# APPENDIX C

# WELL DEVELOPMENT LOGS

ENTERED 11/23/99

# Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 783149
Form Completed by: M. ROBERTS (MDC)
Well Developed by (person/firm): MILLER DRILLING Co.

Parcel No.: GSBP-154
Well No.: MW01
Date started: 10/26/99

COMPLETED 11/4/99

## Monitoring Well Information

Development Method: PURGE W/PUMP
Development Equipment: 2" SURGE BLOCK
(4) WHALE PUMPS
Casing Diameter: 2" STICK UP

Beginning Measurments
Depth to Water (ft): 73.9'
Total depth of Well (ft): 107.0'

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 11:00 | 0 | 73.9' | — | — | — | — | — | — | BEGIN SET UP FOR DEVELOPMENT USING 2" SURGE BLOCK |
| :30 | 0 | 73.9' | 8.39 | .371 | >1000 | 1.38 | 16.9 | TAN MUDDY | BEGIN PUMPING ON BOTTOM AT ~0.15 GPM |
| :45 | ~2.5 | 82.25' | 7.20 | .262 | >1000 | 1.75 | 18.3 | TAN CLOUDY | |
| 12:00 | ~5 | 82.25' | 7.08 | .250 | >1000 | 1.25 | 18.7 | " " | |
| :20 | ~8 | 82.3' | 6.28 | .159 | >1000 | 1.92 | 18.6 | " " | |
| :40 | ~11 | 84.4' | 5.87 | .104 | 443 | 2.52 | 18.8 | " " | MOVED PUMP UP/DOWN SCREEN |
| 13:00 | ~14 | 87.6' | 6.16 | .156 | >1000 | 1.81 | 18.6 | " " | " " " " " |

Parcel No.: GSBP-154
Well ID: MW01
Date: 10/26/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 13:20 | ~17 | 89.55' | 6.34 | .210 | >1000 | 1.26 | 19.7 | TAN CLOUDY | MOVED PUMP UP/DOWN SCREEN |
| :40 | ~20 | 91.15' | 5.79 | .126 | >1000 | 1.69 | 19.7 | " " | |
| 14:00 | ~23 | 92.94' | 5.94 | .165 | >1000 | 1.31 | 19.2 | " " | |
| :20 | ~26 | 95.4' | 6.40 | .273 | >1000 | 1.64 | 18.8 | " " | |
| :40 | ~29 | 98.8' | 6.22 | .207 | >1000 | 1.26 | 19.3 | " " | |
| 15:00 | ~32 | 101.45' | 6.31 | .212 | >1000 | 1.41 | 19.4 | " " | |
| :20 | ~35 | 103.9' | 6.20 | .155 | >1000 | 1.30 | 19.2 | " " | |
| :30 | ~37 | TOO LOW TO READ | — | — | — | — | — | — | WELL PUMPED DRY |
| :30 | ~37 | — | — | — | — | — | — | — | BREAK DOWN / DECON OF PUMP & EQUIP. |
| | | | | | | | | | CONTINUE DEVELOPMENT ON THIS DATE 10/27/99 |
| 15:30 | ~37 | 91.0' | 5.78 | .168 | 545 | 5.28 | 17.7 | TAN CLOUDY | BEGIN DEVELOPMENT WITH BAILER |
| :50 | ~39 | 93.0' | 5.54 | .116 | >1000 | 6.93 | 17.3 | " " | |
| 16:10 | ~41 | 94.9' | 5.47 | .121 | >1000 | 6.50 | 17.2 | " " | |

Parcel No.: GSBP-154
Well ID: MW 01
Date: 10/27/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 16:30 | ~43 | 96.3' | 5.31 | .121 | >1000 | 6.30 | 17.0 | TAN CLOUDY | |
| :50 | ~45 | 98.6' | 5.17 | .112 | >1000 | 6.02 | 17.0 | " " | |
| 17:10 | ~47 | 100.45' | 5.25 | .138 | >1000 | 5.82 | 16.9 | " " | |
| :30 | ~49 | 102.25' | 5.20 | .120 | >1000 | 6.01 | 16.8 | " " | WELL BAILED DRY, STOP DEVELOPMENT FOR TODAY |
| : | | | | | | | | | CONTINUE DEV. ON THIS DATE 10/28/99 |
| 07:45 | ~49 | 95.2' | 6.05 | .125 | 460 | 5.64 | 14.9 | TAN CLOUDY | |
| 08:05 | ~51 | 97.3' | 6.12 | .101 | >1000 | 6.44 | 15.4 | " " | |
| :25 | ~53 | 99.25' | 6.21 | .147 | >1000 | 6.43 | 15.4 | " " | |
| :45 | ~55 | 101.15' | 6.38 | .181 | >1000 | 4.20 | 15.6 | " " | |
| 09:15 ~~09:05~~ | ~58 | Too Low | 7.22 | .212 | >1000 | 3.95 | 15.8 | " " | |
| :45 | ~59 | Too Low | 7.12 | .177 | >1000 | 9.43 | 15.4 | TAN MUDDY | WELL BAILED DRY |
| : | | | | | | | | | END OF DEVELOPMENT |
| : | | | | | | | | | DUE TO 8 HR MAX. |

ENTERED 11/23/99 by Sa

# Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 783149
Form Completed by: M. ROBERTS (MDC)
Well Developed by (person/firm): MILLER DRILLING CO.

Parcel No.: GSBP-154
Well No.: MW02
Date started: 10/20/99

COMPLETED 11/4/99

## Monitoring Well Information

Development Method: PURGE w/ PUMP
Development Equipment: 2" SURGE ~~PUMP~~ BLOCK
WHALE PUMP
Casing Diameter:

Beginning Measurments
Depth to Water (ft): 65.6'
Total depth of Well (ft): 101.7'

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 08:00 | 0 | 65.6' | — | — | — | — | — | — | BEGIN SET UP FOR DEVELOPMENT USING 2" SURGE BLOCK |
| :40 | 0 | 65.6' | 6.50 | .199 | >1000 | 1.08 | 16.9 | TAN MUDDY | BEGIN PUMPING ON BOTTOM USING GRUNDFOS PUMP |
| 09:00 | ~14 | 85.2' | 6.78 | .181 | >1000 | 2.24 | 17.1 | " " | |
| :15 | ~21 | TOO LOW TO READ | — | — | — | — | — | " " | REWIRE WHALE PUMPS WELL PUMPED DRY |
| 10:50 | ~21 | 83.0' | 5.78 | .085 | >1000 | 4.64 | 17.3 | TAN CLOUDY | RESTARTED PUMPING ON BOTTOM USING WHALE PUMPS |
| 11:10 | ~26 | 95.6' | 5.70 | .095 | >1000 | 2.21 | 16.6 | " " | |
| :20 | ~29 | TOO LOW | — | — | — | — | — | " " | WELL PUMPED DRY |

Parcel No.: GSBP-154
Well ID: MW02
Date: 10/20/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 13:00 | ~29 | 88.0' | 5.71 | .093 | >1000 | 3.76 | 17.2 | TAN CLOUDY | RESTARTED ON BOTTOM |
| :20 | ~34 | TOO LOW | 5.34 | .080 | >1000 | 2.88 | 17.5 | " " | |
| :30 | ~36 | TOO LOW | — | — | — | — | — | " " | WELL PUMPED DRY |
| 15:00 | ~36 | 89.7' | 5.60 | .091 | 705 | 2.05 | 17.9 | " " | RESTARTED ON BOTTOM |
| :20 | ~41 | TOO LOW | 5.44 | .089 | >1000 | 2.61 | 17.9 | " " | |
| :25 | ~42 | TOO LOW | — | — | — | — | — | " " | WELL PUMPED DRY |
| 16:20 | ~42 | 92.4' | 5.70 | .091 | 400 | 1.87 | 17.5 | " " | RESTARTED ON BOTTOM |
| :30 | ~44 | TOO LOW | — | — | — | — | — | " " | WELL PUMPED DRY |
| : | | | | | | | | | FINISH DEV. WITH BAILER ON 10/21/99 |
| 09:15 | ~44 | 80.8' | 5.54 | .085 | >1000 | 4.65 | 15.7 | TAN CLOUDY | |
| :30 | ~46 | 83.8' | 5.62 | .078 | >1000 | 5.22 | 15.8 | " " | |
| :45 | ~48 | 85.92' | 5.65 | .077 | >1000 | 5.48 | 15.9 | " " | |
| 10:00 | ~50 | 88.7' | 5.54 | .063 | >1000 | 5.06 | 15.9 | " " | |

Parcel No.: GSBP-154
Well ID: MW02
Date: 10/21/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 10:30 | ~54 | 92.5' | 5.52 | .060 | >1000 | 5.02 | 16.0 | TAN CLOUDY | |
| :45 | ~54 | 94.75' | 5.50 | .065 | >1000 | 5.08 | 16.0 | | |
| : | — | — | — | — | — | — | — | — | STOP DEVELOPING TO START ON WELL MW03 |
| 14:30 | ~56 | 85.12' | 5.66 | .078 | 410 | 2.01 | 16.9 | TAN CLOUDY | FINISH BAILING WITH A BAILER |
| 15:30 | ~64 | 100.8' | — | — | — | — | — | " " | WELL BAILED DRY |
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ENTERED 11/23/99

# Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 783149
Form Completed by: M. ROBERTS (MDC)
Well Developed by (person/firm): MILLER DRILLING CO.

Parcel No.: GSBP-154
Well No.: MW03
Date started: 10/21/99

COMPLETED 11/4/99

## Monitoring Well Information

Development Method: PURGE W/PUMP
Development Equipment: 2" SURGE BLOCK
WHALE PUMPS
Casing Diameter: 2" STICK UP

Beginning Measurments
Depth to Water (ft): 64.2'
Total depth of Well (ft): 101.85'

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| ~~11:45~~ | 0 | 64.2' | — | — | — | — | — | — | BEGIN SET UP FOR DEVELOPMENT USING 2" SURGE BLOCK |
| 11:45 | 0 | 64.2' | 8.49 | .278 | >1000 | 1.55 | 17.1 | TAN MUDDY | BEGIN PUMPING ON BOTTOM AT 0.20 GPM RATE |
| 12:00 | ~3.0 | 81.3' | 7.83 | .219 | >1000 | 1.05 | 18.0 | TAN CLOUDY | |
| :15 | ~6.0 | 85.05' | 7.72 | .214 | >1000 | 1.56 | 17.6 | " " | |
| :30 | ~8.5 | 86.15' | 6.11 | .129 | >1000 | 1.21 | 18.6 | " " | REDUCED FLOW RATE TO 0.17 GPM |
| :50 | ~12.0 | 88.4' | 5.94 | .123 | >1000 | 2.33 | 19.0 | " " | |
| 13:10 | ~13.5 | 91.15' | 6.08 | .136 | >1000 | 2.13 | 19.8 | " " | |

Parcel No.: GSBP-154
Well ID: MW 03
Date: 10/21/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 13:30 | ~17.0 | 93.4' | 6.05 | .157 | >1000 | 2.75 | 19.8 | TAN CLOUDY | |
| :50 | ~20.5 | 96.2' | 5.99 | .160 | >1000 | 1.32 | 19.6 | " " | |
| 14:10 | ~24.0 | 98.4' | 5.91 | .146 | >1000 | 2.12 | 19.8 | " " | |
| :15 | ~25 | TOO LOW TO READ | — | — | — | — | — | " " | WELL PUMPED DRY |
| 16:15 | ~25 | 92.2' | 7.11 | .128 | >1000 | 2.95 | 19.1 | " " | RESTARTED ON BOTTOM |
| 16:30 | ~28 | 96.15' | 6.89 | .210 | >1000 | 1.50 | 19.6 | " " | |
| 16:45 | ~31 | TOO LOW TO READ | 5.92 | .152 | >1000 | 2.31 | 19.8 | " " | WELL PUMPED DRY |
| — | | | | | | | | | 10/26/99 |
| 08:00 | ~31 | 77.9' | — | — | — | — | — | — | BEGIN SET UP FOR DEV. |
| :30 | ~31 | 77.9' | 7.09 | .201 | >1000 | 1.67 | 14.5 | TAN CLOUDY | BEGIN PUMPING ON BOTTOM AT ~0.15 GPM |
| :45 | ~33.5 | 81.2' | 6.72 | .145 | >1000 | 3.97 | 16.3 | " " | |
| 09:00 | ~36 | 84.05' | 6.67 | .136 | >1000 | 5.35 | 16.8 | " " | |
| :20 | ~39 | 86.9' | 6.38 | .088 | >1000 | 5.70 | 16.9 | " " | |

3.0 HR

Parcel No.: GSBP-154
Well ID: MW03
Date: 10/26/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 09:40 | ~42 | 89.75' | 6.28 | .078 | >1000 | 5.66 | 17.7 | TAN CLOUDY | |
| 10:00 | ~45 | 92.55' | 6.28 | .098 | >1000 | 5.49 | 17.6 | " " | |
| :20 | ~48 | 95.9 | 6.73 | .161 | >1000 | 2.35 | 17.7 | " " | |
| :30 | ~50 | TOO LOW TO READ | — | — | — | — | — | " " | WELL PUMPED DRY |
| 10:30 | ~50 | — | — | — | — | — | — | — | BREAK DOWN/DECON PUMP AND EQUIP. |
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ENTERED 11/23/99

# Groundwater Well Development Log

Fort McClellan , Alabama

Project Number: 783149
Form Completed by: M. ROBERTS (MDC)
Well Developed by (person/firm): MILLER DRILLING CO.

Parcel No.: GSBP-154
Well No.: MW04
Date started: 10/26/99

COMPLETED 11/8/99

## Monitoring Well Information

Development Method: PURGE WITH PUMP
Development Equipment: 2" SURGE BLOCK
(4) WHALE PUMPS
Casing Diameter: 2" STICK UP

Beginning Measurments
Depth to Water (ft): 70.45'
Total depth of Well (ft): 92.0'

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 16:00 | 0 | 70.45' | — | — | — | — | — | — | BEGIN SET UP FOR DEVELOPMENT |
| :30 | 0 | 70.45' | 5.81 | .071 | >1000 | 5.16 | 15.6 | TAN MUDDY | BEGIN PUMPING AT BOTTOM AT ~0.20 GPM |
| :45 | ~3 | | 5.33 | .065 | >1000 | 4.38 | 16.3 | " " | MOVE PUMP UP/DOWN SCREEN |
| 17:00 | ~6 | | 6.04 | .073 | >1000 | 5.02 | 16.8 | " " | " " " " " |
| :15 | ~9 | | 5.12 | .064 | >1000 | 2.05 | 17.2 | " " | " " " " " |
| :30 | ~12 | | 5.66 | .066 | >1000 | 2.21 | 17.3 | " " | STOP DEVELOPMENT FOR TODAY |
| : | | | | | | | | | |

Parcel No.: GSBP-154
Well ID: MW 04
Date: 10/27/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 08:00 | ~12 | 71.6' | 5.16 | .063 | >1000 | 3.52 | 15.5 | TAN MUDDY | RESTART PUMPING ON BOTTOM ON THIS DATE 10/27/99 |
| :15 | ~15 | 72.3' | 5.30 | .062 | >1000 | 2.10 | 16.7 | " " | 0.20 GPM RATE |
| :30 | ~18 | ~~72.~~ 74.1' | 5.29 | .062 | >1000 | 2.33 | 17.4 | " " | |
| :50 | ~22 | 75.3' | 5.29 | .052 | >1000 | 2.46 | 18.0 | " " | |
| 09:10 | ~26 | 76.22' | 5.31 | .051 | >1000 | 2.62 | 17.4 | " " | |
| :30 | ~30 | 77.35' | 5.23 | .045 | >1000 | 3.88 | 18.3 | " " | |
| :50 | ~34 | 78.6 | 5.25 | .042 | >1000 | 3.12 | 18.8 | TAN CLOUDY | RESET PUMP TO 89.0' (BOTTOM OF SCREEN) |
| 10:10 | ~38 | 79.1' | 5.21 | .039 | 530 | 3.39 | 18.9 | " " | REDUCED FLOW RATE TO ~0.17 |
| :30 | ~41.5 | 78.2' | 5.21 | .038 | 509 | 3.56 | 19.1 | " " | |
| :50 | ~45 | 77.8' | 5.20 | .035 | 171 | 4.41 | 19.8 | " " | |
| 11:10 | ~48.5 | 77.55' | 5.18 | .034 | 39 | 4.48 | 19.8 | CLEARING ~~CLO~~ | |
| :30 | ~52 | 77.5' | 5.22 | .034 | 370 | 4.27 | 19.8 | CLOUDY | INCREASED FLOW RATE TEMPORARILY TO CLEAN SEDIMENT OUT OF TUBING THEN RESETING TO ~0.17 GPM |
| :50 | ~55.5 | 76.6' | 5.21 | .033 | 93 | 4.71 | 21.0 | " | |

Parcel No.: GSBP-154
Well ID: MW 04
Date: 10/27/99

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 12:10 | ~59 | 76.38' | 5.22 | .036 | 68 | 4.41 | 21.4 | CLEARING | |
| :30 | ~62.5 | 76.2' | 5.21 | .031 | 41 | 4.36 | 21.4 | " | |
| :50 | ~66 | 76.1' | 5.17 | .031 | 20 | 4.78 | 21.3 | CLEAR | RESET PUMP TO 85.0' |
| 13:10 | ~69.5 | 76.38' | 5.18 | .030 | 81 | 4.88 | 21.5 | CLEARING | |
| :30 | ~73 | 76.4' | 5.22 | .030 | 337 | 4.82 | 21.7 | CLOUDY | |
| :50 | ~76.5 | 76.42' | 5.25 | .030 | 110 | 4.99 | 22.6 | CLOUDY | |
| 14:10 | ~80 | 75.89' | 5.23 | .029 | 75 | 4.94 | 23.9 | CLOUDY | |
| :30 | ~83.5 | 75.5' | 5.11 | .029 | 43 | 4.93 | 22.8 | CLEARING | |
| :50 | ~87 | 75.48' | 4.70 | .028 | 35 | 5.12 | 22.4 | CLEARING | |
| 15:00 | ~90.5 | 75.46' | 5.20 | .028 | 24.0 | 4.91 | 22.4 | CLEAR | END OF DEVELOPMENT, BREAKDOWN/DECON |
| : | | | | | | | | | |
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