4Q 2008 GW MONITORING

TEAM 2

PENNY BASSETT

"Rite in the Rain"®

ALL-WEATHER

**JOURNAL**

No. 391

11/2/08 SUNDAY

0830 Arrive on site, prepare field equip, paperwork, meters, etc. for begin of 4Q 2008 sampling event.

PERSONNEL: Penny Bassett
Royanne Barringer
Tara Richards

WEATHER: Rained overnight but not raining during the day. Cloudy w/ patches of sun, high temp ~ 60-65°F

SAFETY MEETING: Review JSAs, discuss fitness to work (health, illness, etc.)

CALIBRATE FIELD METERS:
Team 1 - YSI #1, Micro #1 - Tara
Team 2 - YSI #2, Micro #2 - Penny
Team 3 - YSI #3, Micro #3 - Royanne

12:00 Mobilize to B/W-11 cluster

12:35 Start pumping on B/W-11S
Water is v. cloudy, had red floating particles in discharge for first few minutes. Turbidity parameter v. slow to stabilize

1325 Collect sample
Freeze kit to blow out surface discharge line



14:17 Start pumping on B/W-11B
Set purge level v. low (100 ml/min) because of excessive drawdown
Still had drawdown of ~10' at this rate

1450 Collect sample

1540 Start pumping B/W-11D
Alot of bubbles in discharge line, spend some time trouble shooting to identify source of bubbles. There do not appear to be bubbles in discharge line below cap. They only appear when sample enters 2nd disch tube.

1625 Collect sample

1700 Return to lab, drift check meter, unload samples + equipment

Samples Collected 11/2/08:

B/W-11S, B/W-11D, B/W-11B } PB
B/W-29S, B/W-29D3 } TR
USGS-2BS, W5AA-3S } RB
* USEPA-2S not sample, no water

11/3/08 MONDAY

0530 Arrive on site.

PERSONNEL: Penny Bassett
Royanne Barringer
Tara Richards

WEATHER: Predicted 60% chance rain
Cloudy, overcast, temp
~ 55-60° F

SAFETY MEETING:
Housekeeping, weather

CALIBRATE FIELD METERS
TEAM 1 - YSI 1, MICRO 1 Tara
2 - YSI 2, MICRO 2 Penny
3 - YSI 3, MICRO 3 Royanne

0730 Mobilize to B/W-5R cluster
0828 Start pumping B/W-5DR
no problems/issues, purge @ 500 ml/m
0855 Collect sample

0948 Start pumping B/W-5IR
Purge @ 500 ml/min
1020 Collect sample + duplicate
(B/W-5IR-FD)



1137 Start pumping B/W-5SR
purge @ 400 ml/min
1205 Collect sample

1300 Lunch break + mobilize to MW-4S
1342 Start pumping 500 ml/min
1410 Collect sample

1445 Mobilize to PA-MW-1S
1514 Start pumping @ 500ml/min
1545 Collect sample + MS/MSD
(2x volume)

1630 Return to field office, unload, drift check meters

Samples collected 11/3/08:

| | | | |
|---|---|---|---|
| B/W-5SR | PB | PW-8S | RB |
| B/W-5IR | PB | PW-9S | RB |
| B/W-5DR | PB | PW-10S | RB |
| MW-4S | PB | PW-11S | RB |
| PA-MW-1S | PB | D5AC-1S | RB |
| B/W-14S | TR | | |
| B/W-15S | TR | | |
| MW-2S | TR | | |

QC Samples:
FB-01 field blank
EQ-01 equip blank on geosquirt pump

~~11/4/08 TUESDAY~~ 11/3/08 Cont'd

~~05:30 Arrive on site~~

NOTE: Tara's QED control box had been malfunctioning and could achieve only limited maximum pressure, unable to use on deeper wells. She limited herself to shallow wells until controller gave out completely. It will be sent back to QED for repair + a rental unit was ordered from Equipco

QC Samples:
FB-01 field blank-done in field office using lab grade water, filtered + placed in preserved sample bottles. ~~We use only wat~~
EQ-01 Equip blank on geosquirt pump. ~~Pumped~~ Deconned w/std procedure, washed outside, then pumped commercial grade Distilled water thru pump + filtered + filled preserved bottles.

PBassett



11/4/08 TUESDAY

0530 Arrive on site (Penny + Roxanne)
Tara arrives @ 8am
PERSONNEL: P Bassett
R Barringer
T Richards
WEATHER: Predicted Cold (high of 45°F) and windy, but no precip. Generally partly cloudy w/ patches of sun (Some patches of snow flurries in valley Thursday)
SAFETY MEETING: Cold stress/weather, CO poisoning from vehicle exhaust
CALIBRATE FIELDMETERS
Team 1 - YSI 1, Micro 1
2 - YSI 2 Micro 2
3 - YSI 3 Micro 3

0830 Mobilize to B/W-1 cluster
0931 Start pumping B/W-1D1 @ 500 ml/min. No drawdown, water v. clear.
0955 Collect sample

10:44 Start pumping B/W-1S @ 500 ml/min, v. clear water no issues.

11:10 Collect sample

1225 Start pumping B/W-1D2 @ 500 ml/min, clear water, no issues.

12:50 Collect sample + duplicate B/W-1D2-FD

1400 Set up on B/W-1D3 w/ compressed gas but not able to get enough pressure to air line. It appears to be leaking + losing pressure at air out hose at cap, need to fix/tighten hose fitting or get new hose

* Doyle from Copper Env. arrived @ ~ 1430 to observe safety activities. Reviewed JSA

1530 Return to field office to do drift checks, review paperwork/field forms. Dumped 5-gal bottles



of purge water in Phase I/II pond behind Arimetco plant.

Wells sampled 11/4/08:

B/W-1S
B/W-1D1
B/W-1D2
} PB

B/W-6S
B/W-6I
WSAB-2S
WSAB-3I
} TR

PW-7S
WW-36B
WW-40B
} RB

QC SAMP: FB-02

15:30 Offsite

P Barnett

11/5/08 Wednesday

0530 On site, Tara arrives @ 7:30 but left again, feeling sick

PERSONNEL: P Barrett
R Barringer
T Richards
⊛ Doyle Noud from Cu Env.

WEATHER: Predicted warmer w/less wind high ~ 50°F, partly cloudy

SAFETY MEETING: Review jumper cable/connection sequence to car battery, review contents of first aid kits.

CALIBRATE FIELD METERS:
Team 1 (Tara) – YSI 1, Micro 1
2 (Penny) – YSI 2, Micro 2
3 (Roxanne) – YSI 3, Micro 3

0745 Mobilize to B/W-19 cluster

0850 Start pumping B/W-19D @ 500 ml/min, no issues. Doyle Noud is observing.

0915 Collect sample



10:19 Start pumping B/W-19I @ 500 ml/min, no issues, water clear, no draw down

10:45 Collect sample

11:36 Start pumping B/W-19S @ 460 ml/min, no issues, water clear, no drawdown

12:00 Collect sample

12:37 Lunch break

13:00 Mobilize to B/W-8 cluster

13:32 Start pumping B/W-8I
Depth of pump only allows max purge rate of 300 ml/min, No issues, water clear, no draw down

1405 Collect sample

1459 Start pumping B/W-8S @ 500 ml/m
Water mod cloudy at first but cleared up. Last reported (last event) was 165 but much clearer this time @ 5.8 NTU

1525 Collect sample

11/5/08

NOTE: Tara was sick today + did not collect any samples

SAMPLES COLLECTED 11/5/08:

B/W-8S
B/W-8I
B/W-19S
B/W-19I
B/W-19D
} PB

WW-59B
W5AA-1I
D4BC-1S
} RB

QC Sample: FB-03

P Barnett



11/6/08 Thursday

05:45 On site, load supplies, calibrate meters

PERSONNEL: P Barnett
R Barringer
T Richards

Note: Royanne to sample, Tara will do sample pack + ship

WEATHER: Predicted sunny/part cloudy high 55-60°F, should be even nicer than yesterday

SAFETY MEETING: Safe lifting techniques, refueling of compressors.

CALIBRATE FIELD METERS:
Team 2 (Penny) - YSI #2, Micro #2
Team 3 (Royanne) - YSI #3 Micro #3

08:00 Mobilize to B/W-25 cluster

08:50 start pumping B/W-25D
start @ 500 ml/min but cut back to 300 ml/min because water level drew down > 1'. Water slightly cloudy but cleared up to 7.3 NTU, ORP slow to stabalize. Bladder was replaced couple weeks ago, works well, no bubbles.

0940 Collect sample

10:28 Start pumping B/W-25S @ 500 ml/min. No issues, water pretty clear, no drawdown

10:55 Collect sample

12:03 Start pumping B/W-25I @ 500 ml/min. No issues, water clear, no drawdown.

12:30 Collect sample plus duplicate B/W-25I-FD

Mobilize to Process Area

14:10 Start pumping PA-MW-3S @ 500 ml/min. No issues. V. clear water (< 1 NTU), v. little drawdown

14:40 Collect sample

1530 Return to field office, unload, drift check meters.



SAMPLES COLLECTED 11/6/08:

B/W-25S
B/W-25I
B/W-25D
PA-MW-3S
} PB

B/W-13S
B/W-18S
B/W-18D1
B/W-18D2
} RB

QC Samp: FB-04 field blank

P Barrett

11/9/08 Sunday

0900 Arrive onsite
PERSONNEL: Penny Bassett
Royanne Barringer
Tara Richards
WEATHER: Drizzly rain off and on thru-out day. Cloudy, cold, high temp ~ 48-50°F
SAFETY MEETING: Wet weather, cold stress, muddy conditions
CALIBRATE FIELD METERS:
Team 1 (~~Penny~~ Tara) - YSI #1 Micro #1
2 (Penny) - YSI #2 Micro #2
3 (Royanne) - YSI #3 Micro #3

11:00 Mobilize to MW-2002-2 cluster
11:29 Start pumping MW-2002-2I @ 500 ml/min. Water is very cloudy (~50 NTU), no prefilter used on flow cell.
12:05 Collect sample + duplicate MW-2002-2I-FD



1329 Start pumping MW-2002-2S
No issues, water very clear, pump @ 500 ml/min
1355 Collect Sample

14:59 Start pumping B/W-21S @ 500 ml/min. No issues. Water very clear, no drawdown.
15:25 Collect sample.
* Rain drizzle durining purge but stopped raining before sample collection.

16:00 Return to field office, unload samples + supplies. Drift check meters.

Samples Collected 11/9/08:

| | | | |
|---|---|---|---|
| MW-2002-2S | PB | PW-1S | RB |
| MW-2002-2I | PB | W4CB-2I | RB |
| B/W-21S | PB | MW-5S | RB |
| B/W-29I | TR | W5BB-S | RB |
| B/W-29D1 | TR | FB-05 | field blank |
| W5DB-D | TR | | |

PBassett

11/10/08 Monday

0530 Arrive on site

PERSONNEL: Penny Bassett
Royanne Barringer
Tara Richards

WEATHER: Sunny + clear in a.m., overcast in pm, generally calm, no rain

SAFETY MEETING: Cold stress, hypothermia signs, symptoms, treatment

CALIBRATE FIELD METERS:
Team 1 (Tara)
& 2 (Penny)
3 (Royanne)

0730 Mobilize to B/W-1D3
Set up to use compressed $CO_2$ gas but unable to get any pressure during discharge, tried several gas tanks, other control box, other hose. Still no pressure

0930 Attempt same set up on B/W-23B
Getting more pressure ~75psi but not enough. Likely problem w/ regulator. Cannot sample these 2 wells until fixed.



10:38 Start pumping PA-MW-2S
@ 500 ml/min. No issues.
Stabalized quickly, water v. clear.

11:00 Collect sample.

12:29 Start pumping B/W-10S
@ 500 ml/min. Stabalize pretty quickly, slightly turbid (3 NTU)

12:55 Collect sample

1329 Start pumping B/W-10D
@ 500 ml/min. Became ~~st~~ more cloudy after pumping 10 min and finished at 10 NTU

1410 Collect sample.

1515 Return to field office, ~~to~~ unload samples + supplies. Dump several days accumulated purge water (5 gal bottles) in Phase I pond behind Arimetco plant.

1600 Royanne got flat tire, help change tire

11/10/08

Samples Collected 11/10/08:

PA-MW-2S
B/W-10S } PB
B/W-10D

B/W-3S
B/W-3I
B/W-3D
B/W-4S } TR
B/W-4I
B/W-4D

WW-1S
WW-2S
PW-2S
PW-3S

FB-06 - field blank

PBassett



11/11/08 Tuesday

0530 Arrive on site
PERSONNEL: Penny Bassett
Royanne Barringer
Tara Richards
WEATHER: Predicted overcast, high 55°F

SAFETY MEETING: Driving safety, road hazards, speed limit
CALIBRATE METERS:
Team 1 (Tara) - YSI 1, Micro 1
2 (Penny) - YSI 2, Micro 2
3 (Royanne) - YSI 3, Micro 3

0730 Mobilize to B/W-27 cluster
0804 Start pumping B/W-27S @ 500 ml/min. No issues, clear water, no drawdown
0830 Collect sample

0900 Set up on B/W-27D but getting bubbles in discharge line similar to last event. Did not purge or collect sample. Will pull pump + replace bladder.

0930 Mobilize to B/W-9 cluster
0951 Start pumping B/W-9D @ 480 ml/min. No issues, water very clear
1025 Collect sample + duplicate B/W-9D-FD

1143 Start pumping B/W-9I @ 500 ml/min. No issues.
1210 Collect sample plus 2 extra 1L filt/unpres. bottles for tracer study "B analysis

1257 Start pumping B/W-9S @ 500 ml/min. No issues. Water v. clear, no draw down. Conductivity is higher than last event. Forgot to measure static water level.
1325 Collect sample plus 1 extra 1L filt/unpreserv for tracer study "B analysis

1430 Return to field office, unload samples + supplies. Dump purge water in Phase I pond.



1545 Pull pump from B/W-27D but leave intake drop line in well. Had to pull water level transducer to get pump out but then put it back in, hanging from top of outer casing (several inches higher than well cap)

Wells sampled 11/11/08

PB:
- B/W-27S
- B/W-9S
- B/W-9I
- B/W-9D

RB:
- B/W-20S
- PW-4S
- PW-5S
- PW-6S

TR:
- B/W-7I
- B/W-16S
- B/W-22S
- B/W-28S
- B/W-28I
- B/W-28D

FB-07 field blank

PBarrett

11/12/08 Wed

0600 Arrive on Site

PERSONNEL: P Bassett
R Barringer
T Richards

WEATHER: Sunny/partly cloudy, much warmer (high ~67°F), little-no wind

SAFETY MEETING: Hazards working around open water

CALIBRATE METERS:

Team 1 (Tara) – YSI #1, Micro #1
2 (Penny) " #2, " #2
3 (Royanne) " #3 " #3

0730 Disassemble pump from B/W-27D (in field office) & replace bladder. Bladder did look damaged, like it had been compressed too hard, but no obvious holes or leaks.

0915 Reinstall pump in B/W-27D. Had to pull & reinstall transducer. Water level measured at 09:25 = 32.23'



0935 Start pumping B/W-27D
Some air bubbles for first 2 min but this was just purging air from bladder + drop tube. Eventually no air in discharge, pump ran well. Tagged top of pump @ 102' btoc, ~~int~~

1005 Collect sample

1113 Start pumping B/W-2I
Start @ 500 ml/min but gradually decrease back to 300 ml/min because drawdown was ~0.5' and turbidity of water was increasing over time.

1150 Collect sample

1230 Head to town/NAPA to look for replacement fitting for $CO_2$ gas regulator. They did not have. Ended up swapping hoses with another regulator to ~~find~~ get combination of new/working regulator + old hose w/proper fittings. It appeared to work, now able to get enough

11/12/08

1355 Start pumping on B/W-23B @ 400 ml/min. DO was slow to stabalize but generally no issues w/ working equipment.

1450 Collect Sample

1530 Return to field office, unload, drift check on meters.

Samples Collected 11/12

B/W-27D
B/W-2I } PB
B/W-23B

UW-1S } RB

B/W-2D
MW-2002-1S
W32DC-D } TR
USGS-13S

FB-08 - field blank

1630 Offsite

P Bassett



11/13/08 Thursday

0600 Arrive on site

PERSONNEL: Penny Bassett
Royanne Barringer

WEATHER: Sunny / partly cloudy, calm, warm (high ~65°F)

SAFETY MEETING: Last day, cleanup, lifting, unexpected hazards

CALIBRATE METERS:
Team 2 (Penny) - YSI #2, Micro #2

0745 Mobilize to B/W-1
Set up to start pumping but getting no pressure on discharge. Sounds like the leak is possibly at the connection at the cap. ~~Will redo~~ Redid connection w/ new fitting & it contained the leak. Working well.

0926 Start pumping B/W-1D3 using $CO_2$ gas. Pump @ 430 ml/min.

1005 Collect Sample

11/13/08

11:00 Return to field office
No drift check on field meter because only one sample collected right after calibration

Sample collected 11/13/08:
B/W-1D3 - PB

Field event complete. All but 2 wells were sampled (USEPA-2S (dry) & MW-1S (discharge pipe broken)).

Plan to send all 3 MicroTPW turbidity meters to GeoTech for annual maintenance calibration & new calibration solutions. Will do some in-house cleaning + maintenance on YSI units in order to achieve better DO readings.

P Barrett