APPENDIX C

Well Development Logs

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: R. Gains
Well Developed by (person/firm): R. Gains / IT Corp

Parcel No.: CWM-180-MW01
Well No.: MW01
Date started: 11/26/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale pump and Tubing, PID, Horiba U-10, Orion Turbidity Meter, 210 gal Tank
Casing Diameter: 2 in.

Beginning Measurments
Depth to Water (ft): 37.1' bTOC
Total depth of Well (ft): 55.15' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
14:57	—	37.1	5.95	0.387	999	4.41	19.6	muddy (red-brown)	PR-0.21gpm, 3" from bottom
15:00	0.63	—	—	—	rate	change	—	—	PR-0.06gpm
15:04	0.87	—	—	—	rate	change	—	—	PR 0.08gpm
15:12	1.51	41.1	6.07	0.474	999	6.01	20.0	muddy (red-brown)	"
15:20	2.15	—	—	—	rate	change	—	—	PR = 0.05gpm, pump-mud lift
15:27	2.50	41.65	6.29	0.463	999	6.89	20.0	cloudy (red-brown)	PR 0.05gpm
15:42	3.25	41.93	6.40	0.437	999	7.21	20.0	"	"

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

55.15 - 37.1 = 18.05 x 0.163 = 2.95 x 5 = 14.7 + 5 = 19.7 gal

QC'd [signature]

11-29-01

Parcel No.: chrm-180-mw01
Well ID: mw01
Date: 11/27/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
15:57	4.00	42.25	6.38	0.435	999	6.56	20.2	cloudy (red-brown)	PR-0.05 gpm
16:12	4.75	42.69	6.41	0.436	999	7.03	20.2	"	"
16:14	4.85	—	—	rate change	—	—	—	—	PR-0.45 gpm
16:20	7.55	—	—	—	—	—	—	—	Well is dry
07:15	7.55	39.13	6.02	0.415	999	4.28	16.8	muddy (red-brown)	11/27/01 PR-0.150 gpm, pump - 3'4" from bottom
07:18	8.00	—	—	rate change	—	—	—	—	PR-0.053 gpm, ~~pump-raised 1ft~~
07:30	8.64	41.45	5.95	0.377	999	3.59	17.5	cloudy (red-brown)	PR-0.053 gpm, pump-raised 1ft
07:45	9.44	42.00	5.99	0.378	999	3.80	18.1	cloudy (red-brown)	PR-0.053
08:00	10.24	42.65	5.95	0.377	999	4.27	18.4	"	PR-0.053 gpm, pump-raised 1ft
08:15	11.04	43.20	5.97	0.379	918	5.33	18.3	"	" "
08:30	11.84	43.85	5.98	0.395	777	5.66	18.6	"	PR-0.053 gpm
08:45	12.64	44.30	5.98	0.387	648	5.48	19.2	"	PR-0.053 gpm, pump-raised 1ft
08:50	12.90	—	—	rate change	—	—	—	—	~~PR=~~ PR-0.07 gpm

Parcel No.: CWM-180-MW01
Well ID: MW01
Date: 11/27/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
09:00	13.60	45.20	6.18	0.397	735	5.35	19.3	cloudy (red-brown)	PR-0.07gpm, pump - lowered 1ft
09:15	14.65	45.99	6.35	0.413	880	4.76	19.3	cloudy (red-brown)	PR-0.063gpm
09:30	15.58	46.45	6.22	0.420	999	5.25	19.3	cloudy (red-brown)	PR-0.053gpm
09:40	16.06	—	—	pump	shut	off	—	—	—
10:30	16.06	45.00	6.30	~~0.422~~ 0.419	949	5.12	19.7	cloudy (red-brown)	well is purged w/ poly bailer.
10:39	17.06	46.90	6.48	~~0.425~~ 0.422	"	5.09	19.9	"	
10:46	18.06	48.15	6.36	~~0.427~~ 0.425	"	5.21	19.9	"	
10:55	19.06	49.29	6.42	~~0.424~~ 0.427	"	5.15	20.1	"	
11:10	19.81	50.83	6.35	~~0.420~~ 0.424	"	5.19	20.3	"	
11:25	20.31	52.00	6.41	~~0.42~~ 0.420	"	5.10	20.3	muddy (red-brown)	
11:38	20.81	53.18	6.29	0.425	"	5.24	20.5	"	
11:45	20.935	54.35	6.34	0.431	"	5.18	20.6	"	Well is dry

Parcel No.: CWM-180
Well ID: CWM-180-MW01
Date: 11/28/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
12:50	20.935	39.10	7.16	0.415	1296	3.01	19.5	TAN TURBID	RESUME DEVELOPING 11/28/01 M. SHOEMAKER
13:05	22.44	42.01	7.27	0.420	1511	2.80	20.0	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
13:20	23.94	42.55	7.21	0.421	1463	5.09	20.8	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
13:35	25.44	43.70	7.06	0.433	1477	5.18	20.4	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
13:50	26.94	44.60	7.02	0.440	1511	5.05	20.1	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
14:05	28.44	45.65	7.03	0.449	1512	5.05	20.1	TAN TURBID.	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
14:20	29.94	46.29	7.08	0.454	1515	5.54	20.0	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
14:35	31.44	47.11	7.04	0.466	1545	5.23	19.8	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' OFF BOTTOM
14:50	32.94	47.86	7.04	0.473	1327	4.42	19.9	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' FROM BOTTOM
15:05	34.44	49.34	6.97	0.488	1486	3.82	19.6	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' FROM BOTTOM
15:20	35.94	50.65	7.00	0.506	1638	3.49	19.5	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' FROM BOTTOM
15:35	37.44	52.04	7.03	0.499	1519	3.68	19.4	TAN TURBID	FLOW RATE @ 0.1 GPM PUMP SET 1' FROM BOTTOM
15:40	37.44	DRY	—	—	—	—	—	—	DRY 3rd DAY CEASE DEVELOPING

11/28/01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 96887
Form Completed by: R. Goins
Well Developed by (person/firm): R. Goins / FT

Parcel No.: CWM-180-MW02
Well No.: MW02
Date started: 11/27/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale Pump, 20 gal tank, PID, Horiba U-10, Orion Turbidity Meter.
Casing Diameter: 2in

Beginning Measurments
Depth to Water (ft): 32.65
Total depth of Well (ft): 45.15

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
14:52	—	32.65	5.41	0.209	403	4.74	18.8	cloudy (tan)	PR-0.1gpm, pump-3ft from bottom
15:03	1.1	—		no	change	—	—	—	PR-0.075gpm
15:07	1.4	34.20	5.53	0.198	191	4.68	18.8	cloudy (tan)	PR-0.075gpm, raised 1ft
15:19	2.3	—	pump	stopped	working	—	—	—	
15:41	2.3	35.20	5.81	0.184	137	6.84	18.8	cloudy (tan)	PR-0.062gpm
15:56	3.23	35.94	5.77	0.128	51	6.08	19.0	"	"
16:11	4.16	36.70	5.73	0.111	34	5.91	19.3	pt. clear (tan)	PR-0.062gpm, raised 1ft

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

45.15 - 32.65 = 12.50 X 0.163 = 2.03 X 5 = 10.15 + 5 = 15.15

rec'd [signature]
11-29-01

Parcel No.: Chm-170-mw02
Well ID: mw02
Date: 11/27/01

NOTE: NR - NOT READABLE; WATER LEVEL BELOW TOP OF PUMP HOUSING

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
16:26	5.09	32.60	5.96	0.106	36	6.03	19.4	pt. cloudy (tan)	PR-0.6gpm, pump - lowered to 3" from bottom
16:31	7.49								well is dry
08:20	7.49	37.17	~~17.5~~ 6.19	~~6~~ 0.388	98.7	2.98	17.5	TAN CLOUDY	BEGIN PURGE 11/28/01 M. SHOEMAKER
08:40	8.74	38.80	6.69	0.349	75.0	5.27	18.7	TAN CLOUDY	PURGE RATE 0.0625 GPM PUMP 3" FROM BOTTOM
08:55	9.49	40.00	6.51	0.289	57.0	5.44	19.1	SLIGHTLY CLOUDY	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
09:10	10.24	40.81	6.43	0.264	49.1	5.38	19.4	SLIGHTLY CLOUDY	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
09:25	10.99	41.57	6.45	0.281	33.8	5.70	19.7	SLIGHTLY CLOUDY	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
09:40	11.74	42.21	6.38	0.301	18.6	5.41	20.00	CLEAR	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
09:55	12.49	42.80	6.51	0.333	11.1	5.76	20.4	CLEAR	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
10:10	13.24	43.38	6.41	0.347	8.2	3.47	20.5	CLEAR	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
10:25	13.99	NR	6.45	0.365	7.21	2.86	20.7	CLEAR	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
10:40	14.74	NR	6.49	0.379	6.36	3.60	20.8	CLEAR	FLOW RATE 0.05 GPM PUMP 3" FROM BOTTOM
10:50	15.24	—	—	—	—	—	—	—	WELL DRY

CEASE DEVELOPMENT [signature] 11/28/01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Jeff Alexander
Well Developed by (person/firm): Jeff Alexander

Parcel No.: CWM 180
Well No.: MW03
Date started: 12 3 01

Monitoring Well Information

Development Method: Surge + pump
Development Equipment: WL indicator, Horiba U10, Orion turbidimeter, whale pump
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 22.16' BTOC
Total depth of Well (ft): 39.40' BTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									Surging 1st 5 min.
11:10	0	22.16	6.25	.405	>999	0.26	16.7	brown orange opaque	.5 gpm 1 ft off bottom
11:25	7.5	30.55	6.25	.285	>999	0.91	16.9	cloudy	.125 gpm 1 ft off bottom
11:40	9.375	32.15	6.25	.260	141	0.41	18.1	"	.125 gpm " "
11:55	11.25	33.18	6.37	.383	112	-0.03	18.0	"	.125 gpm " "
12:10	13.125	34.05	6.37	.341	92	-0.18	12.5	"	~~.125 gpm~~ .1 " "
12:25	14.6	35.12	6.43	.412	71	-0.02	18.1	"	~~.125 gpm~~ .1 " "
12:40	16.1	35.78	6.51	.423	63	-0.02	18.6	"	~~.125 gpm~~ .1 " "

TD - DTW = WC x (2')/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

39.40 - 22.16 = 17.24 x .163 = 2.8 gal x 5 = 14 gal. + 5 gallons = 19 gallons

QC'd [illegible] 12/6/01

Parcel No.: CWM 180
Well ID: MW03
Date:

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
12:55	17.6	36.62	6.57	.437	82	-0.02	18.7	cloudy	.1 gpm 1ft off bottom
13:05	19.1	well gone dry							
13:35	—	36.12	very poor recovery. Return tomorrow						
:									12 30
									12401
08:22	19.1	32.33	6.54	.419	374	-0.81	15.8	tan cloudy	.09 gpm 5 ft off bottom
08:37	20.45	34.10	6.52	.269	287	-0.43	16.9	"	.09 gpm 3 ft off bottom
08:52	21.8	35.35	6.53	.346	1172	-0.39	17.3	"	.09 gpm 1 ft off bottom
09:07	23.15	36.35	6.53	.382	457	-0.21	17.4	"	.09 gpm 1 ft off bottom
09:17	24.5	well gone dry.							12401
:									
08:35	24.5	32.26	6.52	.394	>999	-2.03	15.3	br. cloudy	12501 .1 gpm 2 ft off bottom
08:50	26	33.96	6.50	.312	207	-1.13	16.7	clearing	.1 gpm 2 ft off bottom

Parcel No.: CWM-180-MW03
Well ID: MW03
Date: 12501

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:05	27.5	34.85	6.47	.261	73.5	-0.72	17.1	clear	2 ft off bottom .1 gpm
09:20	29	35.68	6.50	.372	120	-0.71	17.6	sl. cloudy	2 ft off bottom .1 gpm
09:35	30.5	37.62	6.59	.311	367	-0.73	12.8	cloudy	1 ft off bottom .1 gpm
09:40	31	well goes dry. 3rd time will bail							photo sample. QA 12501
:									
08:40		33.00	collect photo sample w/ bailer						
:				turbidity = 59.6 ntu's					12601
:									
:									
:					12601				
:									
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: R. Goins (IT)
Well Developed by (person/firm): R. Goins (IT)

Parcel No.: CWM-180-MW04
Well No.: MW04
Date started: 11/13/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale Pump, Horiba U-10, Orion Turbidity Meter, PID, 210 gal tank
Casing Diameter: 2 in

Beginning Measurments
Depth to Water (ft): 21.1' bTOC
Total depth of Well (ft): 27.32' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
12:52	—	21.1	4.95	0.019	4.0 (DI H2O)	6.07	19.0	clear	PR-0.05gpm, pump-3' from bottom
13:07	0.75	21.7	6.07	0.143	107	8.86	18.9	cloudy (tan)	PR-0.04gpm, pump-1' from position
13:12	0.95	—	not	changed	—	—	—	—	PR-0.03gpm
13:22	1.25	22.15	5.62	0.106	29	8.66	18.6	clear	PR-0.03gpm, 1' from position
13:35	1.64	—	pump	stopped	working	—	—	—	
13:37	1.64	22.53	5.53	0.093	124	8.20	18.6	cloudy (tan)	PR-0.1gpm, pump-lowered 1' from position
13:52	3.14	23.45	5.49	0.082	44	7.07	18.6	pt. cloudy (tan)	PR-0.05gpm

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

27.32 − 21.1 = 6.22 x 0.163 = 1.01 x 5 = 5.05 + 5 = 10.05 gal

cc'd [illegible]
11/26/01

Parcel No.: CWM-180-MW04
Well ID: MW04
Date: 11/13/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
14:07	3.39	23.83	5.61	0.078	20.6	6.51	18.3	clear	PR-0.04gpm
14:22	3.99	24.21	5.48	0.074	15.8	6.57	18.3	"	"
14:37	4.59	24.63	5.51	0.070	12.6	6.97	18.6	"	"
14:40	4.71	—	—	pump	stop working	—	—	—	
14:43	4.71	—	—	resume	pumping	—	—	—	PR-0.04gpm
14:45	4.79	—	—	pump stop working	—	—	—	—	Last read for the day
08:40	4.79	23.41	5.79	0.141	307	5.54	15.7	cloudy (red-brown)	11/14/01 PR-0.07gpm, pump-0.5' from bottom
08:45	5.14	—	—	rate	change	—	—	—	PR-0.04gpm
08:55	5.54	24.50	5.39	0.090	34	6.15	16.4	pt. cloudy (tan)	"
09:10	6.14	24.95	5.35	0.068	11.5	6.29	17.0	clear	"
09:25	6.74	25.30	5.26	0.062	8.4	6.17	17.6	"	"
09:40	7.34	25.80	5.22	0.065	13.9	6.20	17.9	"	"
09:55	7.94	*BTOP	5.32	0.068	9.4	6.14	18.3	"	PR 0.04, pump-lowered to 3" from bottom

*BTOP - Water level is "beneath the top of the pump"

Parcel No.: cwm-190-mw04
Well ID: mw04
Date: 11/27/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
10:00	8.14	—	—	—	note change	—	—	—	PR-0.4gpm
10:01	8.54	—	—	—	—	—	—	—	well dry
10:17	8.54	21.8	7.13	0.104	241	10.02	17.9	cloudy (tan)	11/26/01 pump-3 in from bottom PR-0.034gpm
10:32	9.05	22.19	5.31	0.093	82	9.54	18.7	pt. cloudy (tan)	PR-0.034gpm pump-0.5ft from position
10:47	9.56	22.70	5.19	0.069	40	6.87	20.5	"	PR-0.034gpm
11:02	10.07	23.10	5.17	0.066	19	6.93	22.1	clear	PR-0.034gpm, 0.5ft from position
11:07	10.24	23.21	5.20	0.068	16.4	6.96	22.3	"	PR-0.034gpm
11:17	10.58	23.40	5.15	0.070	15.2	6.94	22.5	"	PR-0.034gpm lowered 0.5ft.
11:25	10.85	23.52	5.18	0.069	11.5	6.97	22.8	"	PR-0.034gpm
11:30	11.02	23.61	5.21	0.071	10.1	6.99	23.1	"	"
11:35	11.19	23.73	5.23	0.073	10.0	6.96	23.2	"	"
11:35	—	—	—	—	—	—	—	—	Collected photo sample in poly bottles.

Water Quality Equipment Used _____

Comments _____

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Z. Parham
Well Developed by (person/firm): Z. Parham (IT)

Parcel No.: 182
Well No.: OWM-182-MW01
Date started: 1.9.02

Monitoring Well Information

Development Method: Surge/Purge
Development Equipment: grundfos pump, generator, control box, WLM, Horiba U-10, Rion Turb meter, PID
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 43.37
Total depth of Well (ft): 70.28

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
10:10	0.0	43.37	5.44	.065	>999	4.92	15.3	brown	Began development on 1.9.02 PR=2.5gpm pump=70' btoc
10:15	12.5g	—	—	—	—	—	—	—	generator/control box malfunction.
13:20	12.5	43.71	—	—	—	—	—	—	New generator. Resumed purging. PR=1.5gpm Pump=70' btoc
13:35	35.0	47.12	5.74	.049	225	5.70	16.3	tan	"
13:50	52.5g	48.93	5.69	.053	201	4.98	16.8	tan	generator/control box malfunctioning again.
14:00	57.5	48.44	—	—	—	—	—	—	generator/pump restarted PR=1.5 Pump=70' btoc
14:10	72.5	—	—	—	—	—	—	—	generator/control box malfunctioning AGAIN.

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

70.28 − 43.37 = 26.91' x .163 = 4.39g x 5 = 21.93 + 120g = 141.93

acid

1/10/01

Parcel No.: 182
Well ID: CWM-182-MW01
Date: 1.9.01 / 1.10.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
14:25	72.5	47.89	—	—	—	—	—	—	New generator + control box, Resumed pumping well PR=1.5 pump=70'
14:30	80.0	48.40	5.76	.036	26	7.28	16.1	clear	PR=.7gpm pump=68' toc
14:45	90.5	49.23	5.63	.034	24	7.14	16.7	"	"
15:00	101.0	49.47	5.54	.033	14.3	7.17	16.5	"	Pump raised to 64' toc.
15:15	111.5	49.73	5.59	.035	33.0	7.10	16.4	"	"
15:30	122.0	49.92	5.62	.034	22.0	7.21	16.2	"	"
15:45	132.5	50.05	5.49	.031	15.4	7.32	16.5	clear	ceased development for 1.9.02.
07:45	132.5	43.87	—	—	—	—	—	—	Resumed development for 1.10.02 PR=.4gpm Pump=64' toc
08:00	138.5	46.86	4.58	.063	231	8.21	15.2	tan	"
08:15	144.5	48.06	4.44	.065	101	7.42	15.8	light tan	PR=.4gpm Pump=60' toc
08:30	150.5	48.65	4.89	.042	193	7.63	15.5	tan	"
08:45	156.5	49.14	5.11	.035	97	7.43	15.8	light tan	"

Parcel No.: 182
Well ID: CWM-182-MW01
Date: 1.10.02

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:00	172.5	49.56	5.29	.030	81	7.51	16.1	light tan	PR = .4 gpm Pump = 60' btoc
09:15	178.5	49.78	5.15	.034	75	7.55	16.5	"	Pump raised to 56' btoc
09:30	184.5	49.93	5.23	.029	99	7.57	16.6	"	"
09:45	190.5	50.08	5.28	.033	71	7.51	16.8	"	"
10:00	196.5	50.20	5.34	.028	42	7.58	16.8	"	Pump lowered to 60' btoc
10:15	202.5	50.31	5.33	.029	12.3	7.55	16.8	clear	"
10:30	208.5	50.39	5.29	.031	7.6	7.52	16.9	"	"
10:45	214.5	50.49	5.33	.033	3.9	7.55	16.8	"	"
11:00	220.5	50.62	5.31	.029	3.1	7.51	16.8	"	Development complete / 1L HDPE PHOTO sample taken.
:									
:									
:									

~~Jacob Parker 1.10.02~~

Groundwater Well Development Log

Fort McClellan , Alabama

oject Number: 796887
orm Completed by: Z. Parham
ell Developed by (person/firm): Z. Parham (TT)

Parcel No.: 182(7)
Well No.: CWM-182-MW02
Date started: 11.8.01

Monitoring Well Information

evelopment Method: surge / purge
evelopment Equipment: whale pump + Tubing / PID / Horiba W10 / Turbidimeter / Water level Indicator
asing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 17.39
Total depth of Well (ft): 26.54

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
99:00	0.0	17.39	5.21	.163	>999	3.04	17.7	dark brown	Pump = 26.5' bmc PR = .75 gpm
99:05	3.75								PR = .125 gpm
99:15	5.0	18.14	5.33	.161	>999	2.23	17.9	dark brown	"
99:30	6.88	18.81	5.50	.097	604	4.01	17.7	Tan	"
99:35	7.91								PR = .20 gpm
99:45	9.51	19.66	5.55	.095	208	4.63	18.1	light tan	"
0:00	12.51	19.99	5.48	.078	198	4.76	18.2	light tan	"

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove
6.54 - 17.39 = 9.15 x .163 = 1.49 x 5 = 7.45 + 100 gal. = 107.45 gal.

11-13-01

Parcel No.: 182(7)
Well ID: CWU-182-MW02
Date: 11.8.01 / 11.12.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
10:15	15.5l	20.15	5.40	.070	107	4.65	18.3	light tan	"
10:30	18.5l	20.20	5.40	.062	174	4.70	18.3	"	"
10:45	21.5l	20.44	5.26	.059	188	4.91	18.1	"	"
2hr 11:00	24.5l	20.51	5.47	.053	138	5.10	17.9	"	"
11:15	27.5l	20.63	5.14	.051	100	5.00	17.8	"	stopped development for 11.8.01
09:15	27.5l	17.65	—	—	—	—	—	—	resumed development for 11.12.01
09:30	30.5l	19.08	5.37	.086	430	4.84	17.7	tan	pump at 25.5' bTOC PR=.20gpm
09:45	33.5l	19.23	5.49	.060	170	5.30	18.0	light tan	"
10:00	36.5l	19.60	5.46	.054	173	5.93	18.0	"	"
3hr 10:15	39.5l	19.79	5.43	.047	182	6.10	17.9	"	pump raised to 24.5' bTOC PR=.20gpm
10:30	42.5l	20.43	5.49	.053	563	5.94	17.7	brown	"
10:35	43.5l	—	—	—	—	—	—	—	pump stopped working. Pulled pump from well for maintenance.
13:30	43.5l	17.63	—	—	—	—	—	—	resumed development with new pump. Pump @ 24.5' bTOC, PR=.20gpm

Parcel No.: 182
Well ID: CWM-182-MW02
Date: 11.12.01 / 11.13.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:45	46.51	19.21	5.39	.051	384	6.32	19.2	brown	"
14:00	49.51	19.36	5.35	.035	120	6.65	19.1	light Tan	"
14:15	52.51	19.41	5.31	.035	44	6.64	18.7	"	pump raised to 23.5'
14:30	55.51	19.89	5.29	.041	129	6.71	18.0	tan	"
14:45	58.51	19.91	5.25	.034	130	6.87	17.8	tan	"
15:00	61.51	20.02	5.26	.039	107	6.53	17.6	light Tan	pump lowered to 24.5'
15:15	64.51	20.11	5.27	.034	176	6.75	18.1	"	"
15:30	67.51	20.20	5.20	.032	123	6.87	18.0	"	"
15:45	70.51	20.29	5.22	.033	111	6.73	17.9	"	"
16:00	73.51	20.37	5.21	.032	123	6.67	18.0	"	stopped development for 11.12.01
07:45	73.51	17.79	—	—	—	—	—	—	pump @ 23.5' bmc / resumed development for 11.13.01 PR=.20 gpm
08:00	76.51	19.14	4.94	.076	851	5.60	15.5	brown	"

Parcel No.: 182
Well ID: CWM-182-MW02
Date: 11.13.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
08:15	79.5l	19.45	5.20	.042	188	6.47	16.1	Light Tan	Pump @ 23.5' btoc PR=.20 gpm
08:30	82.5l	19.5l	5.03	.033	108	6.50	15.4	"	"
08:45	85.5l	19.78	5.12	.036	122	6.31	16.6	"	"
09:00	88.5l	19.82	5.09	.035	62	6.28	16.8	"	"
09:15	91.5l	19.89	5.18	.039	62	6.41	17.1	"	"
09:30	94.5l	19.93	5.10	.033	57	6.25	17.3	"	"
09:45	97.5l	19.98	5.19	.035	51	6.38	17.9	"	"
10:00	100.5l	20.08	5.19	.034	49	6.35	17.8	"	"
10:15	103.5l	20.15	5.21	.029	43	6.51	17.8	"	"
10:30	106.5l	20.19	5.12	.028	22	6.33	18.1	clear	"
10:45	109.5l	20.25	5.19	.029	22	6.43	18.1	Clear	Well developed. 1L photo sample taken.
:			~~no~~	~~further~~	~~entries~~	~~/ Jack~~	~~Parham~~	~~11.13.01~~	

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: R. Goins (TT Corp)
Well Developed by (person/firm): R. Goins (TT Corp)

Parcel No.: cwm-182-mw03
Well No.: mw03
Date started: 11/15/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Grundfos pump, Horiba U-10, Orion Turbidity Meter, PID, 210 gal tank
Casing Diameter: 2in

Beginning Measurments
Depth to Water (ft): 14.95' bTOC
Total depth of Well (ft): 55.90' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
10:52	—	14.85	5.79	0.187	999	7.73	18.1	muddy (brown)	PR-0.27gpm, pump-0.5' from bottom
10:56	1.08	—	—	rate	change	—	—	—	PR-0.125gpm
11:07	2.46	26.50	6.09	0.176	999	3.83	19.7	(muddy) (brown)	PR-0.125gpm
11:10	2.835	—	—	rate	change	—	—	—	PR-0.27gpm
11:15	4.185	—	—	rate	change	—	—	—	PR-0.187gpm
11:18	4.746	—	—	rate	change	—	—	—	PR-0.167gpm, pump-mid 2ft
11:22	5.414	34.83	6.16	0.176	999	2.95	20.8	muddy (brown)	PR-0.167gpm

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

55.90 - 14.85 = 41.05 X 0.163 = 6.69 X 5 = 33.45 + 95 = 128.45

QC'd [signature] 11/26/01

Parcel No.: CWM-182-MW07
Well ID: MW07
Date: 11/15/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
11:30	6.75	—	—	rate	changed	—	—	—	PR-0.15 gpm
11:37	7.8	36.50	6.10	0.171	999	3.10	21.6	cloudy (brown)	PR-0.15 gpm
11:52	10.05	36.61	6.28	0.163	805	3.37	22.0	"	PR-0.15 gpm
13:22	10.05	30.41	5.94	0.165	999	2.59	19.6	"	PR-0.187 gpm
13:27	10.798	—	—	rate	changed	—	—	—	PR-0.173 gpm
13:31	11.49	—	—	rate	changed	—	—	—	PR-0.15 gpm
13:37	12.39	36.55	5.87	0.160	999	3.21	20.1	cloudy (brown)	"
13:42	13.14	—	—	rate	changed	—	—	—	PR-0.165 gpm
13:52	14.79	36.50	5.84	0.154	999	3.65	20.8	cloudy (brown)	PR-0.173 gpm, raised 2ft
14:07	17.39	36.55	5.95	0.154	999	3.34	19.8	"	PR-0.173 gpm
14:13	18.43	—	—	rate	changed	—	—	—	PR-0.187 gpm
14:22	20.11	36.95	5.94	0.154	999	3.98	20.0	cloudy (brown)	PR-0.160 gpm

Water Quality Equipment Used _____

Comments _____

Parcel No.: CWM-182-MW03
Well ID: MW03
Date: 11/15/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
14:27	20.91	—	—	rate change	—	—	—	—	PR-0.14 gpm
14:37	22.31	39.95	5.96	0.155	999	3.67	20.3	cloudy (brown)	PR 0.125, pump-lowered 2ft
14:52	24.19	44.90	5.99	0.155	999	3.75	20.0	muddy (brown)	" " "
15:00	25.19	—	—	rate change	—	—	—	—	PR-0.45 gpm
15:04	26.99	—	—	—	—	—	—	—	Well is dry
08:07	26.99	24.95	5.65	0.145	999	3.61	11.8	brown	11/16/01 PR-0.27 gpm, pump-0.5 ft from bottom
08:15	29.15	—	—	rate change	—	—	—	—	PR-0.125
08:22	30.03	32.30	5.44	0.081	999	4.83	14.7	brown	"
08:37	31.90	35.10	5.55	0.082	999	4.50	14.9	"	"
08:52	33.78	36.50	5.57	0.085	999	4.73	16.1	"	~~PR~~ PR-0.125 gpm, pump-1ft raised
09:07	35.65	37.55	5.65	0.087	999	4.87	16.8	"	" "
09:22	37.53	40.00	5.75	0.096	"	4.61	16.9	"	PR 0.125 gpm

Parcel No.: CWM-182-MW03
Well ID: MW03
Date: 11/16/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:37	39.40	44.30	5.89	0.100	999	4.34	18.1	brown	PR-0.125, pump-0.5ft from bottom
09:52	41.29	47.95	5.95	0.105	"	3.79	18.8	"	PR-0.125gpm
09:55	41.65	—	—	— no change —	—	—	—	—	PR-0.3 gpm
10:02	43.75	—	—	—	—	—	—	—	Well dry
13:45	43.75	15.92	—	—	—	—	—	—	resumed purging on 11.20.01 Pump 55' btoc PR=.25gpm
14:00	47.50	24.29	6.13	.086	>999	4.41	16.4	brown	"
14:15	51.25	31.31	6.14	.080	>999	4.29	16.4	"	"
14:30	55.0	36.60	6.06	.079	696	4.19	16.3	dark. Tan	"
14:45	58.75	36.60	6.10	.081	>999	4.23	16.4	brown	Pump @ 50' btoc
15:00	62.50	37.03	6.15	.083	>999	4.11	16.3	"	"
15:15	66.25	41.14	6.08	.085	>999	4.19	16.2	"	PR lowered to .135gpm
15:20	66.93	48.78	—	—	—	—	—	—	Pump lowered to bottom of well.

Parcel No.: 182
Well ID: CWM-182-MW03
Date: 11.20.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
15:24	67.47			well dry for third time					
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Jacob Ward 11.20.01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Z. Parham
Well Developed by (person/firm): Z. Parham (IT)

Parcel No.: 182
Well No.: CWM-182-MW04
Date started: 11.29.01

Monitoring Well Information

Development Method: Surge/purge
Development Equipment: whale pump/hose, WLM, PID, Horiba U-10, Turbidity meter
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 17.49
Total depth of Well (ft): 36.25

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
08:15	0.0	17.49	5.69	.216	>999	5.40	17.0	brown	Pump set at 36' toc. PR=.75 gpm
08:20	3.75	23.79	—	—	—	—	—	—	PR=.132 gpm
08:30	5.07	22.80	5.71	.197	>999	4.61	18.2	brown	"
08:45	7.05	22.78	5.98	.200	>999	4.01	18.1	"	PR=.20 gpm
09:00	10.05	23.67	6.04	.224	>999	2.52	18.5	"	"
09:15	13.05	24.77	6.01	.215	>999	2.32	18.0	"	PR=.15 gpm
09:30	15.30	24.43	5.99	.220	>999	2.51	17.9	"	"

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

36.25 - 17.49 = 18.76 x .163 = 3.06 x 5 = 15.3 + 100g = 115.3 gal

QC'd [illegible] 12/4/01

Parcel No.: 182
Well ID: CWM-182-MW04
Date: 11.29.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
09:40	16.8	24.31	—	—	—	—	—	—	~~PR=1.7~~ 29.11.29.01 PR=.17gpm
09:45	17.65	24.42	6.15	.236	>999	2.89	20.1	brown	Pump @ 36' toc. PR=.17gpm
10:00	20.2	25.01	6.14	.242	>999	3.02	19.6	"	"
10:15	22.75	25.44	6.16	.239	>999	2.98	19.8	"	"
10:30	25.30	25.73	6.21	.242	>999	2.83	19.8	"	"
10:45	27.85	26.08	6.20	.240	>999	3.01	20.0	"	"
11:00	30.4	26.41	6.19	.235	>999	2.87	20.0	"	"
11:15	32.95	26.90	6.21	.248	>999	2.98	19.8	"	Shut down for lunch.
12:45	32.95	19.83	—	—	—	—	—	—	resumed development. Pump=30' toc; PR=.17gpm
13:00	35.50	22.53	6.16	.247	>999	3.71	21.5	brown	"
13:15	38.05	23.32	6.18	.237	583	4.84	20.9	light brown	"
13:30	40.65	24.12	6.18	.239	810	4.75	21.0	light brown	"
13:45	43.20	24.74	6.20	.240	416	4.08	21.2	light brown	"

Parcel No.: 182
Well ID: CWM-182-MW04
Date: 11.29.01 / 12.3.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
14:00	45.75	25.38	6.19	.238	850	4.21	21.0	brown	Pump = 30' btoc PR = .17 gpm
14:15	48.30	26.04	6.22	.253	>999	3.98	20.7	"	"
14:30	50.85	26.57	6.26	.249	>999	3.20	20.6	"	Pump lowered to 32' btoc.
14:45	53.40	27.21	6.28	.253	>999	2.98	20.1	"	"
15:00	58.95	27.83	6.27	.253	>999	3.04	19.9	"	"
15:15	61.50	28.40	6.27	.251	>999	2.89	19.9	"	"
15:30	64.05	28.98	6.25	.253	>999	3.01	20.1	"	Pump lowered to 36' PR = .70 gpm
15:45	74.55	35.87	6.26	.252	>999	2.91	20.0	brown	stopped development for 11.29.01
09:30	74.55	17.41	—	—	—	—	—	—	Resumed development for 12.3.01 Pump set 25' btoc. PR = .18 gpm
09:45	77.25	20.70	5.28	.324	840	4.81	17.2	brown	"
09:55	79.05	—	—	—	—	—	—	—	pump malfunctioning, stopped development for pump maintenance
10:30	79.05	18.71	—	—	—	—	—	—	Resumed development. Pump = 25' btoc, PR = .18 gpm
10:45	82.75	22.34	6.02	.274	>999	4.32	18.4	orange brown	"

Parcel No.: 182
Well ID: CWM-182-MW04
Date: 12.3.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
11:00	84.45	22.49	6.04 ~~.275~~	.275	611	4.32	18.4	brown	Pump at 25' btoc PR=.18 gpm
11:15	87.15	22.92	6.01	.271	482	4.30	18.6	"	"
11:30	89.85	23.32	6.02	.270	320	4.35	18.9	"	"
11:45	92.55	23.96	6.02	.273	400	4.32	19.0	"	Pump lowered to 27' btoc
12:00	95.25	24.19	6.00	.273	442	4.35	19.0	"	"
12:15	97.95	24.52	6.02	.271	190	4.34	18.7	Tan	"
12:30	100.65	24.93	6.00	.269	188	4.22	18.6	"	"
12:45	103.35	25.11	5.98	.270	249	4.29	19.3	"	"
13:00	106.50	25.34	6.02	.274	409	4.34	19.4	brown	"
13:15	109.75	25.63	6.00	.269	469	4.30	19.0	"	"
13:30	111.45	25.91	6.01	.270	400	4.25	18.7	"	"
13:45	114.15	26.11	6.02	.271	338	4.31	18.6	Tan	"
14:00	116.85	26.32	6.01	.269	377	4.29	18.4	Tan	Development completed.

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Z. Parham
Well Developed by (person/firm): Z. Parham/FT

Parcel No.: 182(7)
Well No.: CWM-182-MW05
Date started: 11.8.01

Monitoring Well Information

Development Method: surge/purge
Development Equipment: whale pump + hose, Horiba U-10, Turbidity meter, W.L.M.
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 9.30
Total depth of Well (ft): 24.30

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
09:05	0.0	9.3	6.13	.580	>999	9.92	17.51	brown	pump @ 24' broc PR = .53 gpm
09:10	2.65								PR = .264 gpm
09:20	5.29	11.62 ~~12.62~~	7.32	.371	>999	9.53	18.04	brown	"
09:30	7.93								PR = .211 gpm
09:35	8.08	13.25	7.58	.358	>999	8.52	19.00	brown	pump raised to 20' broc
09:50	11.24	14.60	7.82	.363	>999	7.94	18.98	brown	pump lowered to 21' broc
10:05	14.41	16.90	7.85	.379	>999	9.75	18.96	brown	"

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

24.3 - 9.3 = 15 x .163 = 2.54 x 5 = 12.25 + 95 = 107.25

QC'd [illegible] 11/26/01

Parcel No.: 182(7)
Well ID: CWM-182-MW05
Date: 11.8.01 / 11.14.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
10:10	15.46								PR = .145 gpm
10:20	16.91	20.52	7.81	.362	>999	6.74	20.30	brown	PR = .066 gpm
10:35	17.90	21.46	8.05	.353	>999	7.42	20.39	brown	"
10:50	18.89	22.97	7.94	.365	>999	6.69	20.79	brown	"
2hr 11:05	19.88	23.74	8.06	.360	>999	6.72	20.41	brown	"
11:20	20.87 ~~20.87~~ 11.14.01	24.08	8.00	.367	>999	6.21	21.67	brown	"
11:28	21.4 ~~21.40~~ 11.14.01		well	dry					
08:00	21.4 ~~20.40~~ 11.14.01	11.0							began development for 11.14.01 Pump = 22.0' btoc PR = .1 gpm
08:15	22.90	12.19	6.55	.360	193	8.96	17.1	Tan	PR = .066 gpm
08:30	23.89	12.62	6.82	.341	181	6.24	16.8	tan	"
08:45	24.88	12.98	6.73	.358	19.7	6.79	17.9	"	"
09:00	25.87	13.38	7.02	.349	155	5.61	18.1	"	"
09:15	26.86	13.68	6.89	.357	148	6.03	18.1	"	pump raised to 21' btoc PR = .066 gpm

Parcel No.: 182(7)
Well ID: CWM-182-MW05
Date: 11.14.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:30	27.85	13.89	7.08	.353	113	8.03	18.2	light tan	"
09:45	28.84	14.12	7.18	.351	76	8.14	18.0	light tan	"
10:00	29.83	14.29	6.96	.350	76	5.31	18.9	"	"
10:15	30.82	14.44	7.03	.349	75	7.61	19.0	"	"
10:30	31.81	14.60	6.90	.352	70	8.01	18.7	"	Pump raised to 21' btoc
10:45	32.80	14.75	6.99	.344	40	5.86	20.6	clear	"
11:00	33.79	14.93	6.94	.336	30	5.84	22.0	"	shut down development for lunch.
13:00	33.79	13.05	6.98	.335	130	6.21	21.9	tan	pump at 20' btoc PR=.066 gpm
13:15	34.78	13.48	6.90	.331	178	6.01	22.2	~~light~~ 30 11/16/01 tan	pump lowered to 24' btoc. PR=.066 gpm
13:30	35.77	13.83	6.79	.330	681	5.41	21.6	brown	"
13:45	36.76	14.30	6.81	.335	1010	5.83	21.8	orange brown	"
14:00	37.75	14.54	6.92	.325	223	6.46	21.6	tan	"

Parcel No.: 182(7)
Well ID: CWM-182-MW05
Date: 11.14.01 / 11.15.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
14:15	38.74	14.86	6.88	.331	182	6.72	21.0	tan	raised pump to 22' btoc. PR=.066gpm
14:30	39.73	15.04	6.88	.326	156	6.80	21.0	light tan	"
14:45	40.72	15.25	6.85	.330	125	6.83	21.0	"	"
15:00	41.71	15.43	6.87	.330	59	6.80	20.4	clear	"
15:15	42.70	15.65	6.85	.332	45	6.89	20.8	"	"
15:30	43.69	15.81	6.86	.331	35	6.81	21.0	"	"
15:45	44.68	16.06	6.84	.335	35	6.79	20.1	"	stopped development for 11.14.01.
08:30	44.68	11.02	—	—	—	—	—	—	Resumed development for 11.15.01 / pump=21' btoc PR=.066gpm
08:45	45.67	12.37	6.42	.343	283	5.11	16.5	tan	pump 21' btoc PR=.066gpm
09:00	46.66	12.72	6.77	.327	632	5.61	17.0	brown	Pump raised to 19' btoc PR=.066gpm
09:15	47.65	13.23	6.58	.331	182	5.43	16.8	tan	"
09:30	48.64	13.55	6.73	.339	175	5.87	17.1	tan	"

Parcel No.: 182(7)
Well ID: CWM-182-MW05
Date: 11.15.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:45	49.63	13.90	6.49	.328	149	5.63	17.1	tan	Pump @ 19' btoc PR=.066gpm
10:00	50.62	14.21	6.55	.330	127	5.49	17.8	tan	"
10:15	51.61	14.46	6.86	.323	169	4.92	19.1	tan	"
10:30	52.60	14.62	6.81	.335	172	4.88	19.9	"	"
10:45	53.59	14.75	6.69	.329	175	5.13	19.0	"	Pump lowered to 22' btoc. PR=.066gpm
11:00	54.58	14.91	6.56	.323	175	5.26	19.5	"	"
11:15	55.57	15.11	6.51	.332	92	5.29	20.0	"	"
11:25	56.23	—	pump malfunction	—	—	—	—	—	Stopped purging well in order to fix/replace pump.
14:15	56.23	—	6.55	.336	190	5.78	19.9	brown	1 L photo sample taken. Bailing well dry.
14:20	57.02	—	6.49	.338	389	5.30	20.3	brown	"
14:40	62.30	—	6.51	.329	>999	5.55	19.1	brown	"
15:10	67.58	—	6.43	.335	>999	5.83	19.2	brown	"

Parcel No.: 182(7)
Well ID: CWM-182-MW05
Date: 11.15.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
15:20	20.50				well	Dry			Ended development on CWM-182-MW05.
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Jack Rankin 11.15.01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Z. Parham
Well Developed by (person/firm): Z. Parham (ET)

Parcel No.: 182
Well No.: CWM-182-MW06
Date started: 12.4.01

Monitoring Well Information

Development Method: surge/purge
Development Equipment: whale pump/hose, PID, WLM, Horiba U-10, Orion Turbidity meter
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 18.22'
Total depth of Well (ft): 42.25'

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
08:45	0.0	18.22	6.44	.254	335	1.42	15.7	brown	Pump at 42' btoc PR=.40 gpm
08:50	6.0	23.42	—	—	—	—	—	—	PR= .08 gpm
09:00	6.8	25.86	7.32	.221	246	1.97	16.0	brown	PR=.06 gpm
09:15	7.7	26.62	7.49	.208	93	3.84	17.0	tan	"
09:25	8.3	26.55	—	—	—	—	—	—	PR=.08 gpm
09:30	8.7	26.72	7.45	.212	67	3.56	17.3	light tan	"
09:45	9.9	26.65	7.33	.202	65	3.32	17.8	"	"

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

42.25 - 18.22 = 24.03 x .163 = 3.92 x 5 = 19.6 + 100 = 119.6 gal.

[illegible] 12/5/01

Parcel No.: 182
Well ID: CWM-182-MW06
Date: 12.4.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
10:00	11.1	26.69	7.41	.220	17.4	3.57	18.0	clear	Pump raised to 39' broc. PR=.08gpm
10:15	12.3	26.80	7.35	.210	15.0	3.22	18.3	"	"
10:30	13.5	27.00	7.15	.245	12.0	4.10	18.5	"	"
10:45	14.7	27.51	7.21	.241	12.0	4.15	18.6	"	"
11:00	15.9	27.78	7.08	.269	8.7	4.69	18.8	"	Pump raised to 37' broc PR=.08gpm
11:15	17.1	28.25	7.16	.271	9.3	4.51	18.9	"	"
11:30	18.3	28.74	7.22	.269	9.0	4.38	19.1	"	stopped development for lunch.
12:30	18.3	27.58	7.04	.249	49	4.27	19.3	Tan	Pump at 37' broc PR=.08gpm
12:45	19.5	28.55	7.11	.243	19	4.31	19.4	clear	"
13:00	20.7	28.88	7.05	.251	17.5	4.21	19.4	"	"
13:15	21.9	29.20	7.12	.259	13.0	5.38	19.5	"	"
13:30	23.1	29.55	7.10	.249	12.3	4.08	20.4	"	Pump raised to 35' broc PR=.08gpm
13:45	24.3	29.88	7.11	.251	10.0	4.64	20.3	"	"

Parcel No.: 182
Well ID: CWM-182-MW06
Date: 12.4.01 / 12.5.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
14:00	25.5	30.27	7.12	.242	7.4	4.11	20.5	clear	Pump lowered to 37' toc. PR=.08 gpm
14:15	26.7	30.58	7.17	.247	10.8	4.01	20.5	"	"
14:30	27.9	30.91	7.15	.241	8.3	4.32	20.7	"	"
14:45	29.1	31.13	7.11	.239	8.0	4.41	21.0	"	"
15:00	30.3	31.53	7.14	.240	7.3	4.50	21.0	"	"
15:15	31.5	31.84	7.16	.229	7.1	4.60	21.2	"	"
15:30	32.7	32.04	7.10	.239	7.0	4.51	21.2	clear	stopped development for 12.4.01
09:00	32.7	28.99	6.33	.243	30	4.75	16.4	Tan ~~clear~~	Resumed development for 12.5.01 Pump=37' toc, PR=.08 gpm
09:15	33.9	29.71	6.97	.310	34	4.31	17.7	Tan	"
09:30	35.1	30.02	6.82	.281	19	4.51	17.9	"	"
09:45	36.3	30.35	7.07	.298	14.3	4.53	18.8	clear	"
10:00	37.5	30.84	7.09	.295	10.2	4.43	19.4	"	"
10:15	38.7	31.30	7.00	.296	7.1	4.55	19.9	"	"

Parcel No.: 182
Well ID: CWM-182-MW06
Date: 12.5.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
10:30	39.9	31.54	7.01	.285	5.9	4.43	20.3	clear	Pump at 32' toc PR=.08 gpm
10:45	41.1	31.96	7.10	.285	4.3	4.42	21.3	"	"
11:00	42.3	32.23	7.11	.291	4.5	4.51	21.5	"	"
11:15	43.5	32.52	7.15	.282	7.4	4.48	21.85	clear	Completed 8hr development of CWM-182-MW06.
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Jack Rochmann 12.5.01

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: R. Goins
Well Developed by (person/firm): R. Goins / IT Corp

Parcel No.: CWM-511-MW01
Well No.: MW01
Date started: 11/2/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: 210 gal tank, whale pump & tubing, PID, Horiba U-10, water indicator, turbidity meter
Casing Diameter: 2 in.

Beginning Measurments
Depth to Water (ft): 5.96
Total depth of Well (ft): 24.17

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
12:03	—	5.96	6.17	0.276	999	3.29	23.8	Brown (muddy)	PR-0.062gpm, pump-3" from bottom
12:15	0.744	—	—	—	—	—	—	—	PR-0.09gpm
12:18	1.01	6.79	5.98	0.248	999	4.35	23.5	brown (cloudy)	PR-0.125gpm
12:23	1.635	—	—	—	—	—	—	—	Pump shutoff problems w/ whale pump
12:38	1.635	6.0	5.95	0.242	999	4.03	24.1	brown (cloudy)	PR-0.138gpm
12:40	1.911	—	—	—	—	—	—	—	PR-0.166gpm
12:53	4.07	8.3	5.97	0.250	97	4.29	24.0	cloudy	PR-0.166gpm, pump-1ft from position

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

24.17 − 5.96 = 18.21 x 0.163 = 2.97 x 5 = 14.85 + 5 = 19.85

QC'd [illegible] 11/2/01

Parcel No.: CWM-511-MW01
Well ID: MW01
Date: 11/1/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:08	6.56	8.44	5.99	0.270	26	4.26	23.6	clear	PR-0.166gpm, pump-2ft from position
13:23	9.05	8.43	6.06	0.263	49	3.78	23.4	clear	PR-0.166gpm, pump-1ft from position
13:38	11.54	8.55	6.08	0.250	48	3.89	23.5	clear	PR-0.166gpm, pump-1ft from position
13:53	14.03	8.63	6.06	0.262	94	3.67	23.7	cloudy	PR-0.173gpm
14:08	16.63	8.63	6.06	0.272	88	4.01	24.2	cloudy	PR-0.173gpm
14:23	19.23	8.65	6.03	0.268	64	3.87	23.8	"	PR-0.173gpm
14:38	21.83	8.68	6.11	0.274	54	4.69	23.4	clear	PR-0.173gpm, 1ft from position
14:53	24.43	8.73	6.13	0.271	9.7	3.89	23.1	clear	PR-0.173gpm, 2ft from position
15:08	27.03	8.76	6.08	0.265	25.8	3.52	22.6	"	PR-0.173gpm, 1ft from position
15:23	29.63	8.80	6.06	0.263	9.0	4.22	23.5	clear	PR-0.173gpm
15:25	29.63	—	—	—	—	—	—	—	Collection of photo sample in 1L poly bottle.
:									

Nu Zuphen Tintrim
R. Sorin 11/2/01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 196887
Form Completed by: R. Gains / IT
Well Developed by (person/firm): R. Gains / IT

Parcel No.: CWM-511
Well No.: MW02
Date started: 11/2/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale pump, 20 gal tank, PID, Horiba U-10, Orion Turbidity Meter
Casing Diameter: 2in

Beginning Measurments
Depth to Water (ft): 6.4 FLUSHMOUNT
Total depth of Well (ft): 19.14 FLUSHMOUNT

screen 5-15 ft.

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
11:52	—	6.4	5.82	0.182	81	4.12	25.5	cloudy	PR-0.15, pump-3" from bottom
11:57	0.575	—	—	—	—	—	—	—	PR-0.22
12:05	2.335	—	—	—	—	—	—	—	PR-0.1
12:07	2.535	9.65	5.62	0.149	20	2.27	25.4	clear	PR-0.1, pump - raised 1ft
12:22	4.04	11.0	5.62	0.160	20	3.24	27.6	"	~~PR~~ raised pump 2ft @1217
12:37	5.54	12.2	5.65	0.159	11.8	3.29	28.3	"	PR-0.1
12:52	7.04	13.5	5.75	0.171	13.9	2.53	28.6	"	PR-0.1, pump - lowered 1ft

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

19.14 - 6.4 = 12.74 x 0.163 = 2.08 x 5 = 10.4 + 5 = 15.4 gal

QC'd Kirk Tyson 11/5/01

Parcel No.: Chm-511
Well ID: mw02
Date: 11/2/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
13:07	8.54	14.58	5.89	0.200	8.4	3.51	28.6	clear	PR-0.094, pump-lowered 1 ft 5pm @ 1303
1hr 13:22	9.95	15.61	5.96	0.212	9.2	3.51	27.1	"	PR-0.1 gpm, pump-lowered pump 1 ft
13:37	11.45	16.85	5.88	0.195	32	2.83	25.7	"	PR-0.1 gpm
13:52	12.95	17.59	5.73	0.205	84	3.15	26.3	cloudy	~~0.50~~ PR-0.5 gpm
13:53	13.45	—	—	—	—	—	—	—	Well is dry
11-05-01 10:00	13.45	6.50	5.73	.217	11.7	4.18	22.4	clear	11-05-01 Lee Flippen + Cindy Levaas Depth 8 ft. PR .075
2hrs 10:15	14.58	Below Top pump	6.42	0.175	12.3	4.24	23.8	clear	Depth 10 ft. PR 0.075
10:30	15.71	9.22	6.51	0.191	9.7	3.62	25.0	clear	Reached target PV Depth 12 ft. PR 0.075
10:45	16.84	9.86	6.57	0.205	8.2	3.41	25.6	clear	Depth 14 ft. PR 0.075
11:00	17.97	10.22	6.55	0.204	5.1	3.46	26.4	clear	Depth 14 ft. PR 0.075
3hrs 11:15	19.10	10.63	6.45	0.197	7.4	3.80	25.8	clear	Depth 14 ft. PR 0.075
11:30	20.23	11.02	6.35	0.196	4.3	3.32	26.0	clear	Depth 14 ft. PR 0.075

well development completed
took 1 L H_2O photo sample

11/5/01 Cindy Levaas

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: MARK SNOEMAKER (IT)
Well Developed by (person/firm): MARK SNOEMAKER (IT)

Parcel No.: 511 "BLACKTOP AREA"
Well No.: CWM - 511 - MW03
Date started: 11/5/01

Monitoring Well Information

Development Method: SURGE + PURGE
Development Equipment: WHALE PUMP ; HORIBA U-10 ORION AQUAFAST II TURBIDITY METER
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 6.44
Total depth of Well (ft): 19.42

INITIAL PID = 0.0

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
10:18	0	6.44	5.68	0.354	1089 ~~999~~	3.26	22.9	VERY TURBID	INITIAL MEASUREMENT - PUMP ~ 1' FROM BOTTOM
10:31	7.5	11.09	6.36	0.314	187 ~~97~~	3.28	24.2	CLOUDY	FLOW RATE SET @ ~.5 gal/min
10:46	15.0	15.89	6.34	0.260	68	10.25	24.9	CLOUDY	ADJUSTING FLOW RATE DOWN
10:53	—	—	—	—	—	—	—	—	WELL DRY — SHUT DOWN AND ALLOW 20 MIN RECHARGE
11:13	15.00	MIS ~~6.79~~	—	—	—	—	—	—	LESS THAN 80% RECOVERY. CEASE DEVELOPMENT FOR DAY
12:45	15.00	6.79	6.44	0.362	915	5.25	26.7	VERY TURBID	11/7/01 RESUME DEVELOPMENT, FLOW 0.075 GPM
13:00	16.125	8.00	6.40	0.327	1292	6.25	27.5	VERY TURBID	FLOW 0.1 GPM

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

19.42 - 6.44 = 12.98 * 0.163 = 2.116 * 5 = 10.58 + 5 = 15.58 gal

Parcel No.: 511
Well ID: CWM-511-MW03
Date: 11/7/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
13:55	16.125	8.61	6.42	0.358	1282	4.30	28.1	TURBID	RESTART AFTER REPAIR. FLOW 0.1 GPM
14:10	17.63	9.30	6.32	0.327	196	4.71	27.3	SLIGHTLY CLOUDY	FLOW 0.1 GPM
14:25	19.13	10.61	6.47	0.340	60	3.99	27.1	SLIGHTLY CLOUDY	FLOW 0.1 GPM
14:40	20.63	10.63	6.61	0.349	51	5.26	27.1	CLEAR	FLOW 0.1 GPM
14:55	22.13	12.79	6.42	0.317	30	4.03	26.4	CLEAR	FLOW 0.1 GPM
15:10	23.63	14.15	6.33	0.292	25	4.43	26.0	CLEAR	FLOW 0.1 GPM
15:25	25.13	16.04	6.39	0.290	34	5.11	25.8	CLEAR	FLOW 0.1 GPM
15:35	25.13	—	—	—	—	—	—	—	WELL RAN DRY
07:15	25.13	7.02	6.15	0.426	889	3.91	15.4	TURBID	RESUME DEVELOPMENT 11/8/01 FLOW 0.1 GPM
07:30	26.63	8.69	6.31	0.305	68	5.00	18.2	CLEAR	FLOW = 0.1 GPM
07:45	28.13	9.41	6.48	0.309	58	5.68	18.2	CLEAR	FLOW = 0.1 GPM
08:00	29.63	10.03	6.52	0.329	56	5.18	18.6	CLEAR	FLOW = 0.1 GPM
08:15	31.13	10.69	6.52	0.326	29	4.98	19.1	CLEAR	FLOW = 0.1 GPM

Parcel No.: 511
Well ID: CWM-511-MW03
Date: 11/8/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
08:30	32.63	11.16	6.50	0.320	19	4.61	19.4	CLEAR	FLOW = 0.1 GPM
08:45	34.13	11.52	6.46	0.312	17.3	4.58	19.2	CLEAR	FLOW = 0.1 GPM
09:00	35.63	11.89	6.46	0.306	17.1	4.22	19.8	CLEAR	FLOW = 0.1 GPM
09:15	37.13	12.72	6.44	0.299	18	4.77	21.6	CLEAR	FLOW = 0.1 GPM
09:30	38.63	13.57	6.44	0.292	18.1	4.32	22.1	CLEAR	FLOW = 0.1 GPM
09:45	40.13	14.10	6.36	0.282	13.8	3.52	22.4	CLEAR	FLOW = 0.1 GPM
10:00	41.63	15.74	6.37	0.282	23	3.83	22.4	CLEAR	FLOW = 0.1 GPM
10:15	43.13	15.88	6.38	0.287	18	3.87	22.7	CLEAR	FLOW = 0.1 GPM
10:30	44.63	16.56	6.40	0.281	15.4	3.62	23.1	CLEAR	FLOW = 0.1 GPM
10:35	—	—	—	—	—	—	—	—	WELL RAN DRY - 3rd DAY CEASE DEVELOPMENT
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11/8/01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887
Form Completed by: Lee FLIPPEN/Cindy LeVAAS
Well Developed by (person/firm): IT Corp.

Parcel No.: CWM S12
Well No.: MW 01
Date started: 11-05-01

Monitoring Well Information

Development Method: Surge + Purge
Development Equipment: Horiba U-10 # 906004, AquaFAST II 2028, Heron # 2044, white Pumps + 12v. Battery
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 7.30 ft. Flush MOUNT
Total depth of Well (ft): 22.25 ft. " "

PID 0.0, BZ 0.0, Screen 7.5 - 22 ft

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
14:15	0	7.30	6.71	.393	59	1.73	21.3	cloudy	Depth 21 ft. PR. 0.15
14:30	2.25	9.18	6.80	0.380	64	1.18	22.2	cloudy	Depth 21 ft PR 0.15
14:45	4.50	10.13	6.85	0.393	25	1.20	22.1	cloudy	Depth 21 ft PR 0.15
15:00	6.75	10.72	6.79	0.424	5.3	1.13	22.5	clear	Depth 21 ft PR 0.175
15:15	9.38	12.42	6.71	0.409	65	1.21	22.9	cloudy	Depth 21 ft PR 0.13
15:30	11.33	14.13	6.73	0.401	13.2	1.15	22.9	clear	Depth 21 ft PR 0.13
15:45	13.28	15.44	6.86	0.366	3.7	1.75	22.9	clear	Depth 21 ft PR 0.30

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

22.25 - 7.30 = 14.95 x .163 = 2.44 x 5 = 12.18 + 5 = 17.18 g

RE's [illegible] 11-12-01

Parcel No.: CWM 512
Well ID: MW01
Date: 11/05/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
16:00	17.78	19.49	7.05	0.404	11.1	1.13	22.3	clear	Depth 22 ft @ Reached target purge volume PR 0.30
16:14	21.98	—	—	—	—	—	—	—	Depth 22 ft. — Well ran dry 11-5-01 1¾ hrs
08:07	21.98	10.44	7.06	0.486	124	5.97	17.8	SLIGHTLY CLOUDY	11/7/01 MORE SNOW MAKER RESUMES PUMPING FLOW = 0.1 GPM
08:37	24.98	12.13	6.84	0.421	44	5.16	21.1	CLEAR	FLOW = 0.1 GPM
08:52	26.48	13.86	6.79	0.426	38	5.98	22.2	CLEAR	FLOW = 0.1 GPM
0858 ~~09:07~~	—	—	—	—	—	—	—	—	PUMP ~~RAN~~ DRY SHUT OFF
09:25	26.48	13.93	6.83	0.445	90	6.10	22.8	CLEAR	RESTART FLOW 0.1 GPM
09:40	27.98	15.76	6.73	0.373	33	5.86	24.8	CLEAR	FLOW 0.1 GPM
09:55	29.48	16.19	6.78	0.377	27	6.46	25.2	CLEAR	FLOW 0.1 GPM
10:10	30.48	17.55	6.83	0.412	30	6.24	25.4	CLEAR	FLOW 0.1 GPM PUMP STOPPED @ 1020
10:30	30.48	17.69	6.76	0.447	130	5.95	25.1	SLIGHTLY CLOUDY	RESTART FLOW 0.1 GPM
10:45	31.98	19.04	6.75	0.458	56	5.34	25.9	SLIGHTLY CLOUDY	FLOW 0.1 GPM
10:55	31.98	—	—	—	—	—	—	—	WELL RAN DRY

Parcel No.: 512
Well ID: CWM-512-MW01
Date: 11/8/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
12:32	31.98	12.38	6.81	0.462	44	3.90	22.6	CLEAR	RESUME DEVELOPMENT 11/8/01 FLOW = 0.1 GPM
12:47	33.48	13.11	6.76	0.410	122	5.29	23.7	CLEAR	FLOW = 0.1 GPM
13:02	34.98	14.46	6.74	0.396	7.6	5.20	24.3	CLEAR	FLOW = 0.1 GPM
13:17	36.48	16.02	6.74	0.335	4.9	5.84	24.4	CLEAR	FLOW = 0.1 GPM
13:32	37.98	16.13	6.69	0.339	8.2	5.79	24.3	CLEAR	FLOW = 0.1 GPM
13:35	—	—	—	—	—	—	—	—	CEASE DEVELOPMENT
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11/8/01

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: K Grains
Well Developed by (person/firm): K Grains/IT

Parcel No.: CWM-513
Well No.: MW01
Date started: 11/8/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale pump and Tubing, PID, Horiba U-10, Turbidity Meter, 210 gal tank
Casing Diameter: 2 in

Beginning Measurments
Depth to Water (ft): 9.3' bTOC
Total depth of Well (ft): 34.4' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
09:12	—	9.3	6.07	0.47	999	2.57	16.9	muddy (red-brown)	PR-0.43gpm, pump-3" from bottom
09:27	6.45	16.5	6.12	0.40	999	4.67	17.0	"	PR-0.48gpm, pump-1' from position
09:35	10.29	—	Rate changed	—	—	—	—	—	PR-0.50gpm
09:42	13.79	16.47	6.11	0.361	999	5.07	17.1	cloudy (red-brown)	PR-0.6gpm, pump-1' from position
09:48	17.39	~~17.39~~ 16.9	Rate changed	—	—	—	—	—	PR-0.45gpm
09:57	21.49	15.60	6.15	0.350	725	4.69	17.3	cloudy (red-brown)	PR-0.50gpm, pump-2' from position
10:12	28.99	15.25	6.16	0.351	299	4.83	17.5	cloudy (red-brown)	PR-0.50gpm, pump-1' from position

TD − DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

34.4 − 9.3 = 25.1 X 0.163 = 4.09 X 5 = 20.45 + 5 = 25.45 gal

QC'd [illegible]
11-12-01

Parcel No.: CWM-513
Well ID: MW01
Date: 11/8/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
10:27	36.49	15.15	6.16	0.350	186	5.00	17.5	cloudy (red-brown)	PR-0.50gpm, pump-1' from position
10:36	40.99	—	rate	changed	—	—	—	—	PR-0.97gpm
10:42	43.57	14.75	6.05	0.345	188	4.61	17.6	cloudy (red-brown)	PR-0.54gpm
10:50	47.89	—	rate	changed	—	—	—	—	PR-0.50gpm
10:57	51.39	15.23	6.24	0.347	91	4.37	17.7	slightly cloudy (tan)	PR-0.46gpm, pump-2' from position
11:12	58.29	15.10	6.23	0.347	49	4.87	17.7	slightly cloudy (tan)	PR-0.50gpm, pump-2' from position
11:27	65.79	15.18	6.29	0.345	149	4.63	17.8	cloudy (tan)	PR-0.52gpm, pump-1' from position
11:42	73.59	15.15	6.29	0.346	131	4.15	17.8	cloudy (tan)	PR-0.50gpm, pump-2' from position
11:57	81.09	15.13	6.32	0.343	115	3.71	17.8	pt. cloudy (tan)	PR-0.50gpm, pump-1' from position
12:12	88.59	15.05	6.34	0.348	55	4.05	17.8	clear	PR-0.49gpm, pump-1' from position
12:27	95.79	15.06	6.31	0.349	227	3.67	18.0	cloudy (tan)	PR-0.50gpm, pump-1' from position
12:33	98.79	—	—	rate	changed	—	—	—	~~PR-0.45gpm, pump-1'~~ PG 11/8/01 PR-0.45gpm

Parcel No.: CWM-513
Well ID: MW01
Date: 11/8/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
12:42	102.84	14.35	6.37	0.351	58	2.67	18.0	pt. cloudy (tan)	PR-0.45gpm; PUMP-1' from position
12:57	105.59	14.40	6.35	0.349	13	4.52	17.9	clear	PR-0.33gpm
13:12	110.54	14.20	6.41	0.346	7.4	4.42	17.5	"	"
13:17	112.19	14.16	6.35	0.348	7.1	4.35	17.5	"	"
13:22	113.84	14.09	6.42	0.343	7.4	4.42	17.4	"	"
13:27	115.49	14.02	6.39	0.345	8.0	4.49	17.5	"	"
13:30	115.49								Collected photo sample in 1L poly bottles.
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No further entries
R. [illegible] 11/8/01

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: R. Goins
Well Developed by (person/firm): R. Goins / IT Corp

Parcel No.: CWM-513 K.H. 11/21/01
Well No.: MW02
Date started: 11/9/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: whale pump, Horiba U-10, PID, Orion Turbidity Meter, and 210 gal tank
Casing Diameter: 2 in.

Beginning Measurments
Depth to Water (ft): 9.98' bTOC
Total depth of Well (ft): 32.00' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
07:57	—	9.98	6.16	0.344	999	4.41	15.9	muddy (red-brown)	PR-0.33gpm, pump-3' from bottom
08:07	3.36	—	—	rate	changed	—	—	—	PR-0.27gpm
08:12	4.65	14.68	6.37	0.342	999	5.27	18.0	cloudy (red-brown)	PR-0.27gpm
08:27	8.70	15.10	6.52	0.345	462	5.81	16.0	cloudy (brown)	PR-0.27gpm
08:30	9.51	—	—	rate	changed	—	—	—	PR-0.21gpm, pump-1' from position
08:42	12.03	15.27	6.65	0.345	184	5.97	16.2	cloudy (tan)	PR-0.21gpm, pump-2' from position
08:57	15.18	15.41	6.63	0.345	181	4.49	16.4	cloudy (tan)	PR-0.21gpm, pump-1' from position

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

32.00 - 9.98 = 22.02 x 0.163 = 3.59 x 5 = 17.95 + 5. = 22.95

QC'd [illegible]
11-19-01

Parcel No.: CWM-513
Well ID: MW028 11-12-01
Date: 11/9/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
09:12	19.33	15.49	6.64	0.344	155	3.97	16.8	cloudy (tan)	PR-0.21gpm, pump-1' from position
09:27	21.48	15.61	6.67	0.345	63	3.66	17.3	pt.cloudy (tan)	PR-0.21gpm, pump-2' from position
09:32	22.49	—	—	rate	changed	—	—	—	PR-0.20gpm
09:42	24.49	15.56	6.69	0.389	83	4.85	17.3	pt.cloudy (tan)	PR-0.20gpm, pump-1' from position
09:57	27.49	15.60	6.73	0.343	42	4.25	18.4	clear	PR-0.20gpm, pump-2' from position
10:02	28.49	—	—	rate	changed	—	—	—	PR-0.19gpm
10:12	30.39	15.53	6.71	0.342	177	4.87	18.6	cloudy (tan)	PR-0.19gpm
10:27	33.24	15.45	6.72	0.342	36	4.32	18.7	clear	PR-0.19gpm, pump-2' from position
10:42	36.09	15.27	6.70	0.338	484	3.82	19.5	cloudy (red-brown)	PR-0.17gpm
10:57	38.64	15.21	6.73	0.338	102	3.69	19.6	cloudy (tan)	~~R~~ PR-0.17gpm
11:12	41.19	15.10	6.84	0.338	56	4.15	19.6	pt.cloudy (tan)	PR-0.17gpm, 2' from position
11:27	43.70	14.91	6.68	0.337	203	4.07	20.2	cloudy (red-brown)	PR-0.16gpm, 2' from position

Parcel No.: CWM-513
Well ID: MW082
Date: 11/9/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
11:42	46.14	14.83	6.66	0.338	242	4.32	20.4	cloudy (red-brown)	PR – 0.16gpm
11:57	48.54	14.80	6.68	0.337	54	4.71	20.4	"	PR – 0.16gpm
12:12	50.84	14.78	6.70	0.337	41	5.10	20.4	clear	"
12:27	53.34	14.75	6.69	0.337	22	4.62	20.8	"	PR – 0.15gpm
12:42	55.59	14.75	6.70	0.338	11.6	4.98	21.2	clear	"
12:57	57.84	14.77	6.75	0.337	9.3	4.65	21.7	"	"
13:02	58.59	14.77	6.69	0.336	9.8	4.72	21.9	"	"
13:07	59.34	14.77	6.72	0.338	9.9	4.96	22.3	"	"
13:10	59.34								Collected photo sample in 1L poly bottle.
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Final Entry
R. Johnson 11/11/01

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: J. Alexander
Well Developed by (person/firm): J. Alexander

Parcel No.: CWM-514
Well No.: MW01
Date started: 12 4 01

Monitoring Well Information

Development Method: surge + pump
Development Equipment: grundfos pump, water-level indicator, Horiba U10, Orion turbidimeter, HF turbidity.
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 52.59' bTOC
Total depth of Well (ft): 63.11' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									surge before starting pump
12:30	0	52.59	6.35	.651	>999	-0.22	17.2	orange v. cloudy	Surging 1st 5 min. @ .25 gpm
12:45	3.75	55.48	6.33	.734	569	-0.33	17.9	or. cloud.	rate .12 gpm; depth of pump 1 ft off bottom
13:00	5.55	56.37	6.35	.728	313	-0.12	18.3	brown cloudy	.12 gpm; 3 ft off bottom
13:15	7.35	56.97	6.40	.711	265	-0.21	19.4	cloudy	.12 gpm; 5 ft off bottom
13:30	9.15	57.41	6.43	.639	138	-0.24	18.9	cloudy	.12 gpm; 3 ft off bottom
13:45	11	57.71	6.46	.624	174	-0.04	20.6	tan cloudy	.12 gpm; 3 ft off bottom
14:00	12.8	57.92	6.49	.607	168	-0.05	21.3	tan cloudy	.12 gpm; 3 ft off bottom

TD - DTW = WC x (2')/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

63.11 - 52.59 = 10.52 x .163 = 1.7 gal. x 5 = 8.6 gallons + 100 gallons = 108.6 gallons

QC'd [signature] 12/10/01

Parcel No.: CWM 514
Well ID: MW01
Date: 12.4.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) rate (gpm)	depth
14:15	14.6	58.20	6.50	.592	79	-0.10	21.2	tan cloudy	.12 gpm	3 ft off bottom
14:30	16.4	58.90	6.52	.576	29	-0.10	21.5	sl. cloudy ~~tan cloudy~~ @ 12401	"	" "
14:45	18.2	59.24	6.58	.574	34	-0.34	21.5	clear ~~sl. cloudy~~ @ 12401	"	" "
15:00	20	59.92	6.61	.572	28	-0.33	21.6	clear	"	" "
15:15	21.8	60.12	6.61	.576	26	-0.42	21.6	"	"	" "
15:30	23.6	60.25	6.61	.576	27	-0.41	21.6	"	"	" "
15:45	25.4	60.15	6.61	.576	24	-0.38	21.5	"	"	" "
16:00	27.2	60.32	6.61	.576	20	-0.35	21.3	"	"	" "
STOP PUMPING FOR DAY									12401	
1225 ~~08:35~~	~~27.2~~ ~~24~~ 27.2	@ 12/00 ~~32.26~~ 58.74	@ 12/01 6.73	.499	628	-0.61	21.2	tan cloudy	.1 gpm 12501	1 ft off bottom
1240 ~~08:50~~	~~28.7~~ 28.7	@ 12401 59.82	6.58	.418	>999	-0.82	19.8	orange v. cloudy	.09 gpm	"
1255 ~~09:05~~	~~30.2~~ 30.05	@ 12401 60.06	6.56	.429	369	-0.67	20.9	or. cloudy	.09 gpm	"

Parcel No.: CWM 514
Well ID: MW01
Date: 12 4 01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) rate	depth
13:10	31.4	60.31	6.53	.453	193	-0.59	~~21.2~~ 21.3	orange cloudy	.09 gpm	1 ft off bottom
13:25	32.75	60.65	6.52	.462	>999	-0.66	~~19.8~~ 22.2	tan slightly cloudy	.09 gpm	" "
13:40	34.1	60.79	6.50	.484	>999	-0.46	~~20~~ 21.9	tan cloudy	.09 gpm	" "
13:55	35.45	61.12	6.50	.488	>999	-0.49	21.7	tan cloudy	.09 gpm	" "
14:05	36.8	well goes dry. pump shuts down								
14:45	36.8	60.54	very poor recharge						12 5 01	
11:15	36.8	58.86	6.56	.524	802	-0.52	22.2	brown cloudy	.1 gpm	12/6/01 1 ft off bottom
11:30	38.3	59.82	6.66	.427	946	-0.46	20.1	tan cloudy	.1 gpm	1 ft off bottom
11:45	39.8	60.39	6.56	.476	392	-0.38	21.6	tan cloudy	.1 gpm	1 ft off bottom
12:00	41.3	60.82	6.56	.498	118	-0.31	22.8	sl. cloudy	.1 gpm	1 ft off bottom
12:15	42.8	61.14	6.60	.562	89.6	-0.26	22.9	clear	.08 gpm	1 ft off bottom
12:30	44	61.73	6.64	.594	62.4	-0.10	23.4	clear	.08 gpm	1 ft off bottom

Parcel No.: CWM 514
Well ID: MW01
Date: 12 6 01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) rate / depth
12:45	45.2	61.94	6.70	.521	366	-0.10	23.6	cloudy	.08 gpm / 1ft off bottom
13:00	well goes dry								12/6/01
08:15	45.2	59.76	6.76	.391	335	-0.28	16.5	or. cloudy	.1 gpm / 12/7/01
08:30	46.7	60.62	6.70	.407	315	-0.20	19.6	tan cloudy	" / 1ft off bottom
08:45	48.2	61.15	6.62	.439	272	-0.13	20.2	tan cloudy	" / " / "
08:00	49.7	top of pump	6.56	.520	160	-0.14	29.3	"	" / " / "
09:05	50.2	well goes dry. 3rd time.							12 7 01
10:45	50.2	57.70	collect photo sample. Turbidity =						7.48 ntu's 121001
:									
:									
:									12 1001
:									

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: J. Alexander
Well Developed by (person/firm): J. Alexander

Parcel No.: CWM 514
Well No.: MW02
Date started: 12 12 01

Monitoring Well Information

Development Method: Surge + pump
Development Equipment: Grundfos pump, WL indicator, Horiba U10, HF turbidimeter, Orion turbidimeter
Casing Diameter: 2" .163

Beginning Measurments
Depth to Water (ft): 45.20' BTOC
Total depth of Well (ft): 70.90' BTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
14:30	Ø	45.20	6.70	.883	>999	0.00	16.6	opaque tan	Surging before w/ surge block surging .5 gpm 1 ft off bottom
14:45	7.5	61.28	8.29	.931	999	1.70	16.9	tan v. cloudy	.25 gpm " "
15:00	11.25	61.32	6.49	.798	210	2.21	18.7	tan cloudy	.25 gpm " "
15:15	15	61.19	6.14	1.05	116.3	2.46	18.9	clearing	" " " "
15:30	18.75	61.23	6.37	.832	20.8	2.52	19.4	clear	" " " "
15:45	22.5	6.20	6.45	.821	19.6	2.60	19.6	"	" " " "
16:00	26.25	61.21	6.26	.822	19.8	2.54	19.8	"	" " " "

1½/ TD - DTW = WC x (2")/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

70.90 - 45.20 = 25.7 x .163 = 4.19 x 5 = 20.94 + 95 = 115.94 gallons

QC'd [illegible] 12/17/01

Parcel No.: CWM 514
Well ID: MW02
Date: 12 13 01

12-13-01 JeFFA. / Lee F. PID 0.0

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
07:40	26.25	46.55	6.37	.682	282	1.28	16.1	cloudy	[signature] 12 13 01 .2 gpm 3 ft off bottom
07:55	29.25	57.32	6.83	.645	132	1.32	18.0	cloudy	" 3 ft off bottom
08:10	32.25	56.95	6.86	.650	41	2.72	18.5	sl. cloudy	" 5 ft off bottom
2hrs 08:25	35.25	59.45	6.96	.662	258	3.15	18.9	cloudy	" 7ft off bottom
08:40	38.25	61.22	6.97	.676	303	2.15	18.6	"	" 7 ft off bottom
08:55	41.25	61.29	7.05	.669	79	3.16	18.7	sl. cloudy	" " " "
09:10	44.25	62.10	7.03	.602	93	3.03	18.9	cloudy	" " " "
09:25	47.25	62.70	7.07	.583	186	1.72	19.4	"	" 5 ft off bottom
09:40	50.25	63.20	7.07	.598	169	1.24	19.8	"	" " " "
09:55	53.25	63.12	7.12	.599	145	1.53	18.6	"	" 3ft off bottom
10:10	56.25	64.05	7.17	.546	708	1.83	19.1	cloudy	" " " "
4hrs 10:25	59.25	65.05	7.21	.570	>999	1.83	18.8	tan v. cloudy	" 2 ft off bottom
10:40	62.25	65.45	7.34	.488	>999	1.64	18.8	"	" 1 ft off bottom

Parcel No.: CWM 514
Well ID: MW02
Date: 12 13 01

12-13-01 PID 0.0 Jeff Alexander / Lee FLIPPEN

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
10:55	65.25	65.75	7.27	.508	>999	2.33	19.1	tan v. cloudy	.2 gpm 1 ft off bottom
11:10	67.25	66.30	7.25	.519	>999	1.83	20.1	tan v. cloudy	" " " "
11:25	70.25	68.90	7.40	.442	>999	1.64	18.4	tan opaque	" " " "
13:10	70.25	64.85	7.30	.463	>999	2.40	16.5	tan v. cloudy	" " " "
13:25	73.25	65.52	7.29	.390	>999	3.26	18.7	"	" " " "
13:40	76.25	65.98	7.37	.383	441	4.72	19.3	tan cloudy	" " " "
13:55	79.25	66.48	7.50	.379	410	4.52	19.8	"	" " " "
14:10	82.25	66.98	7.55	.359	386	4.50	19.4	"	" " " "
14:25	85.25	67.85	7.57	.354	684	4.33	19.5	"	" " " "
14:40	88.25	67.96	7.66	.341	518	4.54	19.2	"	" " " "
14:55	91.25	68.30	7.77	.327	>999	4.09	19.9	tan v. cloudy	" " " "
15:10	94.25	68.90	7.77	.317	>999	4.31	19.7	TAN opaque	- stopped parameters [illegible] 12 13 01
08:25	94.29	41.97	7.50	.283	94	5.38	18.9	cloudy	PR 12-14-01 .45 gpm Depth 58.5

Parcel No.: CWM S14
Well ID: MW02
Date: 5-14-01

12-14-01 PID 0.0 Jeff A. + Lee F.
12-13-01 PID 0.0, Jeff Alexander + Lee FLIPPEN

	Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments Purge Rate
	08:40	101.04	52.05	7.43	.287	375	5.80	19.0	cloudy	PR .40 gpm Depth 60.5 ft.
	08:55	107.04	57.47	7.38	.304	371	5.58	18.4	cloudy	PR .40 gpm Depth 62.5'
	09:10	113.04	61.92	7.35	.343	255	5.31	18.2	cloudy	PR .40 gpm Depth 68 ft.
3 hrs										-Reached Target Purge Volume-
	09:25	119.04	63.05	7.45	.324	357	5.58	18.2	cloudy	PR .10 gpm Depth 68'
	09:40	120.54	63.02	7.51	.303	114	5.20	18.4	cloudy	RR .10 gpm Depth 68'
	09:55	122.0	62.98	7.45	.306	70	5.21	19.0	cloudy	PR .10 gpm Depth 68'
	~~09~~ 10:10	123.5	62.98	7.47	.305	46	5.51	19.3	clear	PR .10 gpm Depth 68'
9 hrs	10:25	125.0	62.92	7.48	.303	37	5.53	19.7	clear	PR .10 gpm Depth 68'
	10:40	126.5	62.98	7.43	.305	33	5.21	19.8	clear	PR .10 gpm Depth 68'
	10:55	128.0	62.45	7.48	.310	30	5.71	18.8	clear	PR .10 gpm Depth 68'
10 hrs	11:10	129.5	62.18	7.37	.276	19	5.11	18.7	clear	PR .10 gpm Depth 68'
	11:25	131.0	62.10	7.40	.276	19.1	5.28	19.8	clear	PR .10 gpm Depth 68'
10½ hrs	11:40	132.5	62.01	7.47	.276	19.4	5.35	20.0	clear	PR .10 gpm -Well Developed-

-Stopped Parameters-
10½ hrs - ~~Lee Flippen~~ 12-14-01
- Took 1L H2O Photo Sample -

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: J. Alexander
Well Developed by (person/firm): J. Alexander / IT

Parcel No.: CWM 514 MW03
Well No.: MW03
Date started: 12 6 01

Monitoring Well Information

Development Method: surge + pump
Development Equipment: whalepump, WL indicator, Horiba U10, HF turbidimeter
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 24.36' bTOC
Total depth of Well (ft): 59.52' bTOC

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
									Surging before starting
15:20	0	24.36	5.88	.257	>999	-0.25	17.4	orange opaque	surging 5 min. .2 gpm 1 ft off bottom
15:35	3	29.08	5.71	.229	>999	-0.23	18.2	"	.066 gpm 1 ft off bottom
15:50	4	30.12	5.42	.211	862	-0.23	18.9	orange cloudy	" " "
16:05	5	31.28	5.32	.216	636	-0.23	19.2	"	" " "
16:20	6	31.90	5.12	.204	682	-0.34	19.3	"	" " "
Stop pump for day									12 6 01
									12601

TD - DTW = WC x (2')/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

59.52 - 24.36 = 35.16 x .163 = 5.73 x 5 = 28.65 + 125 gal. = 153.65 gallons

QC'd Keith Hogan 12/12/01

Parcel No.: CWM 514
Well ID: MW03
Date: 121001

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
14:05	6	24.45	5.60	.173	518	-0.83	13.7 ~~or. cloudy~~ 121201	or. cloudy	.12 gpm 2 ft off bottom
14:20	7.8	29.02	5.58	.100	82.1	-0.59	15.2 ~~clearing~~ 121201	clearing	" " "
14:35	9.6	31.87	5.52	.097	52.56	-0.37	15.0 ~~clear~~ 121201	clear	" " "
14:50	11.4	34.52	5.47	.088	38.3	-0.28	14.6 ~~clear~~ 121201	clear	" " "
15:05	13.2	35.46	5.47	.086	35.6	-0.30	14.8	clear	" " "
15:20	15	36.50	5.48	.082	32.1	-0.34	15.6	"	" " "
15:35	16.8	38.12	5.46	.078	26.5	-0.32	15.2	"	" " "
15:50	18.6	38.56	5.40	.075	22.3	-0.26	16.2	"	" " "
16:05	20.4	39.57	5.42	.072	20.1	-0.19	15.8	"	" " "
: End of day									121001
10:20	20.4	30.40	5.63	.173	>999	-0.44	15.3	or. cloudy	.1 gpm 15 ft off bottom
10:35	21.9	31.62	5.70	.166	712	-0.36	15.5	or. cloudy	.1 gpm 13 ft off bottom
10:50	23.4	33.22	5.75	.157	267	-0.28	15.5	"	.1 gpm 11 ft off bottom

Parcel No.: CWM 514
Well ID: MW03
Date: 12 11 01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments rate	Comments depth
11:05	24.9	34.40	5.73	.118	113	-0.22	15.5	cloudy	.1 gpm	9 ft off bottom
11:20	26.4	35.75	5.72	.090	47.2	-0.19	15.5	"	.1 gpm	7 ft "
11:35	27.9	36.23	5.54	.084	37.1	-0.18	15.5	sl. cloudy	.1 gpm	5 ft "
11:50	29.4	37.40	5.60	.092	67.6	-0.18	15.5	"	"	"
12:05	30.9	38.38	5.71	.101	65.5	-0.17	15.6	sl. cloudy	"	" "
12:20	32.4	38.62	5.59	.081	62.3	-0.18	15.8	sl. cloudy	"	" "
12:35	33.9	38.88	5.60	.081	59.3	-0.18	16.1	"	"	" "
12:50	35.4	39.17	5.58	.081	38.3	-0.18	16.1	"	"	" "
13:05	36.9	39.98	5.54	.079	29.7	-0.19	16.2	"	"	" "
13:20	38.4	40.30	5.55	.093	32.3	-0.18	16.1	"	"	" "
13:35	39.9	40.22	5.63	.101	196	-0.18	16.2	fair cloudy	"	" "
13:50	41.4	41.17	5.71	.118	203	-0.18	16.2	"	"	" "
14:05	42.9	41.98	5.64	.098	146	-0.18	16.1	"	"	" "

Parcel No.: CWM 514
Well ID: MW03
Date: 12 12 01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments rate	Comments depth
14:20	44.4	42.42	5.64	.088	85.7	-0.15	16.1	tan cloudy	.1 gpm	5 ft off bottom
14:35	45.9	43.07	5.68	.089	79.6	-0.10	16.2	"	"	" "
14:50	47.4	43.57	5.70	.084	77.8	-0.01	16.5	"	"	" "
15:05	48.9	43.97	5.65	.084	65.6	-0.12	16.3	"	"	" "
15:20	50.4	44.45	5.51	.083	52.1	-0.16	16.1	"	"	" "
:STOP	FOR	DAY							12 11 01	
0:830	50.4	35.13	3.82	.312	7999	6.28	16.2	or. cloudy	.1 gpm	5 ft off bottom
08:45	51.9	38.02	5.90	.188	169	4.90	16.6	or. cloudy	.07 gpm	" "
08:00	52.95	37.95	5.82	.131	158.9	5.12	16.8	tan cloudy	.07 gpm	" "
09:15	54	38.82	5.67	.102	210	5.36	16.8	tan cloudy	.07 gpm	" "
09:20	collect	photo	sample.	8 hours	met.			pump	having trouble.	
:										
:						12 12 01				

Groundwater Well Development Log

Fort McClellan, Alabama

Project Number: 796887
Form Completed by: Z. Parham
Well Developed by (person/firm): Z. Parham (IT)

Parcel No.: 516
Well No.: CWM-516-MW01
Date started: 11.26.01

Monitoring Well Information

Development Method: surge/purge
Development Equipment: whale pump/hose, Horiba U-10, Turbidity meter, PID, water level meter
Casing Diameter: 2"

Beginning Measurments
Depth to Water (ft): 13.19
Total depth of Well (ft): 35.10

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
10:45	0.0	13.19	5.91	.308	>999	4.17	18.6	brown	Pump @ 35' btoc. PR=.25 gpm
10:50	1.25	19.71	—	—	—	—	—	—	PR=.125 gpm
11:00	2.5	20.19	5.95	.251	572	3.46	19.8	brown	"
11:15	4.38	20.55	6.01	.270	106	3.16	20.0	light tan	"
11:30	6.25	20.55	6.00	.256	131	2.85	20.0	"	"
11:45	8.12	20.59	5.98	.263	122	3.01	19.9	"	Pump raised to 33' btoc
12:00	10.00	20.61	6.00	.261	56	2.92	20.1	light tan/clear	"

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove
35.1 - 13.19 = 21.91 x .163 = 3.57 x 5 = 17.86 + 5 gal = 22.85 gal.

btoc = below top of column gpm = gallons per minute

pc'd [signature] 11/29/01

Parcel No.: 516
Well ID: CWM-516-MW01
Date: 11.26.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
12:15	11.87	21.79	5.99	.260	55	2.89	20.0	light tan / clear	Pump at 33' btoc. PR = .125 gpm.
12:30	13.75	22.42	5.86	.240	66	3.04	21.5	light tan / clear	Pump raised to 31' btoc.
12:45	15.63	22.55	5.90	.251	61	2.98	21.2	"	"
13:00	17.5	22.89	5.95	.241	102	3.11	21.0	Tan ~~Light Tan~~	Pump lowered to 34' btoc
13:15	19.37	23.23	6.02	.250	82	3.02	20.8	"	"
13:30	21.25	23.76	5.68	.202	91	3.11	22.2	Tan	"
13:45	23.12	23.99	5.66	.199	124	2.93	22.2	Tan	Pump raised to 29' btoc.
14:00	24.99	24.12	5.67	.200	82	2.91	22.0	Tan	"
14:15	26.87	24.24	5.60	.198	80	3.01	21.7	"	"
14:30	28.74	24.40	5.69	.201	80	2.95	21.9	"	"
14:45	30.61	24.65	5.65	.200	78	3.08	22.0	"	Pump lowered to 30' btoc.
15:00	32.48	24.95	5.55	.195	73	3.07	21.2	light tan	"
15:15	34.36	25.29	5.59	.202	70	3.00	21.0	"	"

Parcel No.: 516
Well ID: CWM-516-MW01
Date: 11.26.01 / 11.27.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
15:30	36.23	25.66	5.50	.196	63	3.05	20.9	light Tan	Pump at 30' btoc. PR=.125 gpm.
15:45	38.10	26.04	5.52	.199	63	3.05	21.2	"	"
16:00	39.97	26.63	5.50	.200	68	3.00	21.0	light tan	Stopped development for 11.26.01.
08:30	39.97	13.0	—	—	—	—	—	—	Pump set at 29' btoc. 11.27.01 PR=.087 gpm.
08:45	41.27	17.0	5.38	.227	151	3.24	19.7	tan	"
09:00	42.57	17.8	5.21	.209	146	3.20	19.5	"	"
09:15	43.87	19.14	5.40	.205	147	3.18	19.1	cloudy/white	Pump raised to 28' btoc.
09:30	45.17	19.75	5.48	.209	144	3.11	19.0	"	"
09:45	46.47	20.23	5.51	.200	129	3.05	20.1	"	"
10:00	47.77	20.34	5.49	.211	119	3.01	20.2	"	"
10:15	49.07	20.34	5.75	.227	112	3.20	21.3	"	Pump raised to 27' btoc.
10:30	50.37	20.35	5.69	.225	116	3.22	21.0	"	"
10:45	51.67	20.35	5.68	.223	112	3.23	21.8	"	"

Parcel No.: 516
Well ID: CWM-516-MW01
Date: 11.27.01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
11:00	52.47	20.37	5.65	.229	97	3.28	21.5	cloudy/white	Pump @ 27' btoc. PR=.087
11:15	54.27	20.37	5.60	.225	87	3.24	21.0	"	"
11:30	55.57	20.38	5.66	.223	62	3.25	21.5	"	8hr development complete. 1L photo sample collected.
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11/28/01

Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 796887.~~01020380~~
Form Completed by: R Gains
Well Developed by (person/firm): R Gains / ITcorp

Parcel No.: CHM-516-MW02
Well No.: MW02
Date started: 11/12/01

Monitoring Well Information

Development Method: Surge and Purge
Development Equipment: Whale pump, Horiba U-10, Turbidity Meter, PID, 110 gal tank, Water level Meter
Casing Diameter: 2in

Beginning Measurments
Depth to Water (ft): 16.53
Total depth of Well (ft): 36.23

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date) (Purge Rate, Pump Position, Misc.)
09:22	—	16.53	5.39	0.313	999	3.65	15.7	lt brown (muddy)	PR=0.17gpm pump-3" from bottom
09:37	2.55	21.66	5.38	0.227	84	4.07	16.8	~~lt~~ (pt. cloudy)	PR=0.187gpm, pump-2' from position
09:42	3.485	—	—	rate	changed	—	—	—	PR=0.25gpm
09:52	5.985	24.72	5.43	0.233	33	3.15	17.5	clear	PR=0.30gpm, pump-2' from position
10:00	8.385	—	—	rate	changed	—	—	—	PR=0.22gpm
10:07	9.925	27.93	5.49	0.246	26	4.14	17.0	clear	PR=0.17gpm, 2' from position
10:15	11.295	—	turned	off pump to let well	recover	—	—	—	—

TD - DTW = WC x 2'/4' well = One PV x 5 = Min PV + H20 to install well = Minimum H20 to remove

36.23 - 16.53 = 19.70 x 0.163 = 3.21 x 5 = 16.05 + .5 = 26.05 gal

QC'd by [signature] 11/14/01

Parcel No.: CWM-516-MW02
Well ID: MW02
Date: 11/13/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments (Date if different from start date)
11:15	11.285	26.00	5.57	0.252	24	4.74	16.8	clear	PR-0.125gpm, lowered pump 2' from position
11:25	12.535	—	—	note	changed	—	—	—	PR-0.107gpm
11:30	13.07	27.90	5.59	0.243	68	5.25	12.5	cloudy (tan)	PR-0.10gpm, lowered pump 1' from position
11:45	14.57	29.10	5.64	0.246	78	4.49	17.7	"	PR-0.10gpm
12:00	16.07	30.31	5.62	0.266	54	4.25	17.9	"	"
12:15	17.57	31.29	5.63	0.286	42	4.17	18.1	lt. cloudy (tan)	PR-0.10gpm, lowered pump 1' from position
12:30	19.07	32.45	5.71	0.300	79	4.68	18.0	cloudy (tan)	PR-0.09gpm, lowered pump @ 1:30 2' from position
12:45	20.42	33.58	5.68	0.315	92	4.75	17.9	"	PR-0.09gpm
13:00	21.77	*BTOP	5.61	0.297	125	4.52	17.8	cloudy (tan)	PR-0.09gpm
13:15	23.12	"	5.56	0.289	156	4.49	17.7	"	PR-0.07gpm
13:22	23.61	—	—	—	—	—	—	—	Well dry.
:		No further entry on this page.							

* BTOP - water level is "Beneath the top of pump".

Parcel No.: CWM-516-MW02
Well ID: MW02
Date: 11/13/01

Time 24hr	Purge Volume (gal)	Water Level (ft) (TOC)	pH (std units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/L)	Temperature (°C)	Clarity (color)	Comments
08:40	23.61	17.02	5.78	0.365	91	6.80	14.1	lt. cloudy (tan)	11/13/01 PR-0.07gpm, pump-6' from bottom
08:55	24.66	20.50	5.72	0.319	65	7.94	14.9	"	PR-0.06gpm, raised 2' from position @ 0850
09:10	25.56	21.71	5.78	0.312	38	6.97	15.0	clear	PR-0.06gpm, raised 2' from position @ 0905
09:25	26.46	22.13	5.69	0.304	38	6.44	15.6	"	PR-0.03gpm
09:40	26.91	22.45	5.67	0.315	19.3	6.75	15.9	"	"
09:55	27.36	22.68	5.75	0.321	16.5	6.58	16.2	"	"
10:10	27.81	22.82	5.88	0.312	13.2	6.64	16.4	"	"
10:15	27.96	22.91	5.79	0.322	11.2	6.72	16.5	"	"
10:20	28.11	23.01	5.87	0.318	12.3	6.66	16.6	"	"
10:25	28.26	23.11	5.89	0.310	10.8	6.53	16.6	"	"
10:30	28.41	23.19	5.75	0.316	9.7	6.71	16.7	"	"
10:32	28.41								Collected photo sample in 1L poly bottle
:		Final Entry		/ R.	Sim	: - 11/13/01			