

COMPASS Synoptic CB: Gas Well Construction & Installation

Materials:

- 2inch PVC Sched 40 - product number
- 2inch PVC caps (flat top) - product number
- Swagelok fittings - product number
- Black UV resistant ¼" OD tubing - product number
- Stopcocks – slip tip product number
- Colored tape
- Heat shrinks

Construction:

- Cut 2" PVC into XX" long pieces
- Prime and Glue Caps to the 2" pieces
- Using a drill press; make holes in the top of the flat caps
- Screw the Swagelok fitting into this hole
 - o You want the hole to be a bit smaller than the Swagelok so that when you screw the Swagelok fitting into the cap it will be very tight
- Cut tubing to desired length and label with colored tape based on depth
 - o 10cm deep well: red tape,
 - o 20cm deep well: orange tape,
 - o 45cm deep well: black tape,
- Attach tubing to Swagelok and tighten fitting
- Attach stopcock to tubing
 - o Put a piece of heat shrink over tubing; push to the side
 - o Using heat gun; carefully heat sampling end of tubing
 - o Push slip-tip end of the stopcock into the warmed hard tubing
 - The warming makes the hard tubing more malleable so that you can fit the stopcock into it
 - o Push the heat shrink up over the connection between the tubing and the stopcock
 - Using heat gun, shrink the heat shrink to seal the connection



Installation:

- Materials needed:
 - o 2" gauge agar
 - o 2" bucket agar
 - o Folding measuring tape
 - o Bucket
 - o Tarp
 - o PVC pole (~1m long; 1 1/2" wide)
 - o Soil Knives / spatulas for scooping
 - o Driveway stakes
 - o Zip ties
 - o 60mL Syringe

- Electrical tape
- Sharpie
- Gloves
- Installation
 - Make sure agars & PVC are marked to appropriate depths
 - Using gauge agar, take initial core to required depth
 - Keep that core intact to the side



- Check the depth with the folding ruler
- Expand the hole with the bucket agar slightly
- Put PVC over tubing on the gas well
- Use the PVC to push the gas well down into the hole
- Check on the PVC that the depth is correct.
- Carefully remove the PVC
- Hold the tubing
- Put some material from the bottom of the bucket agar back into the hole on top of the gas well
- Remove the core from the gauge agar and slide it back into the hole
- Tamp the top of the core
- Use material from the top of the bucket agar to seal the top if needed
- Attach tubing to driveway stake to keep it up off the ground
- Use the syringe to check and see if you are getting water when pulling sample up from the well. Then ADD 180mL (3x 60mL syringes full) of ambient air to the gas well and close the stopcock.

Sampling:

- Connect syringe to the gas well
- Open stopcock
- Pull out 20mL out of the gas well (should be gas) & expel
 - Clearing out what was in the tube
- Close gas well stopcock
- Pull out another 60mL of the gas well for sample
- Close gas well stopcock
- Discard 40mL
- Put the remaining 20mL into an evacuated exetainer (can be field evacuated)

- Fill syringe with 60mL of ambient air
- Push this air down into the well
- Close well stopcock
- Move to next well
- Also take three replicate ambient air samples (20mL into an exetainer 3x) to capture ambient air concentrations

Gas well info:

- 5cm diameter
- 6cm deep
- Total internal volume = 117.81 cm³ (roughly 118 mL)

Other Figures:

