# SSHCZO Metadata Worksheet

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| Data File Name | **SH\_CZMW11.csv** |
| Date Prepared | 2020-01-29 |
| Descriptive Title | CZMW 11 |
| Update Frequency | Quarterly |
| Abstract | CZMW 11 was drilled on 2019-06-19 by [parratt wolff inc](http://pwinc.com/) using a CME 850X crawler mounted direct push/rotary drill rig. 6 ¼ in augers were used to drill to refusal at 5.334 meters and a 6” air hammer was used to continue to 5.944 meters. The well is cased to 5.944 meters with 4” pvc casing. Boring continued with a 4” air hammer to a depth of 44.196 meters.  CZMW 11 is continuously monitored using a vented [Meter Environment HYDROS 21 sensor](https://www.metergroup.com/environment/products/hydros-21-water-level-monitoring/). The sensor measures depth, water temperature, and conductivity (CTD). Measurements are made every 3 minutes, averaged, and are recorded every 15 minutes to a Campbell Scientific CR1000 data logger. The logger is programed and calibrated to manual water level measurements below ground. If changes are made in the offset between top of casing (TOC) and water level, the program will automatically store the old offset after the new offset is entered. A Campbell Scientific Dissolved Oxygen sensor is also installed.  Data are reviewed and QA’ed quarterly. The QA process is accomplished using precipitation data, other nearby well data, and manual water level measurements. Manual water level measurements are made periodically Solinist Electric Well tape and recorded in a spreadsheet. |
| Investigator  Contact Info | Dr. Susan Brantley, Professor of Geosciences, The Pennsylvania State University, 2217 Earth and Environmental Systems Institute, University Park, PA, 16802, 814.865.1619, [sxb7@psu.edu](mailto:sxb7@psu.edu). |
| Data Value Descriptions | * COL1: label = TmStamp\_UTC; Timezone = UTC * COL2: label = WaterTem\_pC; averaged water temperature; Units = degC * COL3: label = WL\_BLG\_m; Corrected and averaged water level below the ground surface; Units = meters * COL4: label = Cond; Specific Conductance, Units = uS/cm * COL5: label = DOmv; millivolts for raw Dissolved Oxygen levels; Units = mv * COL6: label = DOppm; Dissolved Oxygen in parts per million; Units = ppm * COL7: label = DOppm\_Avg = averaged 15 min DO ppm; Units = ppm |
| Keywords | Groundwater Depth, Groundwater Temperatures, Hydrology |
| Methods | Groundwater level measurements are recorded every 15 minutes with a vented [METER Environment HYDROS 21 sensor](https://www.metergroup.com/environment/products/hydros-21-water-level-monitoring/) (previously Decagon CTD) wired to a [Campbell Scientific CR1000](https://www.campbellsci.com/cr1000) data logger. Data are streamed to campus via Ethernet and fiber optic connections to the University network.  TOC above land surface = 0.44 meters  Sensor location down borehole from TOC = 18.44 meters  Sensor location from ground level = 18.00 meters  WL\_BLG\_m is measured with the in-situ sensor by recording the water pressure and known distance to the ground surface resulting in the actual water level below ground in meters. The manual measurements using the well tape are used to verify and correct the data. Corrections are applied when the manual well measurements are different from what is recorded by the sensor. The difference between the sensor data and manual data is applied and prorated visit to visit.  SpC values are QA’ed and corrected to calibrated YSI data by comparing sensor data to the YSI data and applying the difference. These corrections are prorated visit to visit.  Data Gaps/Issues:  2019-08-08 to 2019-09-23: data removed due to improper program being used  2019-10-21 to 2019-10-23; sensors removed while doing down hole geophysics work  2022-08-09: logger replaced with a CR1000X due to ethernet module failure – rec numbers started over and data recovered from older logger |
| Sites | Shale Hills Valley: 40.66380, -77.90610(NAD\_1983\_StatePlane\_Pennsylvania\_South\_FIPS\_3702) |
| Publications | none |
| Citation | The following acknowledgment should accompany any publication or citation of these data: Logistical support and/or data were provided by the NSF-supported Susquehanna Shale Hills Critical Zone Observatory. |
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