As an employee of the Poor Boy Oil Company you are in charge of the Low Hope field. This field consists of 5 wells, 4 oil and one gas, with the following data.

Outside Money #1 is located 660’ FNL and 1980 FWL of section 16-15S-36E in Lea County, NM. Depth 11,612 ft, 2 3/8” tubing set at 11,499 ft with perforations from 11,550 to 11,563 ft. The well produces 250 BOPD of 36 API oil with a GOR of 1200 ft³/bbl and a WOR of .5. The initial production test showed a J of .5 bbl/day, with an ave. reservoir pressure of 2500 psi. BHT is 212F and use 70F for the surface temperature.

Outside Money #2 is located 1320’ FNL and 1980’ FWL of section 16. Depth of 10,100’ with perforations at 10,065 – 10,073’ with 2 3/8” tubing set at 9990’. The well was tested at a rate of 110 BPD of 38 API oil and no water, with a THP of 114 psi. The well is needed to be produced at a rate of 200 BOPD, it has a GLR of 1000 ft³/bbl.

Outside Money #3 is located 1980’ FSL and 660’ FWL of section 16. Depth of 10,250’ with perforations at 10,049-10,068’ with 2 7/8” tubing set at 9975’. The average reservoir pressure recorded at 2510 psi, the well producing at a rate of 150 BOPD and 100 BWPD with a GOR of 1100 ft³/bbl, the oil has the same gravity at well #2. The well has a PI of .33 and a BHT of 180F.

Outside Money #4 is located at 1650’FSL and 660’FWL of section 16. Depth of 6123’ with 2 7/8’ tubing set at 6047’ with the perforations at 6075-6077’. Producing 29 API at a rate of 50 BOPD with a water cut of .75, and a GOR of 3000 ft³/bbl. Its average reservoir pressure is 2000 psi. The production test run at 100 BLPD had a flowing pressure of 1706 psi.

Savejob Gas Com #1 is located 1980’ FNL & FEL of section 16. Depth of 14,125’ with perforation at 12,780 – 12,810, the tubing is set at 12,710’ and is 2 3/8”, N80. With a BHP of 4500 psi the well has a rate of 4,335 mscfpd, with a BHP of 5500 psi the rate is 3040 mscfpd. The reservoir pressure is 7080 psi.
The tank battery for the oil wells is 2640' due east of the #2 well. There is no separation equipment at the oil wells.

The options for flowlines, 1) all the oil wells flow to well #2 and then to the tank battery, 2) wells 1 and 2 met at #2 then over to the battery, wells 3 and 4 flow to well 3 and straight over to the battery. Which is the best option which will allow the greatest number of wells to flow? The options for line size are 2, 2.5 and 3 inch, the costs of which are $3.50, $4.25 and $5 per foot.

What wells will flow at their assigned rates and which ones require a pump.

The gas well has to deliver 3.5 mmscfpd to a sales line that 2.83 miles distant. That line has a pressure of 600 psi. Will a compressor be necessary, what would be the best size for the flowline.

Using the H&B method calculate the pressure drop in well #1 for the flow given. Use the fluid properties from the correlations used in the software.