A 0.3 FT. END CAP WAS PLACED AT THE BOTTOM OF THE SCREEN SECTION. 2, 3, AND 10 FT. SCREEN SECTIONS ARE ACTUALLY 2.35, 9.325, 10.325 FT. IN LENGTH, RESPECTIVELY.

JOB NO. 853-3051

Golder Associates

CHECKED DJM

SCALE 1 INCH = 5 FEET

DATE DRAWN 12-11-86

JOB NO. 853-3051 GA. INSP. FWS/KTM PROJECT CWM/WELLS/MODEL CITY BORING NO. MW4-1D
 DEPTH HOLE 66.6 FT. DEPTH W/ 30 IN. DRILLING NO. 201439282-00543 EM AUGERS 4 1/4" ID SHEET 1 OF 1
 TEMP 70°-75° F TIME WL. 9/22/86 DRILLING COMPANY EMPRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 333.6 FT.
 WEATHER CLOUDY/WARM/SLIGHT RAIN DRILL RIG ACKER AD-2 DRILLER J. GENOVESE DATUM MSL
 COORDINATES N 86° 76.94 E 9653.13 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 9:40 16-10-86
 LOCATION 4.5 FT. E OF MW4-1S WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 11:00

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN.	REC./ ATT	
303.6	FOR COMPLETE SOILS DESCRIPTION AT THIS LOCATION ALSO SEE BORING LOG MW4-1S							INSTALLED 10 IN. DIAM. PVC SURFACE CASING TO 20.0 FT., AUGERED TO 30.0 FT., NO SAMPLING
30.0	FIRM TO SOFT, GRAY BROWN, SILTY CLAY TO CLAY, LITTLE TO SOME F TO M SAND	CL	29	1	DO	16-12-17-17	5/24	GLACIOLACUSTRINE CLAY 30.0-32.0 FT., COMPACT F SAND LAYER
			10	2	DO	7-5-5-5	13/24	32.3-34.0 FT., RED BROWN SILT LENSE
			24	3	DO	9-9-15-17	18/24	34.0-34.2 FT. BROWN F SAND, DILATANT
296.4	COMPACT TURNING TO DENSE, GRAY BROWN, SILT SOME F-C SAND TRACE CLAY, WET, DILATANT	ML	39	4	DO	14-18-21-23	17/24	35.8-36.0 FT. GRAY F TO C SAND AND GRAVEL, WET
37.2			29	5	DO	6-12-17-21	9/24	MIDDLE SILT TILL
			43	6	DO	13-21-22-13	5/24	
290.6	SOFT TO FIRM, GRAY, CLAY LITTLE TO SOME F TO M SAND	CL	31	7	DO	12-14-17-17	19/24	GLACIOLACUSTRINE CLAY
43.0			19	8	DO	1-2-17-8	17/24	
			23	9	DO	7-11-12-12	8/24	
285.6	VERY DENSE, RED GRAY BROWN (MULTICOLORED) F TO C SAND, LITTLE TO SOME GRAVEL, TRACE SILTY CLAY, DILATANT, WET.	SM	62*	10	DO	70-30-32-35	15/24	GLACIOLACUSTRINE SILT/SAND
48.0			78*	11	DO	13-31-39-4*	12/17	
			76*	12	DO	24-28-48-100	16/24	
			7174*	13	DO	38-74-100-25*	11/18	55.2-56.5 FT., NO SAMPLE AT 57.5 FT., 3 INCH SILT AND SAND LENSE
			144*	14	DO	38-52-92*	12/18	
			54*	15	DO	14-24-30-32*	11/24	
			120*	16	DO	19-32-88*	9/18	61.5-62.0 FT., NO SAMPLE
			76*	17	DO	12-30-46-38*	17/24	
268.8			147*	18	DO	40-62-85*	12/18	BASAL RED TILL
64.8			7108*	19	DO	50-11 50-105	2/2	65.5-66.5 FT., NO SAMPLE
267.0	VERY STIFF, RED BROWN, CLAYEY SILT, SOME F TO C SAND, GREEN GRAY CLASTS, DRY	ML						
66.6	END OF SAMPLING AUGERED TO 66.5 FT.							END OF SAMPLING * NOTE: 300 LB. HAMMER WAS USED. INSTALLED MW4-1D SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

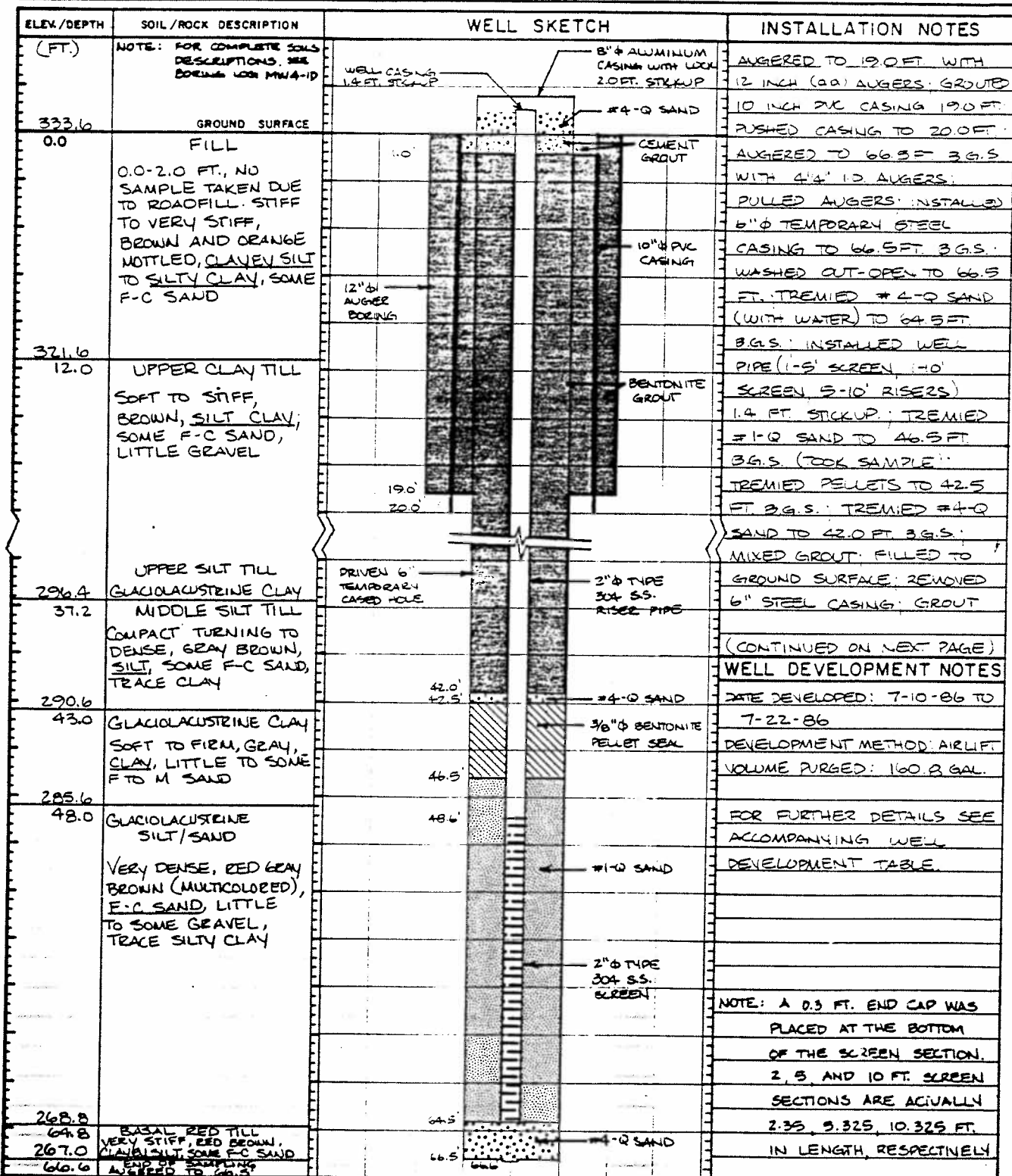
Golder Associates

CHECKED DJM
 DATE DRAWN 12/13/86

JOB NO. 853-3051 PROJECT CNM/WELLS/MODEL C-7 WELL NO. MW 4-1D SHEET 1 OF 2
 GA INSP. FWS/KTM DRILLING METHOD WELLS NYSDEC OHMS Document No. 201469232-00043 GROUND ELEV. 333.6 FT. WATER DEPTH 19.37 FT.
 WEATHER SUNNY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 334.98 FT. DATE/TIME 9-22-86
 TEMP. 52°F DRILL RIG ACKER AD-2 DRILLER J. GENOVESE STARTED 12:00 6:13:86 COMPLETED 12:00 6:17:86
 LOCATION/COORDINATES 40 FT. EAST OF MW 4-S / N 2676.94 E 9653.13 TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in. dia. 50.0 ft. WELL SCREEN 2.0 in. dia. 15.9 ft. BENTONITE SEAL PELLETS 40' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD REMIE TUBE WASH
 JOINT TYPE FLUSH TOP ON VITON SLOT SIZE 0.006 INCH FILTER PACK QTY 20.0 L.F. 350 LBS
 GROUT QUANTITY — CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE BENTONITE DRILLING MUD TYPE NONE INSTALLATION METHOD REMIE TUBE WASH



JOB NO. 853-3051

Golder Associates

CHECKED DJM

SCALE 1 INCH = 5 FEET

DATE DRAWN 12-11-86

**Golder
Associates**

NYSDEC SUBMITTAL DOCUMENT NO. 2014-0232-0004

SUBJECT GWM/WELL MODEL CITY

MW4-1D

Job No. 853-3051

Made by PMS/KTM

Date 6-17-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

AT 1.0 FT. B.G.S.; MIXED CEMENT GROUT; FILLED TO GROUND SURFACE; PUT ON 8" ϕ ALUMINUM PROTECTIVE CASING; FILLED INTERIOR OF CASING WITH #4-Q SAND; WEEP HOLES WERE PUT IN CASING FOR DRAINAGE; PROTECTIVE POSTS WERE PUT AROUND WELL; A CONCRETE PAD WAS PLACED AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING; A WELL WIZARD WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. NYSDEC OHMS Document No. 201468232-00043
 PROJECT CHARTER WELLS / MODEL CITY BORING NO. MW11-85
 DEPTH HOLE 24.1 FT. DEPTH WL. 5.11 FT. DRILLING METHOD HOLLOW STEM AUGERS 4 1/4 ID SHEET 1 OF 1
 TEMP 60°F TIME WL. 9/22/86 DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. SURFACE ELEV. 317.0 FT.
 WEATHER OVERCAST DRILL RIG CME 45 DRILLER K. SWINNICH DATUM MSL
 COORDINATES N10 974 44 E12,168 46 WT. SAMPLER HAMMER 140 LBS. DROP 30 IN. STARTED 3:15 / 14-29-86
 LOCATION 40 FEET EAST OF MW11-8D WT. CASING HAMMER 300 LBS. DROP 30 IN. COMPLETED 9:30 / 14-30-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS	BLOWS/FOOT	SAMPLES			REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 6 IN. REC./ATT	
317.0	GROUND SURFACE						GROUND SURFACE
0.0	VERY STIFF TO STIFF GRAY BROWN TO BROWN, CLAYEY SILT, SOME TO AND F TO C SAND, LITTLE GRAVEL.	CL	14	1	DO	13-9-5-10	14/24
			26	2	DO	11-12-14-15	24/24
			30	3	DO	5-12-18-23	23/24
309.0			64	4	DO	28-28-36-33	26/24
8.0	COMPACT, GRAY BROWN, CLAYEY SILT, SOME F TO M SAND TURNING AT 12.0 FT. TO COMPACT, GRAY BROWN, F SAND, AND SILT, LITTLE TO SOME M TO C SAND, LITTLE GRAVEL, TRACE CLAY	ML	13	5	DO	6-7-6-21	24/24
			32	6	DO	8-23-9-8	17/24
			17	7	DO	6-10-7-8	13/24
			32	8	DO	6-26	9/12
			18	9	DO	6-9-9-12	12/24
			26	10	DO	3-11-15-18	14/24
295.0							
22.0	VERY SOFT BROWN GRAY, SILTY CLAY, LITTLE F SAND, CHANGING TO VERY SOFT, GRAY, CLAY, TRACE F SAND	CL CH	4	11	DO	6-2-2-3	20/24
293.0							
24.0	END OF SAMPLING						END OF SAMPLING
	AUGERED TO 24.1 FT.						INSTALLED MW11-85 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED DJM
 DATE DRAWN 11/26/86

JOB NO. 853-3051 PROJECT NYSDOT CHMS DOCUMENT NO. 201469232-00043 WELL NO. MW11-BS SHEET 1 OF 2
 GA INSP. CFC DRILLING METHOD HOLLOW STEM AUGERS - 4 1/4" ID GROUND ELEV. 37.0 FT. WATER DEPTH 5.11 FT.
 WEATHER CLOUDY DRILLING COMPANY EMPIRE SOILS INVESTIGATIONS, INC. COLLAR ELEV. 319.22 FT. DATE/TIME 9-22-86
 TEMP. 68°F DRILL RIG CMS 45 DRILLER K. SWINNICH STARTED 10:15 4:30-86 COMPLETED 9:45 5:18-86
 LOCATION/COORDINATES 4.0 FT. EAST OF MW11-RD / N 109° 14' 77" E 12168.46 TIME / DATE TIME / DATE

MATERIALS INVENTORY

WELL CASING 2.0 in. dia. 10.0 l.f. WELL SCREEN 2.0 in. dia. 19.9 l.f. BENTONITE SEAL PELLETS 6.0' DEEP
 CASING TYPE 304 STAINLESS STEEL SCREEN TYPE 304 STAINLESS STEEL INSTALLATION METHOD THROUGH AUGERS
 JOINT TYPE FLUSH TAPES TEFLON VITON 0-RINGS SLOT SIZE 0.006 INCH FILTER PACK QTY 17.1 L.F.
 GROUT QUANTITY NA CENTRALIZERS NONE FILTER PACK TYPE #1-Q SAND
 GROUT TYPE NA DRILLING MUD TYPE NONE INSTALLATION METHOD THROUGH AUGERS

JOB NO. 853-3051 300 Golder Associates CHECKED DJM
SCALE 1 INCH = 5 FEET DATE DRAWN 12-11-86

**Golder
Associates**

NYSDEC OHMS Document No. 201469232-00043

SUBJECT CWM/WELLS/MODEL CITY

MW 11-85

Job No. 853-3051

Made by CFC

Date 5-1-86

Ref.

Checked DJM

Sheet 2 of 2

Reviewed JFC

WEEP HOLES WERE PUT IN CASING FOR DRAINAGE. PROTECTIVE POSTS WERE PUT AROUND WELL. A CONCRETE PAD WAS LATER PUT AROUND WELL BY THE SITE AND NEW WEEP HOLES WERE PUT IN CASING. A DEDICATED STAINLESS STEEL BAILER WAS INSTALLED SUBSEQUENT TO DEVELOPMENT.

Boring Log

JOB NO. 853-3051 GA. INVENTORY NO. 2015 DOCUMENT NO. WMA/NE2023/000001 MODEL CITY BORING NO. F9-15
 DEPTH HOLE 18.0 FT. DEPTH WL. 6.53 F- DRILLING METHOD HOLLOW STEM AUGERS-4 1/4" ID SHEET 1 OF 1
 TEMP 65° F TIME WL. 9-22-86 DRILLING COMPANY EMPIRE SOIL INVESTIGATIONS, INC. SURFACE ELEV. 321.4 FT.
 WEATHER CLEAR DRILL RIG CME 45 DRILLER J. LAMM DATUM MSL
 COORDINATES N 9333.04 E 12117.90 WT. SAMPLER HAMMER 140 LBS DROP 30 IN. STARTED 10:00 / 10-8-86
 LOCATION 55 FT. EAST OF F9-10 WT. CASING HAMMER 300 LBS DROP 30 IN. COMPLETED 11:15 / 10-8-86

ELEV. DEPTH (FT.)	DESCRIPTION	UNIFIED CLASS.	BLOWS/FOOT	SAMPLES				REMARKS
				NUMBER	TYPE	HAMMER BLOWS PER 8 IN.	REC./ ATT	
321.4 0.0	GROUND SURFACE							GROUND SURFACE
	STIFF TO VERY STIFF, BROWN MOTTLED, SILTY CLAY TO CLAYEY SILT, SOME F-C SAND, LITTLE TO NONE F-C GRAVEL.	CL	20	1	DO	5-10-10-12	21/24	UPPER CLAY TILL
			17	2	DO	8-9-8-9	7/24	MOTTLED TO 8.0 FT. GRAY WEATHERING ALONG VERTICAL FRACTURES TO 10.8 FT.
			16	3	DO	5-6-10-12	24/24	
			51	5	DO	27-22-29-30	24/24	
			21	7	DO	8-9-12-20	18/24	
310.6 10.8	COMPACT, BROWN F SAND, AND SILT TO CLAYEY SILT, SOME F-C SAND, POCKETS OF C SAND AND GRAVEL.	UL	26	8	DO	10-13-13-12	24/24	UPPER SILT TILL
			32	10	DO	17-17-15-16	24/24	
305.4 16.0	SOFT, GRAY BROWN BECOMING GRAY, CLAY, LITTLE TO SOME F-M SAND.	CH	13	11	DO	4-8-5-6	10/24	
303.4 18.0			12	12	DO	6-6-6-6	24/24	GLACIOLACUSTRINE CLAY
	END OF BORING							END OF BORING
								INSTALLED F9-15 SEE ACCOMPANYING MONITORING WELL INSTALLATION LOG.

JOB NO. 853-3051
 SCALE 1 INCH = 5 FEET

Golder Associates

CHECKED DJM
 DATE DRAWN 11/30/86