This document describes the process used to generate the drawdown curves and contour maps used to in the initial evaluation of the planned step pumping test of the FCI PTF site for June of 2018. The pump testing is described in [2018-03-23 FCI Ltr re Planned Formation Testing.pdf](../Documents/Reviewed/2018-03-23%20FCI%20Ltr%20re%20Planned%20Formation%20Testing-%20Searchable.pdf) (C:\Projects\727- Florence Copper\2018\Documents\Reviewed\) and [2018-05-09 ADEQ to FCI Approving Formation Testing Proposal.msg](../Documents/Reviewed/2018-05-09%20ADEQ%20to%20FCI%20Approving%20Formation%20Testing%20Proposal.msg) (C:\Projects\727- Florence Copper\2018\Documents\Reviewed\).

The procedure uses the Theis solution to approximate drawdowns using the planned pumping stages and the aquifer properties as are built into FCI’s groundwater model. It is noted that the Theis solution assumes a heterogeneous aquifer and we expect the aquifer to be dominated by fracture flow so the solution is an approximation at best.

The procedure handles the step testing by generating drawdown curves for each portion of the step test individually and then superposing them upon the initial pumping. In order to achieve the appropriate response with respect to time of the pump test, the initial response of additional pumping is delayed by shifting the time scale of additional pumping along the time scale of the initial pumping. The additional pumping rate is the total pumping rate for that stage of the pump test minus the total pumping for the previous pumping stage. The recovery portion is simply the negative of entire pumping value.

1. Open [TheisSolutionStepPumpTest.py](Drawdowns/TheisSolutionStepPumpTest.py) (C:\Projects\727- Florence Copper\2018\Pump Test Evaluation\Drawdowns\).
2. Specify the pumping well you wish to analyze on line 144. You can simply uncomment it and comment out whichever other line is declaring the assignment to PumpingWell.
3. Run [TheisSolutionStepPumpTest.py](file:///C:\Projects\727-%20Florence%20Copper\2018\Pump%20Test%20Evaluation\Drawdowns\TheisSolutionStepPumpTest.py). It will produce the output file **PumpingWell- Outfile- Contours.txt** (C:\Projects\727- Florence Copper\2018\Pump Test Evaluation\Drawdowns\) and output figure **PumpingWell Drawdowns.png** (C:\Projects\727- Florence Copper\2018\Pump Test Evaluation\Figures\).
4. Open [ConcentricCircles\_shp.py](Drawdowns/ConcentricCircles_shp.py) (C:\Projects\727- Florence Copper\2018\Pump Test Evaluation\Drawdowns\).
5. Specify the pumping well you wish to analyze on line 53. You can simply uncomment it and comment out whichever other line is declaring the assignment to Well.
6. Run [ConcentricCircles\_shp.py](Drawdowns/ConcentricCircles_shp.py). It will produce the output file **PumpingWell\_Buffer-~ft.shp** (C:\Projects\727- Florence Copper\2018\Pump Test Evaluation\Drawdowns\Buffer Files\).
7. Open QGIS 2.4.0 Chugiak and open project CurisAZSP.
8. Load the files created in step 6 and organize map as you would like to present it.