STATE WELL REPORT

130

Part 1
Driller's Log

Mississippi Department of Environmental Quality
Office of Land and Water Resources
P.O. Box 2309
Jackson, MS 39225-2309
(601)961-5555
(601)961-5228 (fax)

County: Leflore, MS
Permit #:
Driller: Roland W Tollett (RMO-00009026)
Date drilling completed: 4/3/2019

USGS site name: OW-02-EC

For Office Use Only:
Well #: G178
Aquifer:
E-Log #:

State Law requires that this report be prepared by the license holder responsible for the work and filed with the Department at the above address within 30 days of completion of drilling of the well or borehole.

Well Owner Information
(Landowner if borehole is not for a water well)

Owner Name: (landowner) Leflore County Schools
Mailing Address: USGS (driller - rtollett@usgs.gov)
3095 W. California Ave
Ruston | LA | 71270
City | State | Zip Code
Telephone No. (318) 251-9630 (245-8639 cell)

[✓] Well or [ ] Borehole Location

Latitude: 33.59719 Longitude: -90.29504
Method of Lat/Long (*check one*): Conventional Survey_____,
USGS quad_____, Hand-held GPS [x], Survey-grade GPS_____
NE ¼ SE ¼, Sec 16 T 20 N R 01 W
1.6 Miles (*Distance*) West (*Direction*) of Shellmound MS (*Nearest Town*)

Well / Borehole Data

Date drilling started: 4/3/2019 Date drilling completed: 4/3/2019 Hole depth: 93 ft bls Hole diameter: 2.25 in
Location of the source of any surface water used for drilling: none used
Method of dosing and volume of Chlorine used in drilling and development: none used
Logs run (check *applicable*): [ ] No log run [✓] Electric [ ] Gamma Ray [ ] Density [ ] Sonic [ ] Neutron [ ] Other:
Name of organization running log(s): USGS, 3095 W. California Ave, Ruston, LA 71270 (318) 251-9630 x13
Purpose of borehole (check one): [ ] Water Well [✓] Geotechnical/Geological Investigation [ ] Ground Source Heat Pump
[ ] Seismic Survey [ ] Other (*describe*)

If drilling is not related to water well construction, skip the remainder of this block

Purpose of Well (*check all applicable*): [ ] Home [ ] Industrial [ ] Public Supply [ ] Irrigation [ ] Fish Culture [✓] other
Other (*describe*): monitoring well
If a flowing well, method of flow regulation: Valve _____ Other (*describe*)
Static Water Level: 33.03 feet [ ] above or [✓] below land surface (*check one*) Date measured: 4/29/2019 @ 1530
Method of measurement (check *one*) [ ] Steel tape [✓] Electric tape [ ] Air line [ ] Other (*describe*):
Well depth: 72 Well grouted to a depth of: 30 feet Type of grout (check *one*): [✓] Neat Cement [ ] Bentonite [ ] Mix
Casing length: 62 feet Casing diameter: 2 inches Type of casing: PVC
Screen length: 10 feet Screen diameter: 2 inches Type of screen: PVC
Screen slot size: 0.010 inches Setting depth: From 62 feet to 72 feet
Type of completion (check *all applicable*): [ ] Gravel packed [ ] Underreamed [ ] Open hole [✓] Natural Development
Other (*describe*):
Top of lap pipe or reduction in casing: NA feet

If telescoped or more than one screen, describe on next page

RECEIVED
JUN 14 2019
BY OLWR

Form: OLWR-SWR-1A (4/13)

USGS site name: OW-02-EC

County: Leflore, MS

Permit #: _____

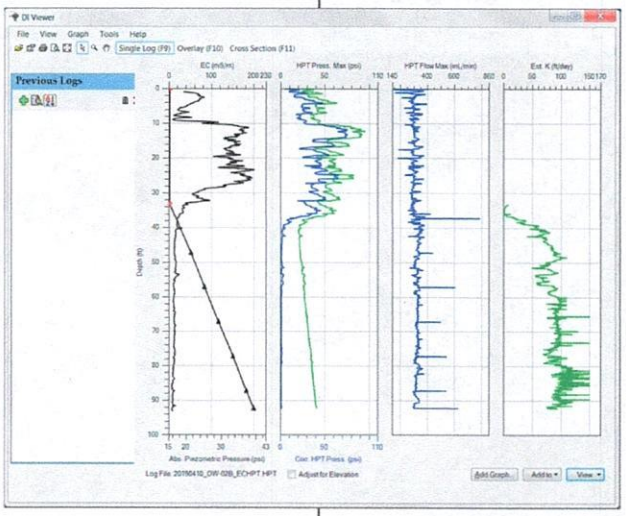
For Office Use Only:

Well #: G178

The sketch below only required for water wells

If well telescopes, show depths on sketch.

Ground Level 130 ft



If more than one screen, show location of each on sketch

Description of formations encountered must be provided for all wells and boreholes, unless specifically exempted by regulations

Description of Formations Encountered	From (*depth*) Ground level	To (*depth*)
Description of direct-push		
Pushed easily, clay to 38 ft bls	0	50
Pushed difficult, likely medium sand	50	75

Sketch the property layout and include the following:

1) the well location
2) any permanent structures on the property that may aid in locating the well
3) any roads, power lines, or other items that may aid in locating the property and the well
4) north arrow

RECEIVED
JUN 14 2019
BY OLWR

Landowner Name: x

I HEREBY CERTIFY that the well/borehole was drilled, constructed, and completed in accordance with all applicable requirements of the Mississippi Department of Environmental Quality and the Mississippi Department of Health regulations, if applicable, and state laws.

Roland W Tollett	5/3/2019	ROLAND TOLLETT Digitally signed by ROLAND TOLLETT Date: 2019.06.04 14:14:45 -05'00'
Print Name of Responsible Licensee and License No.	Date	Signature of Licensee

Form: OLWR-SWR-1B (*4/13*)

G178

Driller: Roland W Tollett, USGS, 3095 W California Ave, Ruston, LA 71270 [318-245-8639] (MS LIC RMO-00009026)

Site number: <MDEQ no> Leflore OW-02

Drill date: 20190403 **Plugged date:** active monitoring well

Site type: USGS monitoring well

EC-log depth none (nearest EC-log SM-02-BH about 1,700 ft west of this well)

Rig Type: Geoprobe 7822DT with EC-HPT probe

Lat/Long 33.59719 -90.29504 (+-4ft) **Sec Township Range:** NE1/4,SE1/4,S16,T20N,R01W

Land surface elevation: 39.6 meters (130 feet; accuracy 1.6 ft) [data source: DEM]

Topo Map Name: Shellmound, MS **County/Parish:** 083 Leflore County, MS (1:24,000)

HUC code: 080302070802 Lake Henry **MAPS site_no for NWIS:** 333550090174201

Land owner: x

This well was drilled as part of a collaboration between USDA ARS (Oxford MS) and the USGS to study artificial groundwater recharge rates via injection in the MRVA aquifer.

********** USER NOTES **********

Drilled by Roland (USGS Ruston LA) and Wesley Bolton (USDA ARS Oxford MS).

Driller notes (ROP is rate of penetration; TOC is top of 2" PVC casing):

0-50 ft intervals pushed easily; likely high clay content; ROP was about 1 inch per 0.25 to 0.50 second

50-75 ft interval was slightly more difficult to push; ROP was about 1 inch per 1 to 2 seconds; likely silty

RWT (driller) noted that this is a good location for EC-log and will return to this site (which we did)

Well construction: This 2" PVC monitoring well is ~75 ft less ~10" cut off of top from bottom of point to TOC with a 10 ft screen; screened interval is ~62-72 ft bls; MP is 2.50 above land surface with aluminum protective riser and 1.5 ft radius concrete slab; ~10 inches of pvc casing was cut off TOC to remove the sharp female thread edge to protect e-tapes and a 4" point was added to btm of casing; about 15 gallons of tap water were poured into PVC casing prior to pulling rods; this technique was used to balance and equalize pressure.

EC-HPT log:

0-10 siltly

10-35 ft bls – thick clay unit

35-93 ft bls – medium to coarse sand

HPT log: using last 6 dissipation test produced a theoretical water level of 33ft bls which matched measured WL very well.

About 2 cups of bentonite granules were poured into the annular space of the borehole and likely bridged over around 30 ft below land surface (bls). Portland cement at a tap water ratio of 5-6 gals per 92-lb bag was used to seal the borehole from about 30 ft bls to land surface.

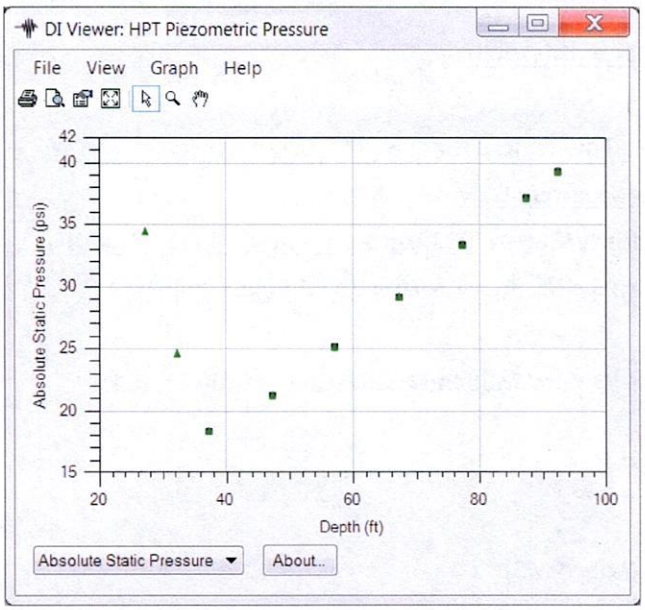
Water level:

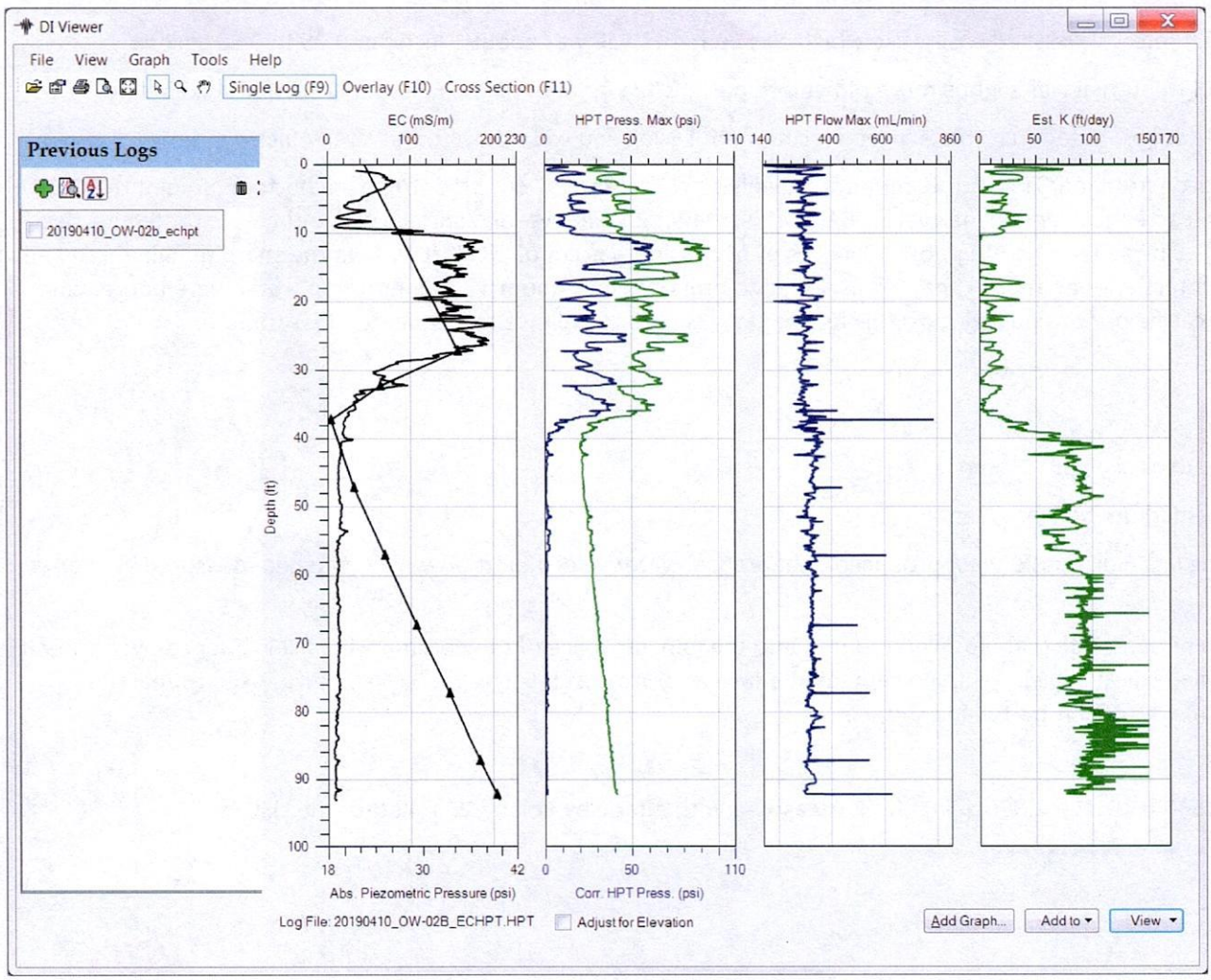
4/29/19 @ 1530 = 35.53 – 2.50 = 33.03 ft bls measured with e-tape by Roland W Tollett of the USGS

****

USGS OW-02-EC (continued)

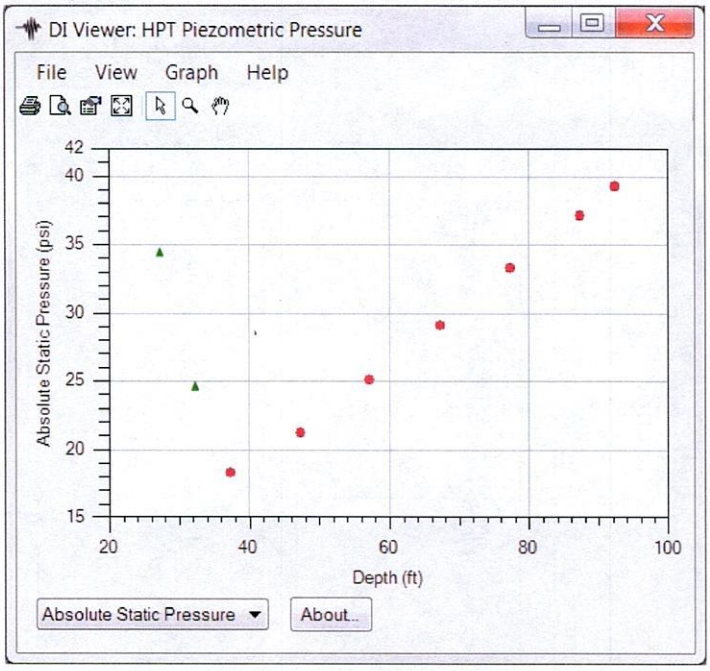
Figure 1. Graph of all 9 dissipation tests and EC-log showing 9 dissipation points from both the unsaturated and saturated zones.

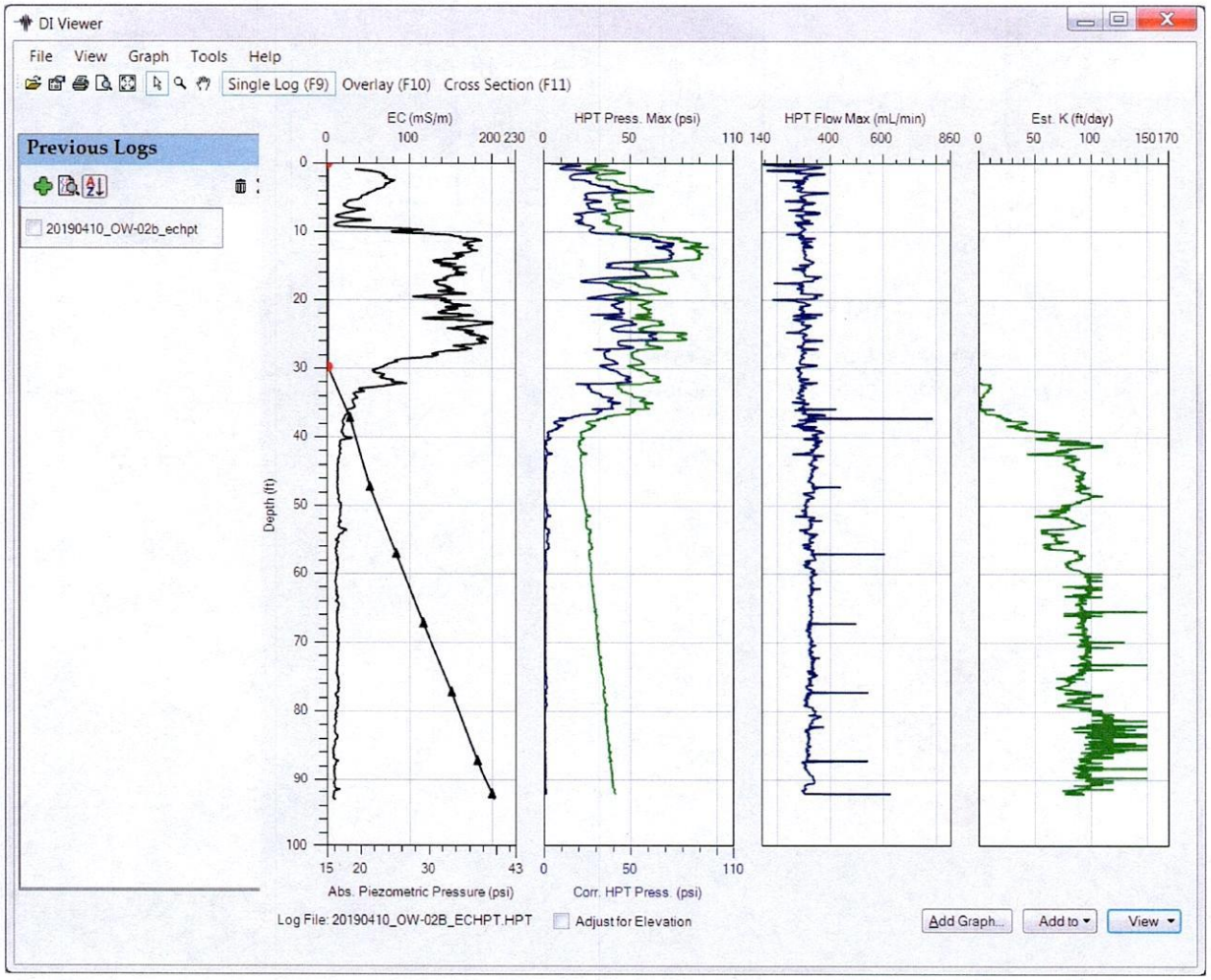




USGS OW-02-EC (continued)

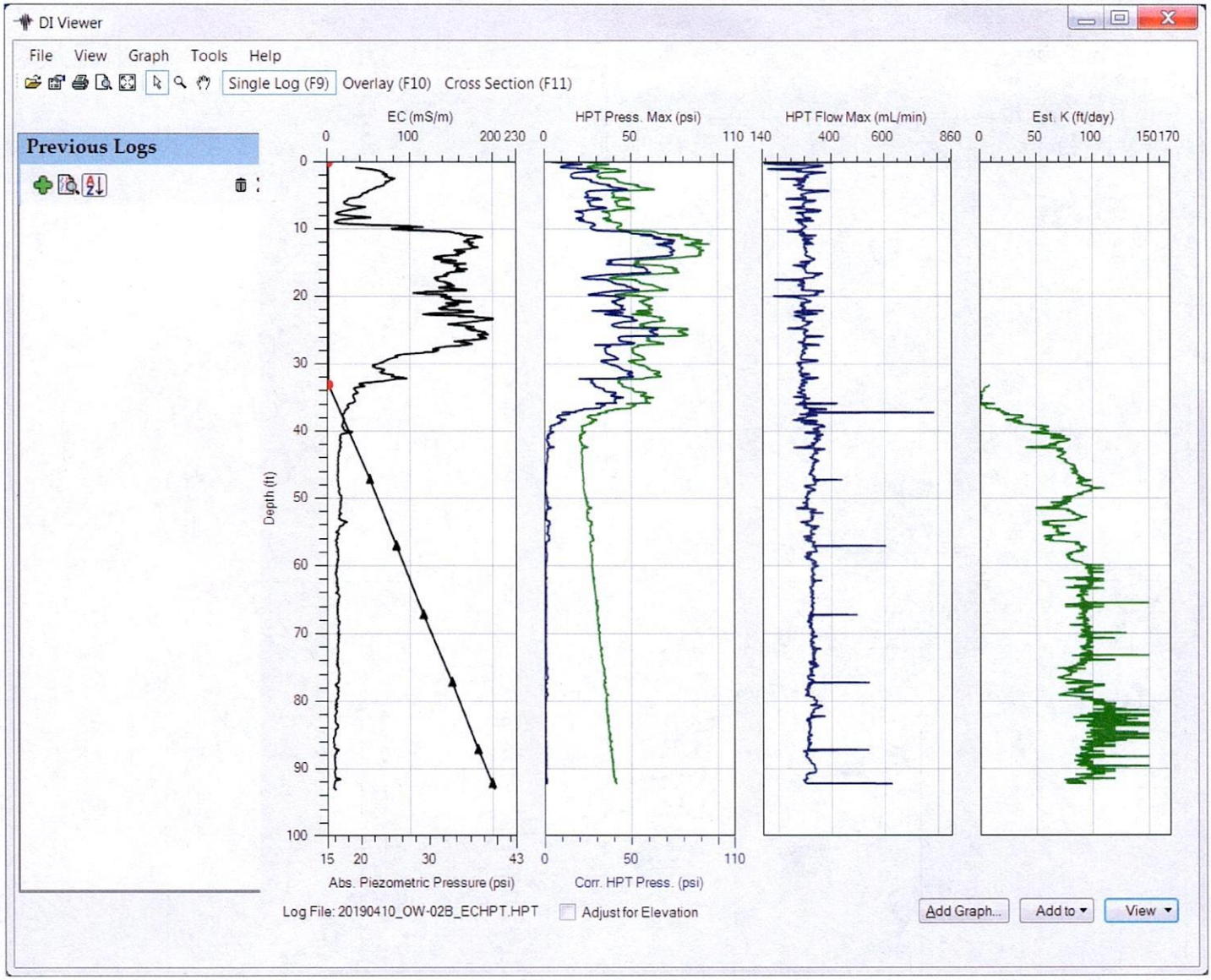
Figure 2. Interpretation 1: Graph of dissipation tests and EC-log showing the last 7 dissipation points and the associated calculated estimated hydraulic head. The water level was estimated to be ~30 ft below land surface from the 7 dissipation tests (sand from 40-93 ft bls; WL on 4/29/19 = 33.03 ft bls).





USGS OW-02-EC (continued)

Figure 3. Interpretation 2 (best): Graph of dissipation tests and EC-log showing the last 6 dissipation points and the associated calculated estimated hydraulic head. The water level was estimated to be ~33 ft below land surface from these 6 dissipation tests (sand from 40-93 ft bls; WL on 4/29/19 = 33.03 ft bls).



G178

20190410_OW-02b_echpt.zip
SITE INFORMATION -- DIRECT IMAGE HPT PROBE
Geoprobe DI Acquisition Software for Windows Version: 3.2 Build: 18113
Pre-Log EC Load Tests

Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Test 1	195.0	198.9	2.0	PASS
Test 2	97.0	98.9	1.9	PASS
Test 3	24.0	24.2	1.0	PASS

COMPANY: Geoprobe
OPERATOR: rtollett PROJECT ID: usgs_office CLIENT: USGS UNITS: ENGLISH
PROBE AND ARRAY: K6050 HPT Probe with Wenner
LOCATION: LA
100 INCH STRING POT USED
ROD LENGTH: 5 feet
PRE-LOG HPT REFERENCE TEST VALUES
PRE TEST TIME: Wed Apr 10 2019 13:58:14

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	15.562	0.0	107.300
TOP with FLOW>0	15.816	295.7	109.050
BOTTOM with FLOW=0	15.348	0.0	105.820
BOTTOM with FLOW>0	15.576	295.0	107.390

EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.5 kPa)
TRANSDUCER TEST PASSED
HPT IDEAL COEFFS: 2.2696e1,-2.2356
HPT SENSOR CAL NUMBERS: XD30959A,0.0000,0.0000,0.0000,0.0000,9.9490e-1,-1.3100
LOG START TIME: Wed Apr 10 2019 14:12:31
LOG END DEPTH: 92.20 ft (28.103 m)
LOG END TIME: Wed Apr 10 2019 15:18:58
LATITUDE: 33.597181750 LONGITUDE: -90.294981111
ELEVATION: 0.000 METERS 0.00 FEET GPS Quality: Manual
POST-LOG HPT REFERENCE TEST VALUES
POST TEST TIME: Wed Apr 10 2019 15:43:28

TEST	HPT PRESSURE (psi)	FLOW (mL/min)	HPT PRESSURE (kPa)
TOP with FLOW=0	15.567	0.0	107.330
TOP with FLOW>0	15.811	289.0	109.010
BOTTOM with FLOW=0	15.358	0.0	105.890
BOTTOM with FLOW>0	15.590	290.6	107.490

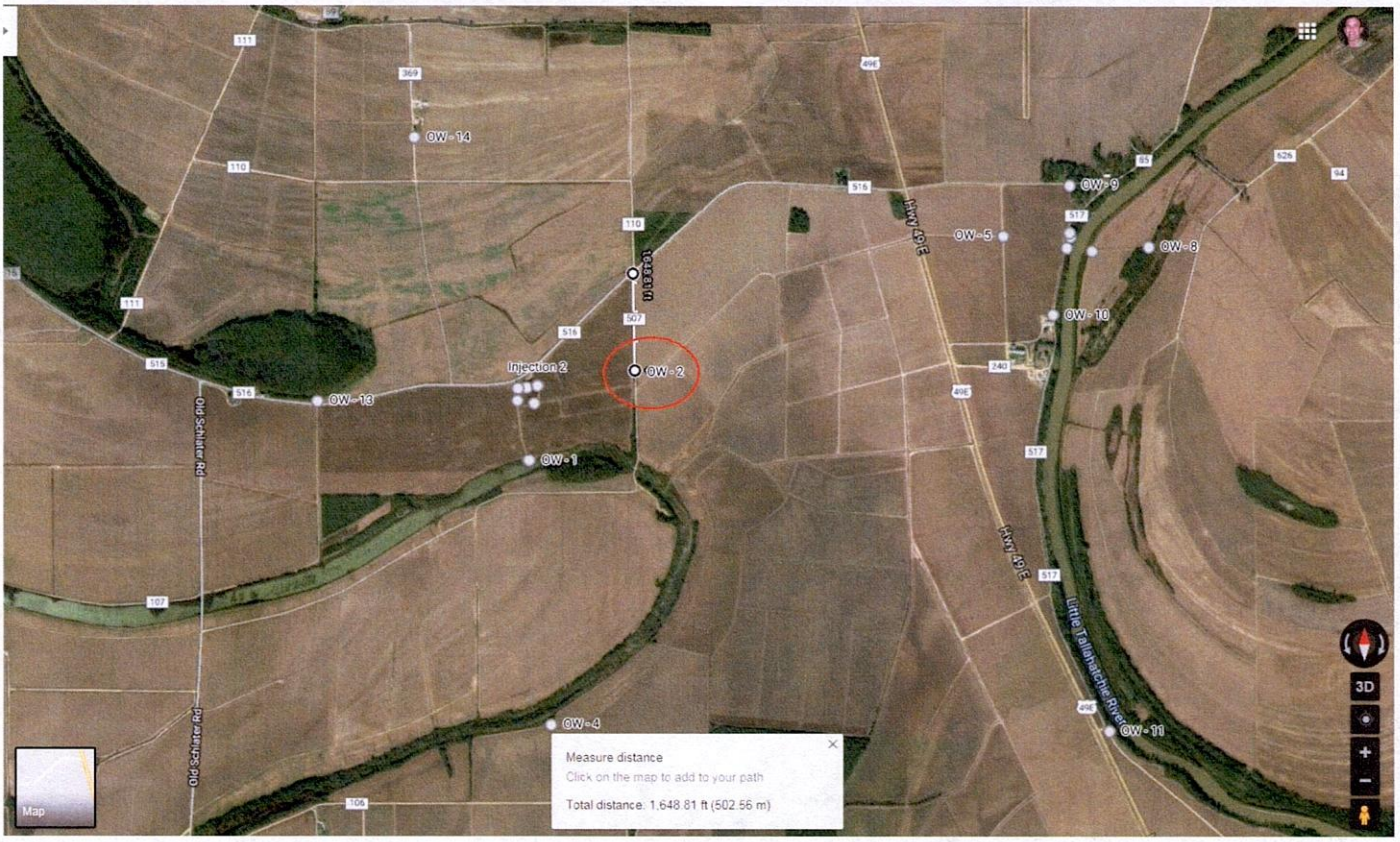
EXPECTED FLOW=0 HPT DIFF.: 0.22 psi (1.5 kPa) +/- 10%
ACTUAL FLOW=0 HPT DIFF.: 0.21 psi (1.4 kPa)
TRANSDUCER TEST PASSED
Post-Log EC Load Tests

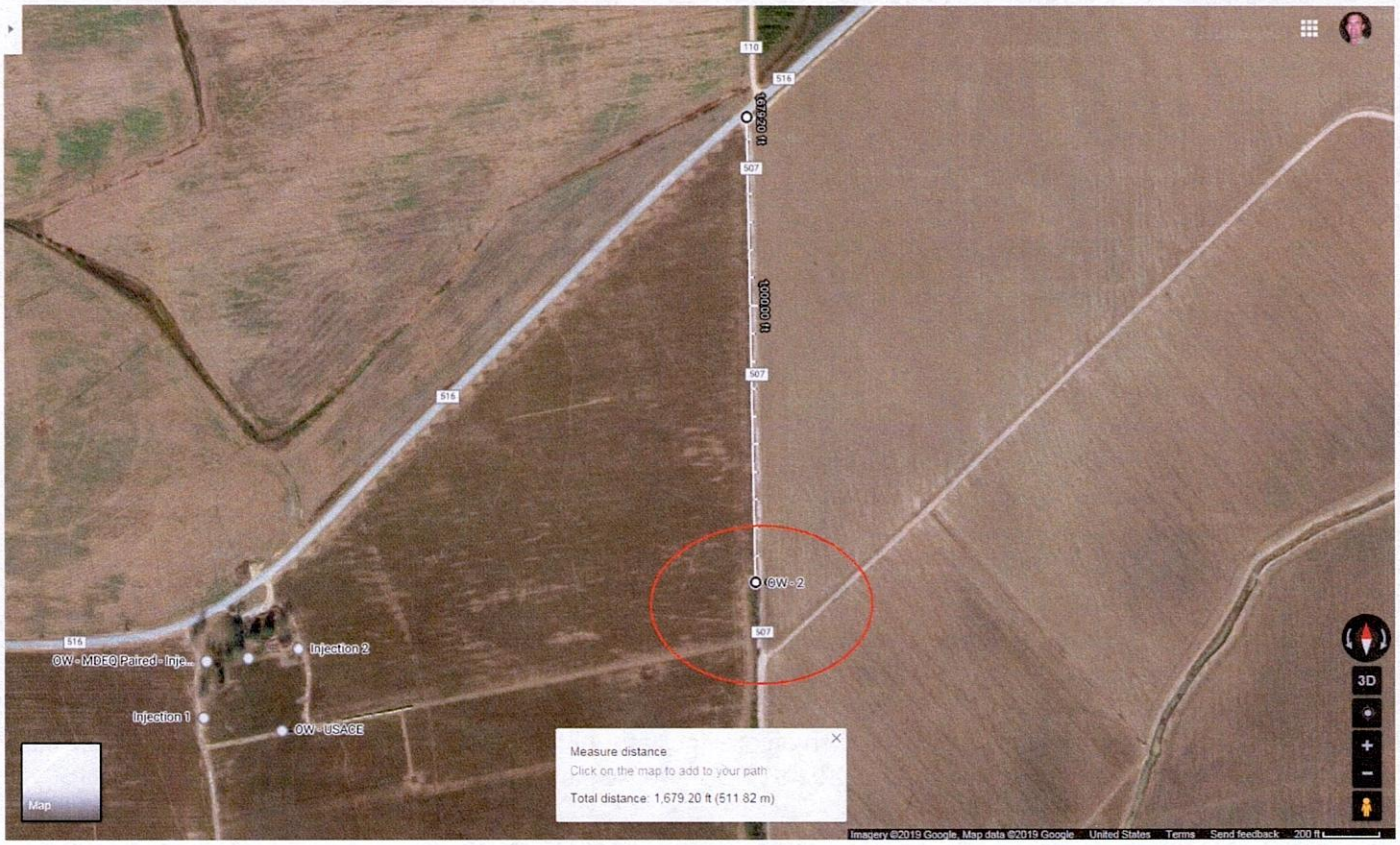
Test	Target (mS/m)	Actual (mS/m)	% Diff	P/F
Test 1	195.0	201.4	3.3	PASS
Test 2	97.0	98.8	1.9	PASS
Test 3	24.0	24.2	1.0	PASS

********** USER NOTES **********
Repushed this EC/HPT log bc white wire was broken on previous attempt. Do not use first EC log. There is a nice sand starting around 37 ft bls to the bottom of the log (92-93ft bls). Dense blueish gray clay from about 10 ft to 30 ft bls. Wesley Bolton and Roland Tollett were drillers.

USGS/USDA-ARS OW-02 (continued)

Figure 3. Location of monitoring well OW-02.





USGS/USDA-ARS OW-02 (continued)

New Site Sheet Form - MAPS

File Tables Search Network Help

NEW SITE

RECEIVED JUN 14 2019 BY OLWR

Site
Datums
Physical Characteristic
Administrative
Groundwater
Other Data Available
Miscellaneous Values
Special Cases
Spring

Site Record

Agency Code USGS : U.S. Geologica | Site Number 333550090174201 | Site Type Code GW

Station Name | Agency Use Code

Coordinate/Altitude Data

Latitude 333549.83 | Longitude 0901742.14 | Coordinate Accuracy H: Hndrth secor | Coordinate Method G: GPS

Coordinate Datum NAD83: NA Datum of 1983 | Latitude NAD83 in decimal degrees | Longitude NAD83 in decimal degrees

Altitude in ft 130 | Altitude Datum Code NAVD88: V Datum of 1988 | Altitude Method Code N: DEM | Altitude Accuracy Value in ft 1.6

Surface Water Data

Drainage Area in sq mi | Basin Code

Contributing Drainage Area in sq mi

Spatial Data

Land Net S16 T20N R01W O | Topographic Code

Map Name SHELLMOUND, MS | Map Scale 24000

Hydrologic Unit Code 080302070802: Lake Henry

Groundwater Data

Aquifer Code | National Aquifer Code | Aquifer Type Code | Well Depth in ft | Hole Depth in ft | Source of Depth

Administrative Data

Country Code US: United Stat | State Fips Code 28: Mississippi | County Fips Code 083: Leflore Cou | Minor Civil Division 90378: District 1 | District Code 28: MISSISSIPF | Time Zone Code CST : Central Standar | Daylight Savings Time Flag Y: Yes

Use Data

Primary Use of Site | Secondary Use of Site | Tertiary Use of Site Code | Primary Use of Water Code | Secondary Use of Water Code | Tertiary Use of Water Code | National Water Use Code

Data Collection and Dates

Data Reliability Code | Site Establishment Date | First Construction Date